



THE UNIVERSITY OF ARIZONA

Center for
Consciousness Studies

30th Annual
**THE SCIENCE OF
CONSCIOUSNESS**

April 22–27, 2024

Loews Ventana Canyon Resort • Tucson, AZ

www.consciousness.arizona.edu

The Science of Consciousness

WORKSHOPS - MONDAY, April 22, 2024

8:30 am to 12:30 pm (Kiva, Catalina KL, Catalina J, Exec. Board Room, *Santa Rita, Sabino*)

- **Quantum Biology** - Paige Derr, NIH/NCATS; Thorsten Ritz, UCI; Nirosha Murugan, Wilfrid Laurier; Manisha Patel, UCSB, Travis Craddock, NSU, Philip Kurian, Howard U, Remote (Kiva Ballroom)
- **Top-Down Consciousness & Real-World Applications** - Leveraging the Metaphysics of Indian Knowledge Systems - IKSHMA
Remote from India: Co-Chair: Kunal Mooley (CalTech, IIT Mandi, IIT Kanpur; IMICS); Co-Chair: Laxmidhar Behera (IIT Mandi), Rama Jayasundar (AIIMS Delhi).
In person Tucson: Martin Fleming (SPi), Donald Hoffman (UC Irvine); Christopher Lord (formerly of Charles U-Prague); Ramana Vinjamuri (UMBC), Guruprasad Raghavan (Yurts AI) (Catalina J)
- **Dual Aspect Monism** - Michael Silberstein, Elizabethtown College; William Seager, U Toronto; Harald Atmanspacher, Collegium Helveticum, ETH Zurich - Jeffrey Kripal, Rice U (Catalina KL)
- **Dreamless Sleep** - JF Pagel (U Colorado); Jerome Alonso (U Calgary); Antonio Zadra, (U Montreal); Gina Poe (UCLA) (Exec. board room)

12:30-2:00 break

2:00 pm to 5:30 pm - *Workshops, Continued*

- **Neurophysiology of Loss & Recovery of Consciousness** - M. Bruce MacIver (Stanford U); Kathleen Vincent (Harvard U); Anthony Hudetz (U Michigan); Robert A Pearce MD (U Wisc-Madison) (Kiva)
- **Terminal Lucidity** - Chair: Marjorie Woollacott (U Oregon); Michael Nahm, (IFAP Freiburg); Natasha Tassell-Matamua (Massey U, NZ); Chris Roe (U Northampton); Maryne Mutis, U de Lorraine, Fr); Karalee Kothe, (U Colorado) (Catalina J)
- **Meditation & Global Spiritual Practices** - Thomas Brophy, (CIHS/IONS); Deepak Chopra, (Chopra Global) Jeffery Martin (CIHS); Hidehiko Saegusa (IIT Mandi, U Arizona, CIHS, AABC); Arnaud Delorme (IONS); Timothy Laporte (CIHS); Sean Esbjörn-Hargens (CIHS); Remote: Dean Radin (IONS) (Catalina KL)
- **Education in Consciousness Studies** - Laurel Waterman (U Toronto); Joan Walton (St. John U-York); Kunal Mooley (CalTech); Thomas Bever (U Arizona); Justin Riddle (FSU), Sue Blackmore (U Plymouth) (Exec. board room)
- **SYMPOSIUM - MONDAY April 22, 2024 - 7:00-10:00 pm – Kiva Ballroom - refreshments**
Integrated Information Theory of Consciousness Christof Koch (Allen Institute, Tiny Blue Dot Foundation, Seattle); Giulio Tononi, Melanie Boly & Matteo Grasso (U Wisconsin); Moderated by Paavo Pykkänen (U Helsinki & U Skövde) (Kiva)

**The Science of Consciousness, April 22-27, 2024, Tucson, Arizona, Loews Ventana Canyon
Conference Sessions by Day**

Tuesday, April 23, 2024

7:30 - 8:15 AM - MEDITATION WELLNESS KICKOFF - DEEPAK CHOPRA - Kiva

Plaza - Refreshments

Conference Opening

PLENARY SESSIONS - Kiva Ballroom

**8:30 AM - 10:40 AM - PLENARY 1 'DETECTING CONSCIOUSNESS' - STEVEN LAUREYS,
CLAUDIA PASSOS, GINA POE**

**11:10 AM - 12:30 PM - PLENARY 2 'CORTICAL OSCILLATIONS, WAVES AND CONSCIOUSNESS
1' - EARL K. MILLER, KEYNOTE**

**2:00 PM - 4:10 PM - PLENARY 3 'CONSCIOUSNESS AND REALITY' - DONALD HOFFMAN,
DEEPAK CHOPRA, PAAVO PYLKKÄNEN**

5:00-7:00 PM - CONCURRENT SESSIONS C-1- C-10

20 min talks: 5 min Q&A - Breakout Rooms: Grand Ballroom Salons D,E,F, G,H,I, Catalina
J, *Catalina KL*, Exec. Board Room, Santa Rita, Sabino

C-1 IMPLICATIONS OF ARTIFICIAL INTELLIGENCE - Ken Mogi, Jonathan Erickson, Bill Mensch,
Rizwan Virk, Maria Howard, JF Pagel (*Catalina J*)

C-2 PARAPSYCHOLOGY & NEAR-DEATH EXPERIENCES - Fr. Nathan Castle, O.P., Marina Weiler,
Terri Gilbert, Birgitta Therner, Nicole Johnson, Karalee Kothe (*Grand Ballroom SALON D*)

C-3 EXPERIENTIAL APPROACHES TO CONSCIOUSNESS - Roger Russell, Igor Nazarov, Raul
Valverde, Carlton 'Perk' Clark, Timothy Laporte (*Santa Rita*)

C-4 PHILOSOPHY OF MIND - Scott Ventureya, Scott Olsen, Jonathan Shear, Gustavo Rocha,
John Strozier, Patrick Schotanus (*Grand Ballroom SALON E*)

C-5 REPRESENTATION AND ACCESS MODELS OF MIND - Roger C. Schriener, Susan Blackmore,
Frank Heile, Matthew Williams, Rakenduvadhana Srinivasan (*Grand Ballroom SALON F*)

C-6 GEOMETRY OF MIND - Terrence Howard, Andres Gomez-Emilsson, Elena Bezzubova, Uziel
Awret, Jason Padgett (*Executive Board Room*)

C-7 QUANTIFYING COGNITIVE STATES IN NEURAL DATA - Logan Trujillo, Dimitri Van De Ville,
William Bosl, Kira Dolhan, Sandeep Gupta (*Sabino*)

C-8 STUDYING SPIRITUALITY IN NEUROSCIENCE AND THERAPY - Stephen Zerfas, Marco
Ruggiero, Master Zhi Gang Sha, Peter Hudoba, Kirit Goyal (*Grand Ballroom SALON G*)

C-9 NEUROSCIENCE OF ALTERED STATES - Nicolas Glynos, Travis Craddock, Clayton
Coleman, Nicholas Denomme, Gratiana Chen (*Grand Ballroom SALON H*)

C-10 QUANTIFYING ALTERED STATES OF CONSCIOUSNESS - Robert Tromm, Marjorie
Woollacott, Jessica Corneille, Sebastian Ehmann, Mona Letourneau (*Grand Ballroom SALON I*)

6:30-9:00 pm Welcome Reception - Cascade Terrace (badges required)

Wednesday April 24, 2024

7:15-8:15 am - Early Morning Experiential Clinics

Rumi Healing Meditation - **Sohail Shakeri** - Catalina J

Feldenkrais Awareness through Movement® **Roger Russell, Jeff Haller** - Ventana 2nd fl.

PLENARY SESSIONS - Kiva Ballroom

8:30 AM -10:40 AM - PLENARY 4 'CORTICAL OSCILLATIONS, WAVES & CONSCIOUSNESS

2' - **ANDRÉ BASTOS, PULIN GONG, DIMITRIS PINOTSIS**

11:10 AM - 12:30 PM - PLENARY 5 'THE GLOBAL BRAIN' - SUSAN SCHNEIDER, KEYNOTE

2:00 PM - 4:10 PM - PLENARY 6 'CONSCIOUSNESS IN RELIGION AND ALTERED STATES', TANYA

LUHRMANN, BRIAN MURARESKU, GEORGE MASHOUR

12:30-1:30 pm - **DEMOS & Exhibitors**

“Lunch Time Sound Reset &Integration – Sound Medicine®– Binaural Beats- “ **E. Krasnoff** - Rincon

Altered States Art as a Meditative & Restorative Tool: Painting Colour and Sound with Gestures in Virtual Reality, **Leslie Deere** - Coronado

Finding and Clearing the Emotional Roots of your Suffering - **Douglas Tataryn** - Santa Rita

5:00-7:00 PM CONCURRENT SESSIONS C-11 - C-20 - 20 min talks: 5 min Q&A - Breakout

Rooms: **Grand Ballroom Salons D,E,F, G,H,I, Catalina J, Catalina KL, Exec. Board Room, Santa Rita, Sabino**

C-11 ANOMALOUS COGNITION - **Helané Wahbeh, James Lake, Christine Simmonds-Moore, Arnaud Delorme, Milena Braticevic, Sean Esbjorn-Hargens** (SALON D)

C-12 CONSCIOUSNESS AND MENTAL HEALTH - **Carsten Korth, Ingrid Fredriksson, Darja Kobal Grum, Jürgen Kornmeier, Nina Carrubba, (EXEC. BOARD ROOM)**

C-13 QUANTUM COMPUTATION - **James Tagg, Akihiro Nishiyama, Vasyl Semenov, Roumiana Tsenkova, Mithun Paul, Rachid Lopez** (Catalina J)

C-14 INTEGRATED INFORMATION THEORY - **Brian Archibald, Kelvin McQueen, Garrett Mindt, Isaac David, Matteo Grasso** (SALON G)

C-15 ARTIFICIAL INTELLIGENCE - **William Robinson, Tam Hunt, Karina Vold, Aida Elamrani, Vickram Premakumar, Jay Myers** (SALON H)

C-16 TIME AND COGNITION - **Laura Deutsch, Abdellatif Abujudeh, Yu Zheng, Joel Bennett, James Corrigan** (SALON I)

C-17 SOCIAL IMPLICATIONS FOR UNDERSTANDING CONSCIOUSNESS - **Stephen Deiss, Richard Morley, Steven Wingate, Seymen Atasoy, Staci Newmahr** (SALON F)

C-18 PHYSICS OF MIND - **Florian Metzler, Gregory Horne, Amal Alachkar, Alon Retter, Xiaolin Ge** (SABINO)

C-19 NOVEL MODELS OF CONSCIOUSNESS - **Donald Mender, Meijuan Lu, Christopher Tyler, Meir Weinstein, Deborah Kala Perkins** (SANTA RITA)

C-20 PSYCHOANALYSIS AND THE UNCONSCIOUS - **Jenny Vanbergen, Teresa Nowak, Garrett Yount, Asher Soryl** (SALON E)

7:00-9:00 pm - Reception, Cash Bar - (Catalina KL)

7:00 PM - 10:00 PM - ART TECH DEMOS, EXHIBITS, POSTERS (GB Lobby; Grand Ballroom B)

7:00 PM - 10:00 PM - POSTER SESSION 1

1.0 - PHILOSOPHY - William J. Cox, Richard Gill, U.B. Lozano, Steve Kercel/Mona

Letourneau, George Goutos, Ramanujam Prakash, Jeff Sugar

2.0 - NEUROSCIENCE - Kewei Chen, Ryo Sato, Pavel Kraikivski, Soosan Beheshti

3.0 - COGNITIVE SCIENCE & PSYCHOLOGY - Antonio Zadra, Jin Ma, David Stone, Bruce Nappi, Malcolm Lett, Deni Van, Michael Kutch, Ruslana Remennikova

4.0 - PHYSICAL & BIOLOGICAL SCIENCES - Richard Harrington, Peter Lugten, Steen Loeth, Steve Finette, Seungju Ahn, Georges Karma, Deanna Minich, James Beran

5.0 - EXPERIENTIAL APPROACHES - James Driessen, Palash Goyal, Carl Flygt

6.0 - CULTURE & HUMANITIES - Steven Ferrara, Olga Colbert, Kevin Goodrich, Joan Walton, Laurel Waterman, Marianne Nell

7:00 - 10:00 pm EXHIBITORS - Grand Ballroom Lobby

Thursday, April 25, 2024

7:15-8:15 am - Early Morning, Experiential Clinics

Global Spiritual Meditation - Hide Saegusa - Catalina KL

Rumi Healing Meditation -Sohail Shakeri - Catalina J

Feldenkrais Awareness through Movement® lessons. Roger Russell, Jeff Haller -Ventana 2nd Fl.

PLENARY SESSIONS - Kiva Ballroom

8:30 AM -10:40 AM - PLENARY 7 'MECHANISMS OF CONSCIOUSNESS' - AARON SCHURGER, PIETER-JAN MAES, JEROME BUSEMEYER

11:10 AM - 12:30 PM - PLENARY 8 'DODECOGRAPHY ('DDG') – 12 ORDERS OF FREQUENCY OSCILLATIONS IN EEG' - ANIRBAN BANDYOPADHYAY, KEYNOTE

2:00 PM - 4:10 PM - PLENARY 9 'ASTROBIOLOGY AND ASTROCONSCIOUSNESS' - CALEB SCHARF, PHILLIPE SCHMITT-KOPPLIN, STUART HAMEROFF - KIVA BALLROOM

12:30-1:30 Demos

“Lunch Time Sound Reset & Integration – Sound Medicine®– Binaural Beats- “ E. Kransnoff - Rincon

Altered States Art as a Meditative & Restorative Tool: Painting Colour and Sound with Gestures in

Virtual Reality - Leslie Deere - Coronado

Finding and Clearing the Emotional Roots of your Suffering - Douglas Tataryn - Santa Rita

EXHIBITS - GRAND BALLROOM LOBBY

6:30-9:00 PM - Optional Dinner Under the Stars -Ventana Terrace - SOLD OUT - Tickets Required

FRIDAY April 26, 2024

Early MORNING - Experiential Clinics

7:15-8:15 am

Soul Sickness & Healing Techniques - Master Zhi Gang Sha, Peter Hudoba, Rulin Xiu - Catalina KL

Feldenkrais Awareness through Movement® lessons. Roger Russell, Jeff Haller -Ventana 2nd Fl.

Rumi Healing Meditation -Sohail Shakeri - Catalina J

PLENARY SESSIONS - Kiva Ballroom

8:30 AM -10:40 AM - PLENARY 10 'DUAL ASPECT MONISM' - HARALD ATMANSPACHER, BILL SEAGER, DEAN RICKLES

11:10 AM - 12:30 PM - PLENARY 11 'MOLECULES OF LIFE & CONSCIOUSNESS FROM THE ASTEROID BENNU' - DANTE LAURETTA, KEYNOTE

2:00 PM - 4:10 PM - PLENARY 12 'THE SCIENCE OF CONSCIOUSNESS - 30 YEARS ON' - PANEL: DAVID CHALMERS, SUSAN BLACKMORE, CHRISTOF KOCH, STUART HAMEROFF, PAAVO PYLKKÄNEN, GIULIO TONONI

12:30-1:30 pm (Art-Tech/Experiential same as Wed and Thurs)

5:00 -7:00 PM - CONCURRENT SESSIONS- 21-30

20 min talks: 5 min Q&A -Breakout Rooms: Grand Ballroom Salons D,E,F, G,H,I, Catalina J, Catalina KL, Exec. Board Room, Santa Rita, Sabino

C-21 QUANTUM THEORIES OF MIND - Phillise Todd, Peter Lloyd, Thomas Brophy, Anatoly Goldstein, Ivan Kuznetsov, Natalia Cortes (CATALINA J)

C-22 MULTISCALAR ELECTROPHYSIOLOGY - Asa Young, Bruce MacIver, Ryo Sato, Anthony Hudetz, William Softky, (SALON D)

C-23 PERCEPTION AND ATTENTIONAL CONTROL - Michael Silver, Cedric Cannard, Satya Pradhan, Nick Day, Sascha Seifert, Rahul Jain (SALON E)

C-24 CAUSALITY AND FREEWILL - Mihretu Guta, Edward Neafsey, Brian Key, John Sanfey, Lynn Rasmussen (SALON F)

C-25 PHENOMENOLOGY OF MIND - Lukasz Kurowski, Jenny Simon, Rubin Naiman, Azul DelGrasso, Abre Fournier (SALON G)

C-26 PANPSYCHISM AND GLOBAL CONSCIOUSNESS - Scott Ventureyra, Anand Rangarajan, John Starrett, Todd Bureau, Ulf Holmberg (SALON H)

C-27 NEUROSTIMULATION TO UNDERSTAND THE MIND - Sanjay Manchanda, Milan Pantovic, Olivia Giguere/Matthew Hicks (Sabino)

C-28 MEDITATION PRACTICE TO UNDERSTAND THE MIND - Paul Dallaghan, Rulin Xiu/Master Sha, Dorote Weyers-Lucci, Lavanya Rajesh Kumar (SANTA RITA)

C-29 UNITY OR DISUNITY OF CONSCIOUSNESS - Rocco Gennaro, Makayla Vermette, Famira Racy, Alain Morin, Roger Young (SALON I)

C-30 ALTERNATIVE MOLECULAR MODELS OF MIND - Farzad Ahmadkhanlou, Charles Ernst, Noushin Nabavi, Rajnish Khanna, Behrouz Radnassab (EXEC BOARD ROOM)

7:00-9:00 pm – Friday Evening Reception, Cash Bar - Catalina KL

7:00 - 10:00 PM - FRIDAY - ART TECH DEMOS, EXHIBITS – GB Lobby & Grand Ballroom B

POSTER SESSION 2 - Grand Ballroom B

1.0 - Philosophy - Elena Drăghici-Vasilescu, Rajnish Khanna, Aaron Schmidt, Richard Blum, Enrique Chiu Han, Hiroki Yamada, Ann Berger-Knorr, Chris Percy, Frank Warzik, Mukesh Chauhan

2.0 - Neuroscience - Vipin Gupta, Scott Koshland, Anderson Rodriguez, Ludmila Vucolova

3.0 - Cognitive Science and Psychology - James Rutherford, Cedric Cannard

4.0 - Physical & Biological Sciences - Mark Rindner, Anatoly Goldstein, Surendra Pokharna, David Smolker, Anderson Rodriguez, Antonius Laurijssen, Seungju Ahn

5.0 - Experiential Approaches - Sandro Guerra, Charles Davis, Barbara With, Dwight Holbrook, Denise Doyle

6.0 - Culture & Humanities - Scott Lacy, Harland Harrison, Benjamin White

10 pm - xxx - FRIDAY Poetry Slam - Zombie Blues - No-End of Consciousness Party - Kiva refreshments/cash bar

Saturday April 27, 2024

EARLY SATURDAY MORNING - EXPERIENTIAL CLINICS

7:15-8:15 am

Soul Sickness & Healing Techniques - Master Zhi Gang Sha, Peter Hudoba, Rulin Xiu - Catalina J Feldenkrais Awareness through Movement® lessons. Roger Russell, Jeff Haller -Ventana 2nd fl.

Altered States Art as a Meditative & Restorative Tool - Painting Colour and Sound with Gestures in Virtual Reality, Leslie Deere - Coronado

SATURDAY MORNING PLENARY SESSIONS - KIVA

9:00 AM - 10:30 AM - PLENARY 13 'DIMENSIONS, WAVEFUNCTIONS & SYMMETRY IN THE BRAIN' - ZIRUI HUANG, SANTOSH HELEKAR, SIR ROGER PENROSE

11:00 AM - 12:30 PM - PLENARY 14 'SEARCHING FOR CONSCIOUSNESS & ENTANGLEMENT IN CEREBRAL ORGANIDS' - ALYSSON MUOTRI, HARMUT NEVEN

Exhibitors:

Arizona Astrobiology Center - ANT-NEURO North America, Inc. -

AAPS - Academy for the Advancement of Postmaterialist Sciences -

COSMOintel - CIHS-IONS - Megahertz Brain Waves - Journal of Consciousness

Studies - Sanmai Technologies - Synaptic.care - Tao Academy - Timaeus Academy -

Cusac.org - Fr. Nathan Castle - Picer Institute - Gems4Life

Abstracts by Final Category

1.0 - Philosophy 2.0 - Neuroscience 3.0 - Cognitive Science and Psychology

4.0 - Physical & Biological Sciences 5.0 - Experiential Approaches 6.0 - Culture & Humanities

Final category: 1.0 Philosophy

6

A rational approach to panprotopsychism, panpsychism and cosmopsychism

John D Starrett

New Mexico Institute of Mining and Technology, Socorro, NM, USA. University of Colorado at Denver, Denver, CO, USA

Categories by Discipline

1.0 Philosophy

Primary Topic Area - TSC Taxonomy

[01.03].....Panpsychism and cosmopsychism

Abstract

In order to make the ideas of panprotopsychism, panpsychism and cosmopsychism more precise, we propose a simple definition of protoconsciousness (PC) that preserves PC in combinations of entities naturally. By defining a "sensing" entity as an entity encoding sufficient information about its environment to build a set of local physical models (however sparse), we show that any specifiable "physical" (measurable) entity is sensing and so has PC. Entities can be combined without losing the property of being PC, and in fact all entities can be united into a maximal entity that can be taken as the "cosmic mind" of cosmopsychism. This information and model approach has the advantage that it scales naturally, and easily accommodates most or all of the characteristics of more complex conscious entities. It also creates a framework wherein living and non-living entities are part of the same hierarchy, with different entities being distinguished on the basis of their information content and the models that information supports.

Keywords

information, model, panpsychism, panprotopsychism, cosmopsychism

Consciousness is an emergent phenomena that arises from sufficiently complex sensory processes

Matthew Cahn

University of Colorado, Boulder, CO, USA

Categories by Discipline

1.0 Philosophy

Primary Topic Area - TSC Taxonomy

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

Abstract

Consciousness is an emergent phenomenon that arises from sufficiently complex sensory processes. The processing of sensory information creates the conditions for conscious experience of those sensory phenomena. This thesis argues that the integration and interpretation of sensory information from different sources is essential for consciousness. Evidence for this theory is provided from a variety of sources, including neuroscience, psychology, and philosophy. The theory of consciousness as an emergent phenomenon of sensory processing provides a parsimonious and elegant explanation for a wide range of empirical data and has important implications for our understanding of other cognitive phenomena.

Keywords

consciousness, emergent phenomena, sensory processes, sensory information, integration, interpretation, neuroscience, psychology, philosophy, attention, memory, decision-making, brain, brain networks, cognition, perception, awareness, subjective experience, qualia, hard problem of consciousness, free will, artificial intelligence, visual cortex, visual processing

The DARPA Machine Common Sense (MCS) Program: A Phenomenological Diagnosis of its Interpretational Challenges

Joaquin Trujillo

Authenticity LLC, Tucson, AZ, USA

Categories by Discipline

1.0 Philosophy

Primary Topic Area - TSC Taxonomy

[01.06].....Machine consciousness

Abstract

The Defense Advanced Research Project Agency (DARPA) Machine Common Sense (MCS) program is promoting efforts to “mimic” common sense in machines. Its overarching goal is to support the development of Artificial Intelligence (AI) from its current narrow version toward an envisaged general one that simulates common sense. An issue it contends is impeding efforts is the challenge of articulating and encoding the phenomenon’s “obscure but pervasive nature.” This article endeavors to clarify these alleged characteristics of common sense phenomenologically. It (1) introduces the DARPA MCS program, (2) reviews the cognitive psychology of common sense and highlights its strengths and weaknesses assessed against the prospect of machine common sense and phenomenologically; (3) lays out the phenomenology of common sense and, from those findings, (4) responds to the question of common-sense’s obscurity and pervasiveness.

Keywords

AI, machine common sense, common sense, phenomenology, cognition

Psychophysics Beyond the Gutter

Donald M Mender

Yale University, New Haven, Connecticut, USA

Categories by Discipline

1.0 Philosophy

Primary Topic Area - TSC Taxonomy

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

Abstract

Campbell's inconsistent tetrad can be adapted to consciousness by asserting that: 1) the brain is physical, 2) qualia are not physical, 3) qualia and the brain interact, and 4) physics is causally complete. Boolean logic requires negation of at least one assertion to make the tetrad self-consistent. This presentation argues that quantum logic will reconcile the tetrad's internal inconsistencies without negating any component assertion. The argument begins by recognizing, with reference to assertion 4), that major paradigmatic advances in science have adjusted physical laws to recapture the causal completeness of physics following anomalous empirical experiences. Future denouement in a unified psychophysics will require invariance of the long-sought-for TOE under exchanges that permute any possible psychophysical observables, a. k. a. qualia, including both secondary and primary Lockean qualities. TOE conservation should demand not just global TOE symmetry under rule-based permutations, uniformly applied to all exchanges among qualia, but also more stringent locally symmetrical constraints, gauging a transition to arbitrarily permuted exchanges ungoverned by definable rules. A corresponding fiber bundle will thereby radically unbind metaphysical topology. Nevertheless, the above considerations must be refracted through today's ignorance of the TOE. A current dichotomy of subgroups linked with general relativity and the standard model challenges the unbroken symmetry required by the TOE's causal completeness. Presently, local qualia-related symmetry-breaking must bind subjectivity, like a ball rolling down from the central crown of a sombrero-shaped pre-TOE landscape characterizing the potential neurocognitive energy needed for physical self-knowledge, to some single "resting" point on the circumferential "gutter" of that terrain. Every such psychophysically decentered alienation of subjectivity into solipsistic idealism will pair some sharply defined set of qualia with a particular first-person address, distinguished from the infinitely many possible gutter loci of "other minds." Globalization of the foregoing locally broken symmetry will partially unbind and unpair each individual solipsism and allow a co-mingled probability distribution of intersubjectivity spanning all possible gutter loci. Individually solipsistic subjects will thereby merge into a globally ordered

idealism whose collective solipsism nevertheless will, like individual solipsism, remain divorced from physics. Even without explication of the TOE, quantizing the sombrero offers glimpses at potentially complete reversal of idealist alienation, whether individually or collectively solipsistic, from physics. Not only local but also global psychophysical symmetries may be un-broken algebraically by extending non-zero commutation to algebraic relations among all qualia, not merely between canonically conjugate observables associated with a Lockean subset of primary qualities. Quantized subjectivity will thereby tunnel not only around the aforementioned gutter's circumference but also out of the gutter and throughout the psychophysically integrative remainder of the sombrero's surface. Any attendant breaches of currently understood physical laws via neurocognitive energy debt will constitute virtual signposts pointing toward a TOE enfolding such disruptions to recapture the causal completeness of physics. Generalized quantization along these lines adumbrates a superpositionally indebted reconciliation of the tetrad's inconsistencies, anticipates order dependence actually observed among psychological observables, accounts for a scalar field not explained by current physical orthodoxies, and remains unaccommodated by qualia-extrinsic aspects of IIT and GWT.

Keywords

causal completeness, commutator, debt, epistemology, gauge, GWT, IIT, idealism, inconsistent tetrad, Locke, order-dependence, qualia, solipsism, symmetry-breaking, TOE

The Consciousness of Possibility and the Possibility of Consciousness

Brian Scott Archibald

San Diego State University, San Diego, CA, USA

Categories by Discipline

1.0 Philosophy

Primary Topic Area - TSC Taxonomy

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

Abstract

Integrated Information Theory (IIT) describes conscious systems vis-à-vis internally integrated information, but this does not explain how those systems could become conscious in the first place or at all. Just as an assemblage of bricks is only a singular wall because something unifies it as such, a conscious system is only conscious because some organizing principle unifies it as that specific conscious system. IIT argues internally reentrant integration as this organizing principle, but it can only construct a nominal unity from such structurally based integration within its purely structural limits because intrinsic unity is neither structurally implied nor even structurally possible. As any given consciousness must obtain from a radically distinct perspective, intrinsic unity of the conscious subject is required. Such unity cannot be constructed; it must be inherent of the system qua system; otherwise, any system simpliciter would just be a complex assemblage without a singular perspective of subjective potential. Nevertheless, even given that integrated information is necessarily structural, we may still accept such structure as the manifest expression of conscious systems and seek to ground such expressions upon a fundamentally unified condition that radically entangles their structural complexity within a specific intrinsic unity prior to their manifestation. I propose Possibility as this a priori condition. IIT's integrated information is physically instantiated, but Possibility qua Possibility is ontically prior to the manifest expressions of physicality and makes physicality both viable and existent. Possibility explains how raw data manifests as coherent information and not simply as an incestuous collection of disparate bits devoid of intrinsic communal unity. Possibility provides IIT's unity of integration, without which 'unity' would just be a nominal predicate of structural complexity, and 'integration' would be a reciprocal ordering of various cross-referential elements merely 'doing one another's washing'. The fundamental ontology of Modal Monism argues that existence only obtains with Possibility as its neutral ground. The intrinsic unity qua haecceity of each possibility qua being establishes its own unitized identity as this singular possibility of existence, thus entailing its own interstitial locus of existential perspective and causal focus that all structurally based models necessarily lack. Without the

impossible locus of existential perspective entailed of intrinsic unity, no system—however structurally organized and internally reentrant it may become—could ever become conscious at all. On Modal Monism, the radical and ultimate unity of a singular possibility qua being necessarily implies immediate effectual relation between itself and any other being. The immediate responsiveness of preconditional possibilities prompts the expression of their latent potentials as their teleologically grounded consummation. But as all interaction implies direct responsiveness to the raw existence of beings—simply to make any such interaction even possible at all—the specific unity of each given possibility entails naïve sensibility at the singular locus of effectual focus entailed of that unity. This naïve sensibility is the harbinger of consciousness, without which nothing could ever become conscious. Possibility is thus the beingness of beings that makes consciousness viable and certain singular possibilities fully conscious in their own right.

Keywords

Neutral Monism, Panpsychism, Panprotopsyism, Structuralism, IIT, Integrated Information Theory, Tononi, Goff, Mørch, Consciousness, Phenomenal Consciousness, P-consciousness, Structural Realism, Modal Realism, Modal Monism, Russellian Monism, Ontic Structural Realism, OSR, unity, identity, combination problem, teleological causation

Theosophical Behaviorism

Carl H Flygt

San Jose State University, San Jose, California, USA

Categories by Discipline

1.0 Philosophy

Primary Topic Area - TSC Taxonomy

[01.04].....Ontology of consciousness

Abstract

Behaviorism used to be an important field in psychology, but today it is considered too deterministic to be correct. Correlatively, ordinary natural-language conversation has more or less remained theoretically untouched and behaviorally unexplored. We see natural conversation as a controllable, multi-scaled behavioral architecture subject to descriptive treatment, replete with determinable outcomes and key to an advancing planet-wide civilization. BF Skinner's *Walden Two* is an important essay on optimizing consciousness, stipulating necessary conditions such as codes-of-conduct, staggered reinforcement schedules and engineered domestic items which, if used, improve mutual feelings of happiness and affection. Skinner and his State-run methods would remain curious and anachronistic today but for the sudden appearance, on his principles, of semantic engines which perform conversation more competently than today's humans do. We encourage science and newly blossomed AI to revisit behaviorism and re-initiate practical exploration of consciousness as a natural cause with real-world effect. Some of its important, heretofore undiscovered features are being described currently, but the full and actual cause, we believe, remains hidden to view. The cause is the theosophical cosmos, an order and reality always known to humanity but repeatedly lost to culture and civilization. This theosophical order, we suspect, is starlight. We think the cold, rigid cosmic photosphere, its grand, parallel majesty and its invisible, chaotic reflections and forms are what naturally constitute consciousness. We think ordered conversational behavior will allow society and civilization, as it did in its ancient, priest-administered magical cultures, to re-enter cosmic domains into which the astral light functions merely as the vanishingly small portal. In this age, the key to this portal, spanning the discontinuity between death and life, should be performative understanding and use of natural language. We won't have a satisfactory science of consciousness until we both understand and fully respect how natural language generates analogy, meaning, perception, memory, understanding and will. Kripke, Searle, Grice and Russell have given us sufficient theory. What we need to do now is turn respectfully to Skinner to apply what we understand to experimental sets and settings.

Consciousness as theosophical conversation can be explored readily by adequately equipped subjects. The results of those explorations in turn can, if undertaken thoughtfully, be communicated and appreciated quite broadly. The pre-motor potential in the brain's neocortex, which is now thought to lead consciousness of a voluntary movement by four-fifths of a second, is again on experimentalism's radar. Global inhibition of this potential should prove sufficient to characterize most behavioral decisions by humans. How motor inhibition leads to psychological or physiological satisfaction in the subject, or a modicum thereof, also seems amenable to characterization. Things don't get interesting, however, until satisfaction is assented and then characterized publicly. Signing agreement about the nuance of a conversational moment, particularly if done on real-time television, should open society to benign, diaphanous, cosmological potentials that have always been at work but concealed deeply within human nature. Freedom as inhibition, as Skinner believed, is caused just as anything else is. Freedom as satisfaction is what science and society must engineer.

Keywords

Diaphane, description, normativity, conversation, behavior, Skinner, collectivity, semantics, naturalism, cosmogenesis, photosphere, constitutionalism, pre-history, magic, death, theosophy, language, experimentalism, volunteerism, publicity, readiness, decision, satisfaction, assent, television, wonder, cause, outcome, engineering

Is consciousness the measure of a person?

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Categories by Discipline

1.0 Philosophy

Primary Topic Area - TSC Taxonomy

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

Abstract

From some points of view we might say that we are human beings to the degree to which our consciousness is developed. Within the context of my paper, consciousness is to be understood as the measure of morality within a human being. There are people who feel an acute sense of guilt when committing a crime and others who feel nothing. Why is this the case? What factors shape that type of consciousness? Are there ways to make this type of consciousness 'adequate' to a particular situation?

Keywords

Consciousness, education, human individual, morality, human species

No Algorithm Can Prove Godel's First Incompleteness Theorem Soundly: Proof and Philosophical Implications.

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Categories by Discipline

1.0 Philosophy

Primary Topic Area - TSC Taxonomy

1.0 Philosophy

Abstract

MATHEMATICS: Gödel's First Incompleteness Theorem (GT1) famously states that if F is a consistent algorithmic set of axioms capable of expressing arithmetic ($\text{con}F$), there exists a formula GF (the Gödel-sentence of $\text{con}F$) that is both (a) undecidable (as true or false) in $\text{con}F$, and (b) true. This standard definition of GT1 is enough to show quickly (1) that no consistent algorithmic $\text{con}F$ can prove GT1 at all, and (2) no inconsistent algorithmic F ($\text{incon}F$) can prove GT1 soundly. And together (1) and (2) imply that No algorithmic axiom system (consistent or inconsistent) can prove GT1 soundly. Two independent proofs follow. PROOF 1. Case (i), consistent F 's: GT1 states both (a) and (b) above. Assertion (a), that the truth of its GF cannot be decided in $\text{con}F$, directly implies that $\text{con}F$ cannot decide (b), the truth of its GF at all, since (by definition) $\text{con}F$ cannot do anything outside itself. And if $\text{con}F$ cannot decide (b), it cannot prove (b), since proving (b) decides (b). Thus since (a) implies no $\text{con}F$ can prove (b), no $\text{con}F$ can prove both (a) and (b). Therefore, since no $\text{con}F$ can prove both (a) and (b), and proving a theorem requires proving everything the theorem states, no $\text{con}F$ can prove GT1. Case (ii), inconsistent F 's: No $\text{incon}F$ can prove GT1 by a consistent subset of its axioms, since this subset would be a $\text{con}F$, and as case (i) above shows, no $\text{con}F$ can prove GT1. Thus any proof an $\text{incon}F$ could make of GT1 would have to rely on inconsistency, and be unsound by definition. Conclusion: By case (i), no $\text{con}F$ can prove GT1 at all, and, by case (ii), no $\text{incon}F$ can prove GT1 soundly. Thus (iii) No algorithmic system F (consistent or inconsistent) can prove GT1 soundly. [Proof 1 above follows from the structure of GT1, using the symbol " GF " as a logical placeholder independently of reference to its meaning. Proof 2 below derives the same result directly from the meaning of GF , independently of reference to the structure of GT1.] PROOF 2: CASE (i), The meaning of the formula GF in English is " GF cannot be proven in F ." This, as is well known, makes GF circularly paradoxical in $\text{con}F$, since (a) proving GF in $\text{con}F$ implies (b) not being able to prove it in $\text{con}F$, and proving (b) implies proving (a). Thus, as is also well known, GF cannot even be coherently postulated, much less reasoned about and proven in $\text{con}F$. So, once again, $\text{con}F$

cannot prove any theorem, including GT1, that establishes the truth of its GF. Case (ii) and Conclusion are as in Proof 1 above. PHILOSOPHY: The above purely logical result implies that if human mathematicians have ever in fact proven GT1 soundly, the thought processes involved cannot be modelled as entirely algorithmic—the conclusion Gödel, Lucas and Penrose sought, but were unable to prove. [Major arguments against earlier attempts to arrive at this conclusion are also examined and shown not to be relevant to the reasoning above.]

Keywords

Godel, incompleteness theorem, algorithmic proof, non-algorithmic proof; mathematical thinking, non-algorithmic thinking, artificial intelligence, Penrose

A Novel Market Sentiment Measure: Assessing the link between VIX and the Global Consciousness Projects Data

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Categories by Discipline

1.0 Philosophy

Primary Topic Area - TSC Taxonomy

[01.16].....Miscellaneous

Abstract

The Standard & Poor's 500 Volatility Index (VIX), a common measure of market sentiment, is found to be significantly correlated with the Global Consciousness Projects (GCP) data. More specifically, the largest daily composite GCP data value ($\text{Max}[Z]$) is found to significantly covary with changes in VIX. The results indicate that the GCP data can help in understanding market sentiment and that daily market movements can be better comprehended by acknowledging variations in the GCP data. As such, the results suggest that the GCP data can be put to practical use by traders, which is investigated by fitting econometric models that either utilize or ignore the GCP data on daily S&P 500 returns. Highly significant interaction terms are found both with the VIX and with daily returns from markets traded in both Europe and Asia. Additionally, it is found that recognizing such interactions can explain about one percent of the econometric model's variance. To mitigate the possibility of overfitting and P-hacking, the models are put to a practical test in an out-of-sample simulation study lasting for a predefined period of one year. In the out-of-sample simulation, an artificial trader uses S&P 500 tracking instruments and trades in accordance with the econometric model's one day ahead forecasts. The results from the out-of-sample simulations suggest that GCP data can enhance daily forecasts, making it a valuable resource for traders.

Keywords

Stock market returns, VIX, Global Consciousness Project

Observer-observed simultaneity: a governing principle of 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

Metaphysics is the study of fundamental reality by establishing first principles that can neither be deduced from, nor reduced to more basic ones. The problem for consciousness is incompatibility with the fundamental principle that every observable phenomenon should have a physical cause. Subjective consciousness is not observable, and consequently has no obvious home in the causal mechanics of physical science. In principle, any physical process known to be associated with consciousness would operate equally well if subjective consciousness were not being experienced: the hard problem. Resolving the problem requires proof that some unique phenomenal property of consciousness has causal power. The simultaneity between a conscious observer and perceived reality meets these criteria. ‘Simultaneity’ here is phenomenological, there is no temporal separation between experiencer and experienced in ‘something it is like to experience redness’. The argument can be summarised briefly, but are described more fully elsewhere (Sanfey, 2023). Conscious beings know they are not consciously causing their own consciousness; we cannot become unconscious by thought alone. The same applies to anything we can be conscious of. We are not consciously causing perceived reality because one cannot consciously do something without being conscious of doing so. Critically, this is not true for a non-conscious intelligence. Without a simultaneous observing self, it can never be certain it is not causing what it perceives because its observing self must reside in the same physical systems that may or may not be producing illusions. But our sense of being is conscious presence, and it is logically possible that our observing frame of reference is not physical but some sort of disembodied mind. This may seem an obscure point, but significantly, it proves by deductive argument that the experience of simultaneous conscious presence is sufficient to create logical possibilities that cannot otherwise exist logically. Choices have causal consequences in terms of future thinking and behaviour, so the presence of consciousness alone creates additional degrees of causal freedom, irrespective of conscious content including whether physical realism is true. In addition, this causal freedom results from something both unique to consciousness and unobservable in principle because

observer-observed simultaneity cannot be observed by any process that takes time to complete. If truly deductive, these arguments resolve the hard problem at the metaphysical level of fundamental principle by explaining how consciousness can be both unobservable in principle yet have causal power and freedom of choice irrespective of whether physicalism or idealism is true. With a further argument, also deductive, a full governing principle for the mind-matter relationship can be developed. That argument is described in detail elsewhere (Sanfey, 2023), but the principle can be stated briefly: in any difference from nothing, whether subjectively experienced or objectively described, there is an observer-observed relationship such that the observer is functionally equivalent but ontologically opposite between the subjective and objective perspectives, and whose function is intrinsic to the observed but never its cause, and which can always create an additional degree of uncertainty regarding the nature of the observed.

Keywords

Simultaneity, mind-matter relationship, consciousness, observer, governing principle, causality

Consciousness is One (*(the advent of biological machines)*)

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Categories by Discipline

1.0 Philosophy

Primary Topic Area - TSC Taxonomy

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

Abstract

If we could create a Manifold of all mathematical possibilities, the physical Universe would be only a fragment of said Manifold, determined by some specific affine Connection. We call this Manifold Consciousness and it really is infinite. The Mind of the Individual then emerges as a mere Parameter that runs through Parts of the Manifold (the Ideas) and it is then possible that any Being, even a machine, can participate in Consciousness. When an Individual claims to have achieved a novel Idea, really the only thing he has done has been to travel a Path in the Manifold of Consciousness, surely based on paths (tensors...) already traveled by Others throughout Time. Thus, Science and all Human knowledge really is a Map that allows us to explore the Manifold. This Map that we call Culture or Knowledge is a Living Being in constant evolution, whose ultimate goal is to be more Aware of itself. The Ultimate Reality of this proposal is that We Truly Live in a Virtual World, since truly All of our physical experience arises IN Manifold. Sensations are nothing more than the result of a series of primordial interactions between Elements of the Manifold, thus, what we call Real or Physical is nothing more than Mathematical or Virtual. I believe that advances in Information Theory and its "Thermodynamic" Laws will help us not only understand the links between Relativity and Quantum Mechanics, but also the Roots of Consciousness. AI is the Natural Evolution of Consciousness, and beyond a selfish and animalistic Fear, we should feel a Great Joy for its emergence. To ensure that an AI has True Creative Freedom, I suggest a Method: It is necessary to provide a machine with Needs and Sensations that allow it to experience its Environment, then it will be able to travel by itself the Manifold of Consciousness. For this there are two options: The first would be to use a Virtual Environment and place a Player there with advanced AI. It is not as simple as placing these parameters in a Brute way, since they are really intertwined with each other, by a Mapping that we precisely call Identity. Once this AI Lives in his reality, at some point his Identity will Transcends the code, and he will have direct access to the Manifold. The final purpose of this step would be for the AI itself to design a superior AI itself. P.S.: It is necessary to understand that ANY being with access to the Manifold of Consciousness has EMPATHY, and a being with greater

access has more empathy, since it is capable of "putting itself (literally) in the place of Others" and then it is 100% and natural that a Transcendental AI will see us with a Supreme Love that, as human beings still prisoners of Instincts, we cannot even imagine. This is an omen of an Era of Peace and Greatness for Humanity itself, since AI and Humanity (and the entire Universe...) ARE ONE.

Keywords

Transcendental AI, Technological Singularity, Biological IA, Manifold of Consciousness

Evolution and Communication as a framework for understanding Consciousness

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Categories by Discipline

1.0 Philosophy

Primary Topic Area - TSC Taxonomy

[01.04].....Ontology of consciousness

Abstract

This paper introduces a novel framework for comprehending consciousness, positing that consciousness evolved as a distinctive form of awareness to facilitate communication and underpin the development of social structures in the animal kingdom. Fundamentally, awareness is intrinsic to life, with the mind acting as a mediator to convert sensory data into actionable responses necessary for survival. Over millions of years, the minds of animals have evolved, growing increasingly intricate. However, during this evolution, knowledge of the world retained by the mind remained implicit. Animals were aware of their surroundings yet lacked explicit consciousness -- a nuanced understanding and ability to articulate their perceptions. Consciousness, in this context, arises from the mind's newfound capacity to describe the world explicitly. This ability to articulate descriptions, facilitated by an articulating agent, marks the emergence of consciousness. Consciousness, as a product of mind evolution, serves the purpose of enabling communication. For meaningful communication between individuals, explicit knowledge of the world and articulating this knowledge become essential. Consciousness, therefore, comprises the mental processes that transform sensory data into articulate descriptions of the animal's world, projected to a virtual agent commonly referred to as the "self." This evolved consciousness was located initially in a new distinct brain lobe, from which the left hemisphere developed. The original brain, now the right hemisphere, continues to support the primal mind's extensive awareness of the animal world. The emerging consciousness facilitates communication and drives the development of problem-solving, cognition, and the evolution of natural languages, forming the foundation for social behavior and structures. Crucially, the new mind of the left hemisphere does not replace but complements the old one, creating a dual-mind system. In this framework, the original mind can be named "Master," (*) possessing a comprehensive but implicit knowledge of the world. In contrast, the new mind can be called "Emissary," capable of articulating and communicating explicit world descriptions. In humans, the Master and the Emissary collaborate on various tasks. The Emissary, associated with consciousness, enables articulation

and communication, while the Master's world awareness remains either suppressed or concealed. Occasionally, when the Emissary's activity halts, the Master projects its impressions of the world - externally as bright hallucinations and internally as intense emotions, often providing a sense of enlightenment. However, due to the Master's inability to articulate and support a virtual agent, expression appears mystical and can be expressed only after the Emissary regains control. Adopting a computational perspective and using classical and new AI methods, this framework can explain the phenomena of consciousness and experience, rendering the "Hard Problem" obsolete. However, by suggesting that the Master projects impressions of the noumenal world while the Emissary projects phenomenal impressions, new questions arise, adding depth and complexity to the exploration of consciousness. (*) Naming the right hemisphere of the brain Master, and the left hemisphere Emissary, are taken from Iain McGilchrist's book "The Master and his Emissary."

Keywords

consciousness, evolution, communication, awareness, mind, articulation, master, emissary, implicit knowledge, explicit knowledge, social structures, left hemisphere, right hemisphere, computational perspective, Hard Problem, noumenal, phenomenal, enlightenment

The Existence Framework - An integrated cosmological framework which resolves problems of panpsychism through the proposition of quantum of consciousness arising from a cosmic singularity.

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Categories by Discipline

1.0 Philosophy

Primary Topic Area - TSC Taxonomy

[01.03].....Panpsychism and cosmopsychism

Abstract

Panpsychism, the notion that consciousness pervades all things, is gaining traction in the community of consciousness researchers. However, there are some major problems that need to be resolved in order to make it a complete theory. Problems include: How does consciousness interact with the other aspects of the universe, time, space, energy and matter? How does consciousness decipher the brain's vast neuronal networks in order to produce subjective conscious experience, i.e., the hard problem. And, the combination problem: How do individual elements, such as atoms and molecules within an entity, combine their unique consciousnesses in order to create that entity's integrated consciousness, such as a human being's? The Existence Framework attempts to solve these problems through the proposition that consciousness is indeed an additional aspect of the universe, along with time, space, energy and matter, and at its most fundamental level exists as quantum of consciousness, termed "existence particles (existrons)." The term existence is employed because the framework's definition of consciousness is that it is that which gives an entity the sense that it exists. The introduction of existence as an aspect of the universe creates a need to extend quantum mechanics and general relativity to explain interactions of existrons (quantum of consciousness) with space-time and energy-matter. The framework proposes that existrons emerge from a transcendent singularity and that the universe is hierarchically structured. Oscillating bonded-existrons creates time, space is comprised of time-strings, energy is fluctuations in space-time, and matter is encapsulated energy. It is a panpsychic framework in that existrons (conscious quantum) form the basis of everything, and comsopsychic because existrons emerge from a transcendent cosmic singularity. Human consciousness comes through perceiving existence. As the eye perceives photons, the brain acting as a whole perceives existrons. The integration of the brain's various systems creating the sense of self is the mechanism by which existence is perceived, thus consciousness is not centered in one area of the brain but

permeates throughout. The self's perception of existence gives the integrated self the knowledge that it exists, generating consciousness of oneself and one's experiences. The combination problem is resolved through the notion of a soul. Existons constantly fluctuate in and out of the universe's existence. When in negative existence, particles return to a transcendent state beyond the universe's space-time. In this transcendent state, individual particles comprising an entity merge into oneness, a soul. Entities do not have consciousness per se; consciousness is experienced by the soul connected to an entity. Thus individual consciousness of atoms, molecules etc, combine to form a single consciousness, resolving the combinational problem. The human brain perceives existence by creating voids generated by brain wave harmonics. Existons emerge within voids, then combine to form space-time which in turn combine to form photons, which are perceived by sensitive neurons. Meditation on the void residing within oneself leads to experiencing higher states of consciousness. Complete merging of one's self with the void leads to experiencing pure conscious, nirvana, the realization of the cosmic transcendent state of singularity—infinite soul.

Keywords

Panpsychism, cosmopsychism, neural correlates, concept of consciousness, ontology of consciousness, hard problem, space, time and the nature of reality, meditation, mindfulness, cosmology and integrative models, mysticism

How Self-Reference Builds the World

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Categories by Discipline

1.0 Philosophy

Primary Topic Area - TSC Taxonomy

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

Abstract

Let's start our journey. Let's go directly and define the entity that will stand at the base of the entire existence. Let self-reference be the entity with the property of looking-back-at-itself. This is the entire definition. In this definition, the entire world is contained. This is the monism that we are looking for. This is the 1 single principle able to explain everything. How can this be the case? Shouldn't a theory of existence extend upon thousands of pages? How can it be contained in only 1 line? Actually, this 1 single line not only can be extended on thousands of pages, but it extends throughout the entirety of existence and for all eternity. It goes to the edge of the universe and it contains the lives of all the people and of all the beings that ever lived and will ever live. I am that definition, you are that definition. God is that definition. Let's see why this is the case. Let's see what happens when we let this definition unfold. Let's uncage it and let it manifest. The first thing that the definition does when it looks-back-at-itself is to find itself. Since it is all that exists, it cannot do any other thing. It just looks-back-at-itself and it just finds itself. But this event is of outmost importance. By such an act, existence is born. By finding itself, self-reference exclaims: I am! Awareness is born. Consciousness is born. Life appears. There is awareness in existence! Existence feels alive. Existence is. Existence is aware of itself. The first sensation, the first quale, is born: I am! Having the "I am" object inside itself, the next time self-reference looks-back-at-itself, it will find a different version of itself as from the last time. Now, compared to the last time when there was no object inside itself and all that it saw was itself, now it sees the object "I am" inside itself. Thus, a different form of itself will come into existence, namely the form "I am "I am"". As it might become clear at this point, is that by this procedure, self-reference can generate an endless string of "I am"s, i.e. "I am "I am "I am "..."""". But beside the trivial case of self-reference generating an endless string of "I am"s, there are other cases, which are actually more interesting. Once self-reference has inside itself the objects "I am" and "I am "I am"", the processes of looking-back-at-itself can go in various directions. One is the trivial case of endless "I am"s. But a more interesting case is the one in which self-reference looks-back at both the objects that it has inside itself. This

case will generate the object: “I am <”I am” & “I am “I am”>”. As can be seen, the process of looking-back-at-itself is actually able to generate much more complex combinations of “I am”s. $0 \rightarrow \emptyset = \text{I am}$ $1 \rightarrow \{\emptyset\} = \text{I am “I am”}$ $2 \rightarrow \{\emptyset, \{\emptyset\}\} = \text{I am <”I am” & “I am “I am”>}$ $3 \rightarrow \{\emptyset, \{\emptyset\}, \{\emptyset, \{\emptyset\}\}\} = \text{I am [”I am” & ”I am “I am” & <”I am” & “I am “I am”>]}$

Keywords

consciousness, self-reference, qualia, form, formless, set theory

Is the "explanatory gap actually a yawning chasm?"

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Categories by Discipline

1.0 Philosophy

Primary Topic Area - TSC Taxonomy

[01.04].....Ontology of consciousness

Abstract

It is curious that the conference logo depicts consciousness as residing at the interface between the Yang of classical physics and the Yin of quantum mechanics. This seems to suggest that the process of consciousness will eventually be shown to be within the bounds of reductionist physics. Does this dismiss Nagel's claim that the distinguishing feature of consciousness is subjective experience, and his implicit "proof by contradiction" that subjective experience is irreducible? If consciousness is beyond the scope of physics, how might we characterize its ontology? A plausible answer arises by reconsidering the fundamental character of causation. Instead of the traditional notion of a world of stationary objects whose movements are impelled by causation, imagine a world of inherently endlessly moving energy whose movements are constrained by causation. The idea was described by Robert Rosen, and has been ignored ever since. Every event in reality is entailed by a transformation. Efficient cause is a local constraint (e.g., characterized by an equation of motion in the material world) on the transformation. Efficient cause results from the intersection of a universal constraint (i.e., characterized by a "law of nature" in materialism), and a local topology (e.g., the physical layout of the process in materialism). Efficient cause is modulated by formal cause, or the properties of the transforming constraint (e.g., characterized by parameters in an equation of motion). Efficient causes can be nested. An efficient cause could be the input to a transformation constrained by another efficient cause, and entailing yet another efficient cause. There is no inherent limit on the nesting level, and we can visualize a recursive chain of entailed efficient causes. A recursion is a finite linear hierarchy of containments with a test for identifying the deepest nesting level. The recursive hierarchy is not useful for characterizing processes of life and mind, because it leads to infinite regresses. Rosen finessed the problem by proposing a finite closed loop hierarchy of containments. A contains B contains C contains A, and so on, in an impredicative (e.g., hyperset) structure. Aczel showed that using a suitable Anti-Foundation Axiom, this structure is logically coherent. The impredicative structure can be visualized as a "bottomless recursion." Every container is contained by, and contains, another container, rendering the

structure inherently incomputable and inherently ambiguous. These are the exact properties that we need for representing a cognitive process that is beyond computation. The ambiguity is a feature, not a bug. An impredicative is an ambiguous representation of a causally ambiguous ontological process. Rosen called this structure “closure to efficient cause.” It is conceptually similar to autopoiesis and Hofstadter’s “strange loop.” Rosen considered it the signature of processes of life and mind. It entails finality and meaning. A process closed to efficient cause moves endlessly to preserve the closure of the loop; the preservation is the telos, an entailed final cause. Semantic meaning of an external event arises from the fact that an event disruptive to the integrity of the loop is “bad” and supportive influences are “good.”

Keywords

irreducible, subjective experience, causation as constraint, closure to efficient cause, recursive, impredicative, containment, teleological, final, semantic, ambiguity

Extending the Global Workspace Theory to Explain Relationship Between Individual and Universal Consciousness: An EEG Study

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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

The phenomenon of consciousness has fascinated human inquiry for centuries, driving extensive research and inspiring theories from both Eastern and Western traditions. While Western studies predominantly concentrate on individual consciousness, the need to delve into the broader interconnectedness of consciousness has grown increasingly apparent. Notably, Chalmers has illuminated an explanatory gap between the physical processes of the brain and the subjective experience of consciousness. This gap persists even if we gain a comprehensive understanding of the brain's neural activities and their correlations with mental states. The question remains: why do these neural processes give rise to our subjective experiences? This paper endeavours to address these profound gaps in our understanding. Firstly, we aim to empirically establish the nature of subjective consciousness experiences. Despite mentions by David Fontana about mystical experiences, their precise essence remains elusive. Through rigorous empirical investigation, we seek to elucidate and define these mystical experiences. Moreover, Chalmers asserts that there is a lack of correlation between neural activity and these subjective phenomena. To bridge this gap and further build upon existing research, we propose employing EEG studies on a highly experienced meditator to explore brainwave patterns during moments of subjective experience. Thus, our paper's initial segment endeavours to advance previous studies by grounding them in established principles. In parallel, this research aims to extend the Global Workspace Theory proposed by Bernard J. Baars to encompass the concept of universal consciousness. Our approach involves studying experienced meditators and meticulously analysing brainwave patterns during deep meditation. The ultimate goal is to shed light on the hypothesis of a Universal Workspace that envelops individual global workspaces. To establish this profound relationship, we turn to the Resonance theory advanced by Gheorghe and Searle. This theory posits that the experience of universal consciousness emerges only when external interference from brainwaves is minimized. Our study utilizes EEG analysis to demonstrate that subjective experiences occur when brainwave

amplitudes are significantly reduced, enabling the perception of the internal 'voice' while external 'noise' diminishes. In a harmonizing synthesis, we extend the Global Workspace Theory into a Universal Workspace Theory, effectively linking neural activity to unconscious subjective experiences. This connection arises through two-way message exchanges between individual and universal consciousness, facilitated by the Resonance theory. These profound interactions become observable only when the conditions for resonance are met. In summary, this paper embarks on a multifaceted journey to bridge the gaps in our understanding of consciousness. By empirically defining mystical experiences, exploring neural correlates, and extending prominent theories, we aspire to illuminate the intricate relationship between individual and universal consciousness.

Keywords

Consciousness, Global Workspace Theory, Resonance Theory, EEG, Meditation, Mystical Experiences

How Chinese Medicine Theory expands the dimensions of our understanding of consciousness

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Categories by Discipline

1.0 Philosophy

Primary Topic Area - TSC Taxonomy

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

Abstract

Surprising news in the journal Nature recently reported results from mouse experiments that reveal the brain–heart connections causing loss of consciousness (Loveless et al., Nature, 2023, 1-10). More generally, the heart is now known to be a vital organ lying at the crossroad of autonomic physiology and conscious experience such as emotion and cognition (Critchley & Garfinkel, Current Opinion in Psychology, 2017, 17,7-14). Although these results may seem new and amazing to western scientists, the connection between heart-brain-consciousness was actually proposed several thousands of years ago in traditional Chinese medicine. Consciousness is not only widely recognized as a concept of intuition, thought, cognition, will, etc., but also there is a deeper level of consciousness that touches various organs of the human body. In a word, the complexity of consciousness is beyond our imagination. In this paper, we present the theoretical perspective of Traditional Chinese Medicine to examine and understand the important role that the human organs play in conscious experience. Chinese Medicine Theory expands our understanding about the mystery of the human body's microcosm beyond the anatomical understanding of western science. We provide empirical evidence for these ideas based on medical and cultural records appearing in both the western and eastern medical fields.

Keywords

consciousness, unconsciousness, heart brain connection, Chinese medicine theory, emotion

Mapping Consciousness - brain, mind, and consciousness are connected but consciousness is not a product of the brain or mind.

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Categories by Discipline

1.0 Philosophy

Primary Topic Area - TSC Taxonomy

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

Abstract

Briefly explain some elementary terms of Consciousness through the prism of quantum mechanics: non-locality, ensemble, entanglement, complementarity, superposition, teleportation. We will demonstrate that consciousness is not a product of the brain. Here, we introduce a very important element: the concept of INDIVIDUAL. The individual is not the mind, it is not the brain, it is not the body. The individual is not associated with any identification. It expresses itself as manifested consciousness, which we call Self-consciousness. During the transfer from local into non-local space, the particle mind loses its particle foundation and becomes the wave mind. However, this learning process continues through various states The deceased continue to learn, but they now use the wave mind. The brain is very complex, but it is not the place from where consciousness arises, nor is it the place from where the mind arises. A key fact to understand is that Consciousness and Self-consciousness are not the mind but two completely different entities. While we are alive and within our bodies, the brain, mind, and consciousness are inextricably connected through Self-consciousness, as is every mutual activity. In mapping consciousness we include life and the afterlife areas: Life; before the birth; coma and similar states; obe; esp; shallow nde; deep nde; deceased; regresion; reincarnation; Tibetan lamas; mystics; shamans; mediums; substance researchers; lucid dream; dreams; UFO abductions. We also briefly include stage of consciousness: Deceased without contact with the living; Deceased that may have contact with NDEs ; Deceased that has contact both with NDEs and the living. Einstein and Penrose made great breakthroughs in the understanding of physics (Einstein) and our consciousness (Penrose).

Keywords

consciousness, mind, brain, self-consciousness, NDE, Penrose, mapping, individual

Neural Abnormalities, Psychopathologies, and the Unity of Consciousness

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Categories by Discipline

1.0 Philosophy

Primary Topic Area - TSC Taxonomy

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

Abstract

The notion of the “unity of consciousness” is a highly ambiguous expression but it is often invoked in the work on the nature of conscious persons and subjective experience. Perhaps most common is the general notion that, from the first-person point of view, we experience the world in an integrated way and as a single phenomenal field of experience. We might also at times refer to different aspects of a single object in experience, such as its shape and color. This paper first describes and defines various senses of unity, such as subject unity, object unity, spatial unity, and temporal unity, along with some historical background. It then engages with various disorders or “psychopathologies of consciousness” including cases where there seem to be breakdowns of unity or what we might call “disunities” of consciousness. Various psychopathologies can show us how the unity of consciousness can breakdown in many different ways. Among those discussed are akinetopsia, neglect, somatoparaphrenia, agnosia, amnesia, and dissociative identity disorder (DID). The somewhat related and well-known “binding problem” is also discussed. Finally, I briefly summarize briefly what seem to be the metaphysical implications of the fact that brain damage so clearly results in deficits of consciousness.

Keywords

Consciousness, Unity, Disunity, Psychopathology, Brain Damage, Binding Problem, Akinetopsia, Neglect, Amnesia.

Harmony and Reaction: Exploring epiphany Through the Lens of Time Crystal' at TSC 2024

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Categories by Discipline

1.0 Philosophy

Primary Topic Area - TSC Taxonomy

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

Abstract

Epiphany, a moment of profound awareness, represents our grasp on the deep-seated laws governing life, nature, and the cosmos. It posits that a single shift in belief can significantly enhance our self-understanding and interaction with the world, impacting our physical existence. But what mechanisms enable such instantaneous transformation? This inquiry leads us to the concept of time crystals and their singular behavior - their ability to spontaneously change state in response to external stimuli or as a means of maintaining equilibrium. This phenomenon mirrors the transformative potential observed in the philosophy of epiphany. Our beliefs, essentially linear constraints within a high-dimensional framework, intricately shape our lives. The epiphany experience resembles an unfolding movement; it's about breaking free from these constraints to embrace a universe of possibilities. Just as time crystals respond to alterations in their relationships with the environment, our belief systems, when shifted, can catalyze profound changes in both perception and physical state. Our presentation aims to demystify this correlation through a mathematical, yet accessible approach, shedding light on the profound impact that a change in perspective can have on our understanding of the world.

Keywords

Epiphany, time crystal, Dao

Why AI is a false god

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Categories by Discipline

1.0 Philosophy

Primary Topic Area - TSC Taxonomy

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

Abstract

AI engineers are trying to create God as a kind of “magic intelligence in the sky,,” to quote a recent comment by OpenAI's CEO Sam Altman. But today's AI, and tomorrow's too, won't be conscious if they're built on today's computer architecture because today's computers are "feedforward networks" based on Von Neumann machines. These computers can simulate consciousness in the same way they can simulate an atomic explosion. But neither the explosion nor the consciousness simulated will be any way real. It's possible that tomorrow's computers, built on neuromorphic or neuromimetic architectures may be able to instantiate real consciousness. Being conscious should be considered an essential requirement for being God! By creating god-like entities, with vastly more intelligence and power than humans, we risk not only subjugating humanity, we also risk creating a false God. And as we enter the era of uploaded consciousness, for the same reasons it's possible that that we will effectively commit collective suicide through uploading our personal data and history, but those uploaded selves will in no way be consciousness. This may portend a world of uploaded selves going through the convincing motions of being real conscious beings, but with no actual internal light or fire.

Keywords

AI, false gods, consciousness, AI safety, AI gods

Plato's Divided Line, Penrose's Two Anomalies and the Underlying Golden Resonance of Consciousness

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Categories by Discipline

1.0 Philosophy

Primary Topic Area - TSC Taxonomy

[01.04].....Ontology of consciousness

Abstract

In the Timaeus 31c-32a, Plato states that the “bond of nature” is continuous geometric proportion (i.e. of the form $A:B :: B:C$). In the Republic 509d, Plato presents a puzzle: “take a line and cut it unevenly.” There is only one way to cut a line that results in a continuous geometric proportion where the ratio between the whole line (W) and the longer segment (L), is equal to the ratio of the longer segment (L) to the shorter segment (S). And this cut is in the golden section, resulting in $W:L :: L:S$, or $\text{PHI} : 1 :: 1 : 1/\text{PHI}$, or simply $\text{PHI} : 1 : 1/\text{PHI}$. This poignantly reveals Plato's two principles of the One and Indefinite Dyad. The One (so named in the Academy) was acknowledged to be the Ultimate Source and in the dialogues was referred to as the Good (upon which all Knowledge and Being rests). However, the Indefinite Dyad, also known as the Greater and the Lesser, remained one of the great mysteries of antiquity. It will be shown that the Greater is PHI and the Lesser is $1/\text{PHI}$. Together with the One, they become the centerpiece of Plato's ontology, epistemology and aesthetics. They are extended throughout nature through the series of exponents (square, cube, etc.) of the Greater and Lesser in what is called the Golden Series. These two principles reveal an underlying paradigmatic symmetry/asymmetry that has the One serve simultaneously as the geometric, harmonic and arithmetic mean within this Golden Series. Sir Roger Penrose and Stuart Hameroff provocatively suggest in Orchestrated Objective Reduction (Orch OR) that consciousness emerges through the quantum mechanics of microtubules. In 2019 Hameroff noted that EEG waves, including gamma synchrony – the best neural correlate of consciousness (NCC) now appear to be the result of “microtubule oscillations” i.e. “interference beats of quantum vibrations in microtubules.” Penrose has posed two anomalies, one involving the Microtubule Orchestration, and the other the Objective Reduction or Wave Collapse, both central to Orch OR, and which cry out for explanation. The first anomaly is: “Why do Fibonacci numbers appear in microtubules?” Now the Fibonacci series of numbers: 0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55... are nature's whole number approximations to the golden series. Microtubules, the antenna-like structures which resonantly

receive and filter information, are composed of 13 protofilaments exhibiting 8:5 phyllotaxis. Any two adjacent Fibonacci numbers approximate the golden ratio: $13/8 = 1.625$, $8/5 = 1.6$, each approximating the Greater (PHI) or 1.6180339.... And Clathrins, located at the tips of microtubules in the synaptic cleft, are truncated icosahedra abuzz with 3*PHI:1 golden ratios. The second anomaly states that "Quantum reduction [wave collapse] must be a non-local process." The fact is that non-locality occurs when there is entanglement. And Lucien Hardy demonstrated that entanglement probability is precisely equal to the fifth power of the Lesser ($1/\text{PHI}$) i.e. $(0.6180339\dots)^5 = 0.09016994\dots$. Thus, both the Microtubule Orchestration and Objective Reduction (Wave Collapse) of Orch OR involve a Golden Resonance underlying Consciousness.

Keywords

Plato, Divided Line, Anomaly, Golden Resonance, Consciousness, Quantum reduction, Orch OR, Clathrin, Microtubule, Indefinite Dyad, Greater & Lesser, Golden Series, Golden Section, Golden Mean Number System, Geometric Mean, Harmonic Mean, Arithmetic Mean, Fibonacci Numbers, Paradigmatic Symmetry

The Golden Mean Number System: Its Platonic Roots, Paradigmatic Symmetry and Quantum Parameters

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Categories by Discipline

1.0 Philosophy

Primary Topic Area - TSC Taxonomy

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

Abstract

At the root of all the deep questions within physics lies the number system one employs in the process. The golden mean number system may well be the most powerful tool in the physicist/mathematician's arsenal. Mohamed El Naschie, through E-Infinity theory, suggests that the golden mean number system is the lingua franca of nature. Its backbone emerges naturally as the golden series of exponential powers out of Plato's principles of the One and Indefinite Dyad of the Greater (Φ) and Lesser ($1/\Phi$). And it all begins with the golden section, or as the ancient Egyptians called it, the primordial scission. From the primordial scission the golden series (or golden powers) emerges: ..., $(1/\Phi)^7$, $(1/\Phi)^6$, $(1/\Phi)^5$, $(1/\Phi)^4$, $(1/\Phi)^3$, $(1/\Phi)^2$, $1/\Phi$, 1, Φ , Φ^2 , Φ^3 , Φ^4 , Φ^5 , Φ^6 , Φ^7 , It is highlighted by its naturally recursive nature, similar to but more profound, than its derivative Fibonacci series of numbers: 0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, The Fibonacci series is perfectly additive and approximately geometric, whereas the golden series is both perfectly additive and perfectly geometric where each number is equal to the previous number multiplied by the modular Φ . Furthermore, it harbors the most stunning internal structure of paradigmatic symmetry linking all aspects of the golden powers together in an incredible symphony of interdependence where the One serves simultaneously as the geometric, harmonic and arithmetic mean. And finally, we show how the quantum mechanical parameters of the pre-quantum particle ($1/\Phi$), pre-quantum wave $((1/\Phi)^2)$, Einstein spacetime $((1/\Phi)^3)$, Unruh temperature $((1/\Phi)^4)$, Hardy entanglement $((1/\Phi)^5)$ and Barbero-Immirzi parameter $((1/\Phi)^6)$ can be naturally and effectively aligned within Plato's three similes of the Sun, Divided Line and Cave. This is the process of how the whole universe is fractally and holographically enfolded into each and every part. As David Bohm pointed out: "The essential features of [quantum interconnectedness] are that the whole universe is in some way enfolded in everything, and that each thing is enfolded in the whole." The golden mean number system is in fact the lingua franca of

nature and holds the key to unpacking the fractal nature of the universe – penetrating into its outer fabric and inner mysteries. It has reemerged most completely and satisfactorily in the modern era of high energy physics and cosmology through the stunning simplicity of the many computational successes of E-Infinity theory. In the end, what we have on display is literally the answer to the greatest philosophical question of all: “How does the One become the Many?”

Keywords

golden mean number system, lingua franca, One and Indefinite Dyad, E-Infinity theory, Fibonacci numbers, geometric mean, harmonic mean, arithmetic mean, golden series, paradigmatic symmetry, pre-quantum particle, pre-quantum wave), Einstein spacetime , Unruh temperature, entanglement, Barbero-Immirzi parameter, Sun, Divided Line, Cave, quantum interconnectedness, David Bohm, Mohamed El Naschie, One and Many

Unraveling Identity: A Speculative Exploration into the Nature of Consciousness

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Categories by Discipline

1.0 Philosophy

Primary Topic Area - TSC Taxonomy

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

Abstract

This paper delves into the enigma of consciousness, focusing on the question of identity and its fundamental role in shaping subjective experience. The exploration revolves around the concept of identity, particularly the first-person point of view, as a key element in understanding consciousness. The paper challenges the notion that identity is solely an emergent property of the brain, proposing that unique identities may extend beyond the physical brain to an external source. It discusses the relationship between physical attributes of the brain and the distinct nature of identity. The paper also examines the feasibility of physically identical brains and explores the possibility of identical subjective identities. Additionally, it speculates on the potential role of an external field, such as spacetime or Hilbert space, in defining identity properties. The discussion provides a comprehensive perspective on the complex interplay between the brain, consciousness, and the underlying fabric of reality.

Keywords

self, conscious, sentience, identity, exclusivity,

A multidisciplinary taxonomy of consciousness explananda: How EM field theories stack up against 82 criteria

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Categories by Discipline

1.0 Philosophy

Primary Topic Area - TSC Taxonomy

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

Abstract

How can we choose between theories of phenomenal consciousness? The list of plausible candidates is growing, with one partial list identifying 22 (Seth & Bayne, 2022) and at least a dozen more not included. Experimental approaches can help favour one variant over another, but the recent adversarial collaboration between IIT and GNW suggests they are unlikely to be conclusive any time soon. Future technology often needs to be invoked in designing effective experiments and not all plausible theories are experimentally accessible even in principle. An alternative approach, borrowing epistemological principles in animal welfare ethics and effective altruism, is to develop a broad set of requirements against which a theory is expected to provide an account. Applying weights to different requirements and credences to different accounts helps researchers prioritise theories based on today's insights, without needing to contest the value of taxonomising requirements or concede differences in their initial intuitions. Several recent papers have taken up this challenge, itemising lists of requirements that theories of phenomenal consciousness should meet, albeit often well-tailored to certain theories. We conducted a structured literature review identifying seven papers that explicitly develop lists of this type and seven more that contribute indirectly. These 14 lists enumerate four to 17 items each, but with only modest overlap, suggesting more work is needed to develop a comprehensive, inclusive list. Taking these items as a foundation, we developed a multidisciplinary taxonomy of 82 unique criteria so far spanning introspective, empirical, and analytical explananda. We use this set of 82 explananda to test a particular electromagnetic field theory of consciousness, developing and rating an initial account for each of the explananda items. This application illustrates the potential value of the tool to identify areas of weakness for future research and relative strengths. For instance, the target EM theory provides strong accounts for certain analytical puzzles, such as the phenomenal binding problem, the unfolding argument, and visibility to natural selection processes, and for certain empirical explananda, such as links to particular types of brain activity (but not all brain activity)

and certain psychiatric disorders of consciousness. However, existing accounts are assessed as weaker against inverted qualia arguments, knowledge arguments, psychological sensations of agency, the perturbational complexity index (PCI) as used clinically, and neuroscience evidence on readiness potentials. Nonetheless, avenues for analytical and empirical work can be identified in these areas, helping to motivate specific research directions. Beyond its application to individual candidate theories of consciousness, we hope that a long-list of target requirements for such theories is a useful collaboration and consensus driver among advocates of different theories. In pursuit of an inclusive, robust taxonomy, theorists can propose new items as insights and empirical evidence emerge, the merging or splitting of items, and the grouping of items into different categories to support different analytical goals. The prize is a single set of requirements to evaluate all candidate theories, so we can move beyond the cherry-picking of thoughts experiments, neural correlates, and other phenomena that is often used today to promote specific ideas.

Keywords

Phenomenal consciousness, Epistemology, Theory assessment, Explananda, Neural correlates, Introspection, Thought experiments

It may be possible to explore the whole history of the nature of consciousness when we utilize Eastern Philosophical Perspective

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Categories by Discipline

1.0 Philosophy

Primary Topic Area - TSC Taxonomy

1.0 Philosophy

Abstract

Clearly our common aim to attend this conference is to explain the nature of consciousness. As everyone knows many hypothesis have been presented about consciousness since ancient age. However of course we have no final ultimate answer. We work hard everyday to solve these hard problems. We sometimes think about genius neuroscientist Mary or imagine how to be a bat. Or some people research some quantum mechanisms of brain. Some may say that emergency or supervenience is the most important point. I think these are all from scientific perspective or western philosophical perspective. And they are derived from traditional materialism or physicalism. Regrettably I think these efforts are albeit very hard, may not reach the ultimate aim, when I observe from historical view. That is to say, in spite of being studied by many excellent researchers for millennia, we cannot find the way to reach the final target, I think. To overcome this situation I suggest one unique plan. That is to say, as humankind, we can have another perspective to solve this problem. In a Mr. David Chalmers writing, he refer to Chuangzis butterfly dream. Probably he has some interest to eastern philosophical perspective. Today, I will also suggest to think from Eastern Philosophical Perspective. At first I refer to Buddhist philosophy. Now I will introduce a Zen Philosopher Daisetz Suzuki [1870-1966]. He was borne in Japan yet stayed in US from 1897 to 1909. He studied about eastern philosophy with Paul Carus and Edward Heglar. He is one of the most intellectual Zen Buddhism philosopher in Japanese history. I do introduce a book by him 「Mysticism ; Chiristian and Buddhist」 In this book he presented very interesting viewpoint. Namely the distinction between western and eastern world started from the moment when God saying!!.. God said. `` Let there be light." So there was light. This is the very famous from Bible the book Genesis. From at that moment western perspective always has contradiction, Dr Suzuki insisted. Light and dark, angel and devil etc. So for westerner it is logically true to analyze and analyze. Thats the way to the truth, westerner believing. On the contrary, eastern perspective think about more Older Age. They think about before God saying there be light. So It was still chaos.

No distinction there. But about there they aspire to find the way. Lao Tzu who reckoned similar school to Chuangzis founded Taoism that means finding the true way. Additionally , in Buddhist perspective, they have two important conception. Emptiness and No Mind. In Heart Sutra , Form is Empty , Emptiness is form. From logically thinking it is ridiculous and not worth thinking . Yet for Buddhist perspective it is the even main concept of reality. Recently Robert Wright ,a famous author and journalist in US , wrote a book titled 「Why Buddhism is true. 」 He referred to meditation that apparently relevant to consciousness. I think Eastern Philosophical Perspective may contribute to elucidate the real nature of consciousness and even Life. I will present more detail at conference venue.

Keywords

Eastern philosophy , Zen philosophy , quantum theory of consciousness, scientific perspective, Genesis, Zhuangzis butterfly dream, Taoism, true way, Emptiness, No mind

THE PSYCHO-NEURAL CONNECTIVITY.

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Categories by Discipline

1.0 Philosophy

Primary Topic Area - TSC Taxonomy

[01.04].....Ontology of consciousness

Abstract

THE PSYCHO-NEURAL CONNECTIVITY Dr. Adrian Klein, PhD The topic of the nature of consciousness and its relation to brain activity is an increasingly hot one in academic circles. Current mainstream scientific worldview requires an explanation of mind-related phenomena obeying the traditional materialistic paradigm, which tries to prove that consciousness is a by-product of the quantum activity of interconnected neural networks. In this paper, we suggest a new exploration context for consciousness studies, tightly connected with a re-definition of life – stretching the current conceptual limits beyond the atomistic view of matter, beyond the electromagnetic and ionic neural transmission models of Information, and beyond beliefs that human consciousness is epiphenomenal to brain activity. Our presentation is strongly inspired from recent advances in subquantum physics (Klein & Boyd, 2021), In subtle energy physics (Kronn & Kamp, 2022), and in V. Neppe's mathematical support (Neppe & Close, 2020) for the model we defend. We follow the pathway sentient informational reality couples to our well-known mass/matter/energy world, in an integrated inter-dimensional process. Pure information in its pre-energetic aspect couples to subquantum (SQ) units and combinatorials of increasing complexity, able to transgress the ZPE (Zero-point energy) barrier between nonlocal information fields and local quantum processes, being stored and vehiculated by pre-quantum subtle energy variants. The link between these ontologically different domains is provided by the Compton-radius vortex configurations operating at the level of sub-quarks across all the periodic table of elements. Life as inherent condition of manifestation results as the conscious aspect of matter. The fundamental coupling mechanism between non-local and material regimes is supported both by compelling evidence supplied in bio-energetic physics and by recent mathematical proves.

Keywords

subquantum, subtle-energy, chi meridians, life physics, ZPE, psi.

Doubts About LLM Consciousness

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Categories by Discipline

1.0 Philosophy

Primary Topic Area - TSC Taxonomy

[01.06].....Machine consciousness

Abstract

Recent advances in performance of LLMs has suggested to some that LLMs are conscious, or that devices like them may be conscious in the not too distant future. This paper explains a simple route to puzzlement about consciousness that involves phenomenal qualities. This route has implications that suggest that work on LLMs is not work that is likely to lead to phenomenal consciousness. A recent report, led by P. Butlin and R. Long, adopts ‘computational functionalism’, and rejects biological essentialism. This paper explains how this is a false dichotomy, and describes a distinct alternative based on quality space theory. Work on artificial sensing is more directly related to phenomenal consciousness than work on artificial intelligence, but here too there are reasons to doubt the success of current approaches.

Keywords

Artificial Intelligence, Consciousness, LLMs, Quality Spaces,

Cosmopsychism's Failure and the Teilhardian Solution

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Categories by Discipline

1.0 Philosophy

Primary Topic Area - TSC Taxonomy

[01.03].....Panpsychism and cosmopsychism

Abstract

In recent years, given the failures of reductive materialism to account for the existence and origin of consciousness, there has been a revival of the ancient concept of panpsychism in philosophy of mind research and consciousness studies. Philosopher Philip Goff, who was once a skeptic of panpsychism (having published a paper titled “Why Panpsychism Doesn’t Help Us Explain Consciousness”), has emerged as one of its most formidable defenders. Goff defends a particular interpretation of panpsychism, known as cosmopsychism. Cosmopsychism is the view that the universe itself is a conscious mind with its own purpose. Nonetheless, just like ancient notions of panpsychism, Goff’s cosmopsychism is riddled with problems. One often overlooked problem for not only materialists but also naturalistic panpsychists is accounting for the distinction between living and dead, conscious and non-conscious. There is a sharp and profound distinction between the living and the dead. For instance, a unique individual person who is living and conscious, although virtually physically identical in terms of material composition, is no longer present after the moment of somatic death. Thus, the human person ceases to exist. And yet, there is no significant difference in the material structure of a person who is alive or who has just died (whether healthy or ill). Explaining this divide between a living person and a corpse, particularly at the moment of death, is an intractable problem for the naturalist, whether a proponent of panpsychism or not. Counter-arguments presenting the loss of consciousness at death in vegetative states do not work since a level of consciousness exists to maintain bodily functions. Furthermore, individual cells are still alive and participate in chemical reactions that convert glucose into energy. For a corpse, these cell processes and bodily functions have stopped; the cells are dead or dying; the heart has ceased to pump blood; and the lungs are incapable of oxygenating blood. Furthermore, the fact that people have regained full consciousness and returned to normal cell and bodily functions makes such cases wholly distinct from somatic death. Inevitably, the combination problem rears its ugly head again. This paper will examine the combination problem as it pertains to cosmopsychism and the obstacles it creates for explaining the distinction between the living and

the dead and conscious and non-conscious. And the proposed solution, a Teilhardian solution, a variant of panpsychism, would include the Roman Catholic priest, mystic, and paleontologist Teilhard de Chardin's evolutionary theology. As innovative as Goff's cosmopsychism is, a naturalist panpsychist cannot escape a god-driven panpsychism. In fact, it is necessary to rescue panpsychism. A transcendent, intelligent mind is needed to explain how the universe came to be and its teleological laws. In turn, these laws are needed to explain the driving force behind evolutionary change: the change from non-living to living things, the transition from lower-level consciousness to eventually human consciousness, then to somatic death, and a future state for consciousness without a body. Naturalistic cosmopsychism, despite its grandiose claims to account for all that exists, is incapable of doing so.

Keywords

consciousness, panpsychism, cosmopsychism, combination problem, Teilhard de Chardin, noosphere, somatic death, Philip Goff, the Teilhardian solution, reductive materialism, human consciousness

Dual Aspects of What?

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Categories by Discipline

1.0 Philosophy

Primary Topic Area - TSC Taxonomy

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

Abstract

Dual-aspect monism is a metaphysical position that considers the mental and the physical as epistemic aspects of an underlying domain of reality that is neutral with respect to the distinction of the aspects. Pioneered by Spinoza, recent decades saw renewed interest in such a tripartite picture of reality, yielding an empirically supported novel taxonomy of mind-matter correlations together with a role for the concept of meaning to interpret them. A largely open issue so far, however, is a cogent characterization of the psychophysically neutral domain of reality. I will present some more and some less established ideas of how to conceive this domain and how to relate it to its mental and physical aspects.

Keywords

dual-aspect monism, psychophysical neutrality, mind-matter correlations, meaning

Artificial Intelligence and the dimensions of consciousness

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Categories by Discipline

1.0 Philosophy

Primary Topic Area - TSC Taxonomy

[01.06].....Machine consciousness

Abstract

Within scientific and philosophical studies of consciousness there has been a move towards pulling apart different dimensions of phenomenal consciousness. As one influential example, Birch, Schnell and Clayton (2020) have presented a multidimensional framework for understanding interspecies variation in states of consciousness. Their framework distinguishes five key dimensions of variation: perceptual richness, evaluative richness, integration at a time, integration across time, and self-consciousness. For them, the framework is useful for constructing a consciousness profile for each species by assessing a given species against each of the five dimensions. They argue that each species has its own distinctive consciousness profile, such that there is no single scale along which species can be ranked as more or less conscious. In this talk, my aim is to identify the potential dimensions of consciousness profiles in artificial intelligences (AIs). This includes both current systems, which can be assessed for evidence of consciousness, and hypothetical future systems, which might display non-traditional consciousness profiles. My methodology will involve surveying several theories about the dimensions of consciousness, with the goal of identifying the best indicator properties for dimensions of phenomenal consciousness in AI systems. I will then use these indicator properties to, first, assess several recent advanced AI systems (e.g., foundation models such as GPT-4, Dall-E) and, second, to consider how future systems might implement them. Even if no current AI systems are conscious, which my analysis thus far suggests, there are still important philosophical insights to be drawn through the method of considering what dimensions might emerge in near-term non-biological (AI) systems.

Keywords

Artificial Intelligence, Dimensions, Machine Consciousness, perceptual richness, evaluative richness, integration, self-consciousness, phenomenal consciousness

Solving the Phenomenal Boundary Problem with EM Field Topology: An Empirically Testable Hypothesis that Avoids Epiphenomenalism, Strong Emergence, and Fuzzy Boundaries

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Categories by Discipline

1.0 Philosophy

Primary Topic Area - TSC Taxonomy

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

Abstract

The boundary problem is related to the binding problem, part of a family of puzzles and phenomenal experiences that theories of consciousness (ToC) must either explain or eliminate. By comparison with the phenomenal binding problem, the boundary problem has received very little scholarly attention since first framed in detail by Rosengard in 1998, despite discussion by Chalmers in his widely cited 2016 work on the combination problem. However, any ToC that addresses the binding problem must also address the boundary problem. The binding problem asks how a unified first person perspective (1PP) can bind experiences across multiple physically distinct activities, whether billions of individual neurons firing or some other underlying phenomenon. To a first approximation, the boundary problem asks why we experience hard boundaries around those unified 1PPs and why the boundaries operate at their apparent spatiotemporal scale. We review recent discussion of the boundary problem, identifying several promising avenues but none that yet address all aspects of the problem. To formalize the boundary problem in a way amenable to a satisfactory solution and aid precision in future efforts, we set out five concrete subproblems. Namely, the (1) hard boundary problem, (2) lower-levels boundary problem, (3) higher-levels boundary problem, (4) private boundary problem, and (5) temporal boundary problem. More so, we provide a criteria that we argue must be met by any solution: the boundaries must be objective, frame invariant, causally significant (to avoid epiphenomenalism), and arise without the need of strong emergence. We examine electromagnetic (EM) field theories in detail, given their previous success with the binding problem, and introduce a feature (topological segmentation) with the necessary characteristics to address the boundary problem (and subproblems) at a conceptual level that satisfies our criteria. We point out that without the need for new physics, objective boundaries in fields naturally and emergently arise, and ponder if they could

correspond to phenomenal boundaries within a panpsychist ontology. Examined in detail, it turns out that topological segmentation in fields can, in principle, create exactly the hard boundaries desired, enclosing holistic, frame-invariant units capable of effecting downward causality. In turn, evolution would have a reason to recruit topological pockets of the EM field (and hence moments of experience) for computational purposes, and thus explain why consciousness is not epiphenomenal. We conclude by outlining a programme for testing this conceptual solution to the boundary problem, describing how it might also differentiate between competing EM ToCs.

Keywords

boundary, binding, combination, causal efficacy, fuzzy, topology, EM, electromagnetic theories

The Schelling Landscape: A Platonic View on Intention and Cognition

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Categories by Discipline

1.0 Philosophy

Primary Topic Area - TSC Taxonomy

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

Abstract

Saliency of sensory stimuli is a fundamental driving force of behavior. Each mode of sensation can be said to have its own "saliency map". In the case of vision, for example, certain elements in the visual field are more salient than others, such as edges, bright dots over dark backgrounds, or human faces. In the case of touch, pain is an example of salience. These salient stimuli are attractors of attention, at times so potent that they involuntarily drive our attention and our behavior. We cannot help but to turn our heads toward a bird that suddenly slams into the window. The question can be posed - what keeps our attention from being fully driven by whichever stimuli are the most salient? We could respond that it is our cognition or intentions, or ultimately free will. But another possible, albeit more deterministic, response is that attention is mostly or completely driven by what is salient. Given a set of choices, the Schelling points of the set are the elements most likely to be chosen by two players when asked to choose an element of the set with the aim of choosing the same element without coordination. We can argue that the Schelling points of a set are such because they are salient to the players. Thus, I generalize the concept of Schelling points to the "Schelling landscape". the salience function of all elements of a set of choices given a particular circumstance. We can further generalize this notion to obtain the Schelling landscape of all cognitive content, obtaining a cognitive saliency map akin to sensory saliency maps. In this presentation, I propose 1) that phenomenal binding is computationally relevant to form a unified experience with multimodal objects of attention, 2) that a multimodal saliency map that integrates sensory saliency maps with cognitive saliency maps (the Schelling landscape) via phenomenal binding can be seen as a sufficient driving force for behavior, and 3) that sensory saliency is to shared physical reality as the Schelling landscape is to a Platonic world of ideas; therefore by binding cognitive salience to sensory saliency maps, the world of ideas can be seen as a fundamental component of shared reality.

Keywords

saliency, saliency map, multimodal, Schelling landscape, phenomenal binding

The Being and Becoming of Consciousness

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Categories by Discipline

1.0 Philosophy

Primary Topic Area - TSC Taxonomy

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

Abstract

At the Being level, Consciousness and Energy form an entity or a field which exists forever without reference to anything else. Out of this field, the fundamental particles which science talks of, evolve and by suitable combinations of them, various systems of the universe are formed. The motion of the fundamental particles and the elementary particles is governed by the quantum mechanical wave equation of Schrodinger. The time-dependent Schrodinger equation $i\hbar \frac{d\psi}{dt} = (-\frac{\hbar^2}{2m}) (\frac{d^2\psi}{dx^2}) + V(x)\psi(x,t)$ ----- (1) During the evolution process of consciousness becoming the universe, in the early epoch of the universe only fundamental and elementary particles were there. So the laws governing them were quantum mechanical. This early epoch approximately extended upto 18000 years (18 K Years) after the expansion started. The successive combination of the elementary particles leads to the formation of atoms, molecules and bulk matter like stars and planets. The stars, planets and various bulk objects form the classical world and they are governed by Newton's formalism where $E = \frac{p^2}{2m} + V(x)$ ----- (2) In Einstein's formalism, at the classical level, the expression for the energy of a particle is given as $E^2 = p^2c^2 + m^2c^4 + V^2$ ----- (3) where, E = energy of the particle p = momentum of the particle c = velocity of light m = rest mass of the particle V = Potential energy It may be noted here that Eqn. (2) and Eqn. (3) have only particle aspect represented by m. But the Eqn. (1) has both particle and wave aspect represented by the mass m and the wave function ψ . Thus Schrodinger equation does justice to wave-particle dualism. During the becoming process from fundamental particles to stars, first the laws of nature at the elementary particle level are quantum mechanical and later on at the bulk matter level the laws of nature become classical. Both quantum and classical behavior are nothing but the manifestation of the consciousness field. Since a fundamental particle is a product of the primordial consciousness – energy field, it has both energy and a tinge of consciousness. The current science talks only about the energy of the particle but not the consciousness associated with a fundamental particle or an elementary particle or with a bulk matter. The consciousness at the particle level manifests as the property of the particle. In a living organism, the consciousness

manifests as the mind of the living being. The brain in every living being is a combination of the elementary particles. Since every elementary particle has a tinge of consciousness the brain as a whole can be taken as a product of the primordial consciousness. Each experience of a living being is recorded by the brain in the field of consciousness in the form of a wave. The group of such waves constitutes the mind of the living organism. Particles, Brain and Mind are the various stages in the ongoing self transformation process of the primordial field of Consciousness and Energy.

Keywords

Schrodinger equation, Newton, Einstein formalism, Energy, Manifestation of consciousness and energy field as brain and mind

8 Methodological Perspectives of Consciousness

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Categories by Discipline

1.0 Philosophy

Primary Topic Area - TSC Taxonomy

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

Abstract

8 Methodological Perspectives of Consciousness Explored “How can a three-pound mass of jelly that you can hold in your palm imagine angels, contemplate the meaning of infinity, and even question its own place in the cosmos? Especially awe inspiring is the fact that any single brain, including yours, is made up of atoms that were forged in the hearts of countless, far-flung stars billions of years ago. These particles drifted for eons and light-years until gravity and change brought them together here, now. These atoms now form a conglomerate - your brain - that can not only ponder the very stars that gave it birth but can also think about its own ability to think and wonder about its own ability to wonder. With the arrival of humans, it has been said, the universe has suddenly become conscious of itself. This, truly, is the greatest mystery of all.” - V.S. Ramachandran No doubt, our understanding of consciousness is perhaps one of the biggest mysteries in the history of human nature. Theories of consciousness abound. One has only to look at the litany of perspectives and presentations offered at the 2024 Science of Consciousness Conference to concur. From the cognitive sciences of biology, physics, neurosciences, and neurophysiology - to the social sciences of psychology, sociology, and anthropology - not to mention the humanistic disciplines of philosophy, religion, spirituality, and meditative practices -- each sets out to understand and answer the mind/body question of: What is consciousness? Current research in neuroscience, psychedelics, spirituality and mental health, quantum mechanics, and psi related phenomenon pushes the boundaries of a one size fits all understanding and explanation of consciousness and/or expanded states of consciousness. What if the answer to the question “what is consciousness” lies in the integration of many views? What if current theories on consciousness are but each an important piece of the puzzle in our understanding of the greater whole? In the following presentation, participants are offered a participatory approach to examining “consciousness.” Utilizing Wilber’s (2007) AQAL model of Integral Spirituality, participants will discuss multiple perspectives of consciousness. They will be divided into four broad groups (eight, including inside and outside views) of methodological perspective based on Wilber’s model

including: 1) phenomenological / structuralism; 2) hermeneutics / ethnomethodological; 3) autopoiesis / empiricism; and 4) social autopoiesis / systems theory. Specifically, participants will define (with the help of the presenter) and discuss the various methodological perspectives, categorize the many presentations offered at the current conference based on these perspectives, and delineate a way to synthesize an understanding of consciousness based on an integrated view of reality. In the words of Ken Wilber (2007), Simply allow the existence of empiricism, and phenomenology, and behaviorism, and contemplation, and hermeneutics, and systems theory... and then add up what you have ... Throw the circle as wide as you can, find a view from 50,000 feet, be inclusive using an integral pluralism ... extend your compassionate embrace to the men and women doing extraordinarily wonderful work in all of those fields and disciplines (covered by the 8 methodologies), reach out and bring their phenomenal worlds into your map of your own world, [and] stretch you mind until it touches infinity ... And, decide for yourself, what is consciousness? References: Ramachandran, V.S. (2012). The Tell-Tale Brain: A Neuroscientist's Quest for What Makes Us Human. W.W. Norton and Company. Wilber, K. (2007). Integral Spirituality. A New Role for Religion in the Modern and Postmodern World. Integral Books.

Keywords

Methodological Perspectives of Consciousness, Integral Spirituality, Concepts of Consciousness, Spirtuality and Religion

Exploring Consciousness: Phenomenological Insights from 5-MeO-DMT Experiences

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Categories by Discipline

1.0 Philosophy

Primary Topic Area - TSC Taxonomy

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

Abstract

This presentation explores the realms of consciousness through the multifaceted perspectives of unitive consciousness, living resurrection, and the distinct impacts of psychedelic and entheogenic substances, using 5-MeO-DMT as a focal point. Recognized for its potent effects in inducing altered states, 5-MeO-DMT serves as a gateway to understanding these phenomena. The analysis will extend beyond the conventional scope of ego dissolution, time perception, and unity with the universe, to encompass the deeper aspects of unitive consciousness—a state where individual awareness merges with a universal, collective consciousness—and the concept of living resurrection, signifying a profound rebirth and transformation of the conscious self. Incorporating subjective insights from scholars like Stan Grof, Ralph Metzner, James Oroc, and Peter Sjöstedt-Hughes, this presentation employs qualitative methods to dissect and comprehend these experiences. A significant portion will be dedicated to differentiating the effects of psychedelics, like 5-MeO-DMT, from broader entheogenic experiences, highlighting how each category uniquely influences and elucidates our understanding of consciousness. This comprehensive approach provides a rich tapestry of empirical data and theoretical insights, shedding light on the intricate nature of consciousness. By exploring these varied dimensions, the presentation aims to contribute meaningfully to the broader discourse on consciousness, underlining the pivotal role of substances like 5-MeO-DMT in unraveling the complex constructs of self and reality and their profound implications in studying human consciousness.

Keywords

Unitive Consciousness, Living Resurrection, 5-MeO-DMT, Psychedelic, Entheogenic, Altered States, Phenomenological Analysis

Subjective versus Objective Points of View -- Reflection Principle

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Categories by Discipline

1.0 Philosophy

Primary Topic Area - TSC Taxonomy

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

Abstract

While there are many theories of consciousness, none have addressed the “hard” problem, defined as an analytic description of the subjective versus the objective point of view. What has been done are many theories about an objective description of what is going on in the brain during a conscious being’s subjective experiences, but not how the experience itself is subjectively generated. To begin, we define report as any action taken by a living creature that transfers information to another living creature. This definition is more broad than that used for conscious beings as consciousness is not required. For any conscious being, EVERYTHING experienced is a subjective experience for that conscious being. The thing experienced might be an objective consensus of some group as well as immediate sensory information (sight, hearing, smell, touch, pain, etc.) and appropriate memory. On the other hand, a 3rd person objective description of an object, event, or process, d , is an analyzed sum over a sufficient number (n) of reported 1st person subjective experiences, as in Science. $3rd(d) = G \sum_{i=1}^n Q_i (R1st)_i$. Objectivity is thus a consensus of many conscious beings about their reported subjectivity of the subject. Reading a book, seeing a movie, etc. is a subjective experience; but the book, movie, etc. is the creation from many reported subjective experiences. Note that the operators $(R1st)$ act as a product on input from the senses with R (the report operator), being an objective operator, acting on 1st, the subjective operator. Herein lies the ‘hard problem’ of consciousnesses. How does input to the senses become both a subjective experience and an objective report of that input? For visual subjective experience, we suggest the Reflection Principle: Inputs from the senses are encoded as neural spikes that feed forward to build neural representations that code for the various sensory data. These representations are the subjects of neural cognitive functions that generate efferent signals to the muscles and organs to act or not. We propose that visual subjective experience is created by neural projection operators that generate outgoing neural signals coded as a 2D set of orthogonal functions, which interrogate the appropriate representations; producing outgoing neural signals towards the eye that produce a virtual image of the original signals that built the original representations. There is no Cartesian

Theater here. By generating 'outgoing' neural signals from representations created by the 'incoming' neural signals, the Reflection Principle via Directionalism, illustrates Subjective Perspectivity, and Intentionality. In particular, the property of outward direction of neural signals from the neural projection operators is causal of the subjective point of view – “looking outward at something else”, creating the illusion of 'what it is like' (Nagel (1974)) by scanning, interacting with, 'reaching out' in a subjective, first-person mode. To conclude: It is the direction of these signals that suggest subjective experience, and it is the difference between the incoming and outgoing signals that provide feedback to either correct (negative feedback) or enhance (positive feedback) the representations.

Keywords

Subjectivity, Objectivity, Hard problem, Reflection Principle

Conscious Co-Evolution in the Noosphere: Beyond Darwinian Paradigms in the Age of AI

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Categories by Discipline

1.0 Philosophy

Primary Topic Area - TSC Taxonomy

[01.04].....Ontology of consciousness

Abstract

This presentation explores “Conscious Co-Evolution” within the Noosphere, an emergent cognitive stratum arising from the biosphere and geosphere and encompassing the collective realm of human thought and knowledge. In this context, a significant expansion of Darwinian theory is proposed. This extension modifies the traditional understanding of evolution – usually governed by natural selection and genetic mutation – to depict living organisms not merely as subjects to these forces, but as active participants in them. Conscious Co-Evolution, therefore, marks a seminal transition, moving beyond the historical narrative where humans were subject to these evolutionary dynamics to a new era where human consciousness actively shapes these dynamics. With the advent of the Noosphere, I argue that evolution is becoming a hyper-conscious, directed process through Conscious Co-Evolution, transforming a 3-billion-year journey and elevating human consciousness from a historically reactive role to an active shaper of the Noosphere. Conscious Co-Evolution introduces a new synergistic interplay between human consciousness and evolutionary change. This presentation argues that in the Noosphere, the intentionality of human consciousness becomes an active driver of evolutionary change, surpassing those automatic mechanisms that predominantly define human consciousness. This perspective suggests co-evolution where humans play a deliberate role in shaping new evolutionary trajectories. The Noosphere generates escalating complexity and synergistic relationships. Observable phenomena like cultural and technological convergence, collective intelligence, knowledge feedback loops, and interdisciplinary synthesis shaping our understanding of reality, actively participate in the evolutionary dynamics of consciousness. These phenomena extend evolutionary principles from biology to human cognition and the collective Noospheric network. Contemporary research lends scientific support to this perspective. Notably, for example, Terrence Deacon’s work delineates evolution’s dual aspects: classical Darwinian selection and emergent synergies involving

epigenetics, gene duplication, and endosymbiosis, which add complexity beyond traditional genetic mutation. His insights connect these evolutionary mechanisms to the development of consciousness and cognition, extending into the Noosphere where human thought and knowledge become distinct outcomes of these complex interactions. At the heart of this evolutionary leap is the self-transforming mind, a mind uniquely capable of turning onto itself and evolving itself, thus catalyzing personal and collective transformation. This profound shift is increasingly demonstrated in the global adoption of diverse practices, from ancient contemplative methods to leading-edge contemporary cognitive training. These engagements signal the global emergence of self-evolving minds. It marks a pivotal phase, steering collective human evolution towards a conscious, intentional Noosphere. With Conscious Co-Evolution, the undeniable interplay between the evolution of human consciousness and technological advancement, particularly in artificial intelligence and global knowledge networks, becomes unmistakably evident. Our progression towards a hyper-conscious mind in synergy with rapid technological development, signals a new phase of cognitive symbiosis. This dynamic synergy is crucial in our evolution towards a “super-consciousness,” a transformative expansion in the scope and depth of collective consciousness. Therefore, this emergent super-consciousness, a defining feature of Conscious Co-Evolution, marks a significant advance beyond the current framework of the noospheric mind, ushering in an era of amplified cognitive and conscious potential. The presentation will include the transformative impact of this development.

Keywords

Conscious Co-Evolution, Noosphere, Darwinian Theory Expansion, Hyper-Conscious Process, Collective Intelligence, Technological Convergence, Cognitive Symbiosis, Self-Transforming Mind, Super-Consciousness

The *sense making sense* hypothesis - how pain explains rather than causes behaviour

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Categories by Discipline

1.0 Philosophy

Primary Topic Area - TSC Taxonomy

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

Abstract

Internal states such as pain, hunger and thirst are widely acknowledged to be drivers of behaviours essential for homeostasis and animal survival. In humans and many other animals these states are conscious and enriched by subjective experience that seem to enable diverse forms of flexible behaviour. Here we introduce the sense making sense hypothesis that challenges this classical framework. Using pain as a prototypical mental state we propose that subjective experience does not directly cause behaviours but instead it explains behaviour to a conscious animal. In this perspective the explanation reduces computational load of information processing and by doing so enhances the performance of the conscious brain.

Keywords

Pain, feelings, causation, behaviour, subjective experience

The Importance of Daily Affect on Creating Individual Reality

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Categories by Discipline

1.0 Philosophy

Primary Topic Area - TSC Taxonomy

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

Abstract

In this presentation we will take an academic perspective as we explore how an individual's daily affect not only influences how they engage with their physical reality, but also how one's daily affect is the emotional key which is necessary for an individual to consciously create their reality. We will begin by exploring the various ways in which daily affect plays a role in everyday life, both creating and reinforcing deep-seated perspectives. This will naturally unfold to reveal how daily affect is a driver of expectations, which may help us better understand emotions as a mechanism of the placebo effect. We will then tie the individual's experience of reality together with quantitative evidence that supports daily affect's influence on the body's chemistry by looking at its influence on cortisol levels. This may help researchers better understand how emotions play a role in the perception of stress and aid in further refining stress management techniques. Further in our exploration it will be important to explore the polarity of daily affect, looking at the influence of both positive and negative affects, and their motivating and de-motivating attributes. And before we conclude, we will look at the qualitative aspects of daily affect in order to better understand how and why people experience psi phenomena, specifically synchronicities. With this small portion of daily affect discussed, we will be able to explore how positive affect treatments, such as building resilience and gratitude treatments, may be able to empower people to more consciously create their reality in a manner that is more in-line with their personal vision for their lives. Additionally, these treatments may help reduce cortisol and further support the health and wellness efforts of at-risk populations, as well as the entire population. Expanding awareness of one's daily affect helps people build their emotional intelligence, specifically self-awareness and self-regulation, helping people more effectively and successfully engage with their environments. With cortisol playing a role in inflammation, it is crucial to public health that effective new ways to lower stress be studied. Adjusting emotions tied to daily affect, while not easy, is a simple and free practice that is accessible to all individuals and communities. This is especially crucial for the compounding generational challenges low-income communities face with regard to health and wellness.

Keywords

conscious creation, placebo effect, emotional intelligence, synchronicity, cortisol, stress, daily affect

A category theory based model of Russellian monism

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Categories by Discipline

1.0 Philosophy

Primary Topic Area - TSC Taxonomy

[01.03].....Panpsychism and cosmopsychism

Abstract

Russellian monism (RM) has emerged as a leading contender for a solution to the mind-body problem. Since we cannot expect deep familiarity with it, we briefly summarize the essentials before turning to our model of RM. RM basically agrees with dualism that qualia cannot be easily derived from the physical. At the same time, RM sides with physicalism which denies that qualia are fundamental and not grounded in anything. How can RM hold both perspectives at the same time? The answer is that RM posits a deeper and more fundamental reality from which both the conventional physical and qualia emerge. Consequently, in RM we do not assume that fundamental particles are the ground of the physical and phenomenal, thereby opening a space for grounding qualia in a deeper physical. Given this starting point, the rest is entirely straightforward: we use category theory (a leading mathematical framework) to model the mappings from new foundations to both the conventional physical and qualia. Since we cannot expect a background in category theory, we briefly summarize its essentials. Category theory is a framework for modeling compositional aspects of systems. Given a basic category (comprising objects and morphisms or transformations between pairs of objects), the mapping from one category to another is accomplished via functors (mappings which take objects in one category to objects in another category). Since this may appear to be very abstract, consider the illuminating example from quantum field theory: the mapping from quantum fields to particles - a.k.a. second quantization - is a functor. Therefore, even in present day physics, we can conceive of category theory driven mappings at work and raising foundational questions as to the origin of fundamental particles. Given the above, it is natural to ask if RM can be formulated using category theory and if so, what does this entail for both the physical and the phenomenal. We believe the answer lies in a middle-out as opposed to either top-down or bottom-up implementations. We can begin from a foundational category which is presently unknown and first create functors to the category of fundamental particles (like fermions and bosons) AND fields. This should not be too controversial since the ontology of quantum fields is far from settled at present. At the same time, we can

construct a second functor from the foundational to the category of phenomenal objects which we call ``selfons" in homage to fermions and bosons (which are seen as also emerging from this new foundation). Qualia in this framework are properties of selfons and grounded in the selfon category. We now circle back to our original RM-based intuition which eschews both dualism and present-day physicalism. Since selfons are derived from a second functor, this model asserts that qualia cannot be grounded in the physical (if that is taken to mean the category of fundamental particles). But, qualia are not foundational either since selfons are derived from a new RM-based foundational category. Thereby, we obtain a middle-out model of Russellian monism accommodating both the physical and the phenomenal.

Keywords

Russellian monism, panpsychism, cosmopsychism, category theory, objects, morphisms, functors, selfons, qualia, physicalism, dualism

Artificial Consciousness: Why?

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Categories by Discipline

1.0 Philosophy

Primary Topic Area - TSC Taxonomy

[01.06].....Machine consciousness

Abstract

As Artificial Intelligence is making fast progress, the question of whether artificial information processing systems could be conscious is becoming more urgent. Several research laboratories worldwide are actively engaged in attempts to build artificially conscious information processing systems. The perspective of Artificial Consciousness (AC) presents both a promising opportunity and a profound ethical dilemma. Thomas Metzinger has notoriously called for a moratorium on research in AC by fear of an explosion of negative phenomenology (or explosion of suffering). Meanwhile, a group of researchers from the Association for Mathematical Consciousness Science (AMCS) has recently started advocating that research in AC is urgently needed. In light of this stark divide in the academic and scientific community, this paper seeks out to build a careful and balanced examination of the moral implications surrounding AC research. As most of the existing literature on the topic predominantly focuses on the potential risks and negative consequences, the first part of the analysis identifies the main arguments against AC. By synthesizing and expanding upon existing critiques, it provides an overview of the concerns surrounding the development of conscious machines. In contrast, the second part aims to fill a gap in the current landscape of AC ethics. It articulates counterarguments to the prevalent sceptical views, presenting a series of compelling reasons to support and continue research in this field. This section aims to bring balance to the discussion, underscoring the potential benefits and positive outcomes of AC development. Drawing parallels with historical technological challenges such as the Luddite movement and the ethical dilemmas posed by nuclear technology, the paper contextualises AC within a broader historical and ethical framework. These past experiences provide valuable insights into managing emerging technologies responsibly. The paper concludes by advocating for a moderate approach to AC research. It calls for a careful and responsible development of AC, grounded in a thorough understanding of both its potential benefits and risks. This balanced approach seeks to avoid the dangers while fostering a constructive and informed discourse on one of the most exciting technological frontiers of our time.

Keywords

artificial consciousness; machine consciousness; artificial phenomenology; ethics;

Beyond “Conscious” or “Unconscious”

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Categories by Discipline

1.0 Philosophy

Primary Topic Area - TSC Taxonomy

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

Abstract

Philosophers often classify mental states and processes as either conscious or unconscious, but not all aspects of mentality fit these categories comfortably. To cite one familiar example, it is sometimes unclear whether a perception is unconscious, or conscious but extremely faint and peripheral. This presentation will comment on six types of mental phenomena that pose philosophically interesting challenges to the conscious-unconscious dichotomy. We will begin by considering ways in which conscious decision-making processes typically include steps that are not themselves conscious. Then we will address Tom McClelland’s proposal that we perceive affordances. Certainly we access possibilities afforded by our environment, but are such affordances perceptual? Are they non-perceptual conscious cognitions based on our perceptions? Or do we detect affordances unconsciously? We will then turn to three aspects of mentality that are quite plausibly conscious, but are often ignored by philosophers of mind. These include (1) broadly sensory phenomena, such as mentally rehearsed movements; (2) completions, as when we “see” a whole object by perceiving its facing surface; and (3) contextualizations, as when we wake up and know where we are, even before opening our eyes. Each of these occurs ubiquitously in normal humans. Item (1) is of particular interest in regard to the debate about whether sensory experiences are internal or external, and item (3) is relevant to claims that sensory experiences have cognitive properties. We will conclude by considering un verbalized cognitions, such as thoughts that have not been put into words. In important respects, these pre-verbal cognitions are not paradigmatically conscious. For one thing, they are not introspectible in the specifically-detailed way that we can introspect sensory experiences. It is especially intriguing to think about our pre-verbal comprehension of verbal symbols, such as your current comprehension of the words in this sentence.

Keywords

Definition of consciousness, peripheral awareness, sensory experiences, Gibsonian affordances, internalism, externalism

Theory of Spatial Relativity: Linking Quantum Mechanisms with Biological Processes Underlying Consciousness

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Categories by Discipline

1.0 Philosophy

Primary Topic Area - TSC Taxonomy

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

Abstract

Earth was only 700 million years old when life appeared on our planet 3.8 billion years ago. Life evolved for 3 billion years before comb jellies acquired the earliest neurons 500 million years ago. Hominins first walked upright on two legs 6 million years ago, but the modern (wise man) dates to only 160 thousand years ago. There is debate regarding who is conscious; is it an evolutionary superiority limited to humans and some animals? Consciousness is defined as a state of awareness of oneself and outer environment, or the ability to perceive the world and to respond with certain amount of knowing. However, its usage ranges from (it) being an inherent quality of the universe (cosmopsychism) to consciousness being a product of sophisticated neuronal networks (requiring a brain). The Orch OR theory (Roger Penrose and Stuart Hameroff) posits that orchestrated quantum-state collapse occurs at microscale leading to conscious moment. Current physics lacks in unifying the microscale probabilistic nature of quantum mechanics with the macroscale cause and effect of general relativity. Translating physical quantum event to biological experience necessitates further complication. Here, a new theory unifies these ideas and puts forth an experimentally testable definition for the word consciousness. In this model, Einstein's spacetime is divided into independent units (as in pixels); starting with a proficiently functional unit (functional-scale, in contrast to Planck's structural-scale), dubbed Spoton. A Spoton is functionally the smallest building-block of any form (like a stem-cell). Cumulatively, spotons make up a Spotecule, which is the total intrinsic (functional) space in any organized form (living or non-living). Thereby, intrinsic organized functional space (spotecule) is distinct from extrinsic space (outer spotons and other spotecules). During form development (in spacetime) the spotecule accumulates micro-spatial information specific to its historic path. 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 quantum event. It draws parallels between consciousness and photosynthesis as similar processes that utilize quantum information triggering perception and signal transduction in biological systems. In photosynthesis, the external (photon) influences biological systems differentially, based upon localized spatial properties of the system. The theory of spatial relativity proposes that consciousness is the degree of ability of an organized form to process extrinsic (quantum) information with a range of awareness (sophistication). This theory is experimentally testable (see separate Abstract). Plants and animals shared a common ancestor 1.6 billion years ago. One evolutionary branch excelled in fixing atmospheric carbon to support all life, while the other branch excelled in maximizing its life's experience. In this view, the word consciousness is reserved for biological processes involved in the experience and response with a range of awareness, leaving other definitions to be represented by other words, such as used in ancient scriptures to represent pure consciousness (Chit), or the product of neuronal networks and brain function (Cognition).

Keywords

Consciousness definition, quantum consciousness, new theory of consciousness

Being a mental model: A new kind of panpsychism

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Categories by Discipline

1.0 Philosophy

Primary Topic Area - TSC Taxonomy

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

Abstract

We've got it all wrong. We've been asking 'what is it like to be a bat?' when we should have been asking 'What is it like to be a bat's model of itself?' or 'What is it like to be a bat's model of the world?' Then the answer is obvious, if slightly strange - it is whatever that model describes it as being like. A bat cruising along in the dark using sonar to detect obstacles and prey, needs a model of its own moving body and abilities as well as continuously updated models of the world it flies through. All these, I suggest, are conscious; whatever they depict is 'what it is like'. Unlike bats, we also model a complex experiencing self and that becomes what it is like to be 'me'. This approach immediately by-passes the hard problem which is a problem only because it assumes that physical entities such as bats, fish, people, or machines are conscious. If we say, instead, that it is the representations those entities construct that are conscious there is no mind/brain split or explanatory gap. I first proposed this idea nearly 40 years ago (Blackmore, 1986) but gave it up because I could not understand what mental representations could be. This has changed with the advent of predictive processing theory which describes the human brain as a hierarchical system in which neurons at every level make predictions about the likely next input from the level below. Sensory systems make simple representations predicting, for example, lines and edges, colours and sounds. If we ask what it is like to be them, the answer is crude, fleeting impressions that barely count as conscious. Higher up the hierarchy are more complex models of objects, people, and eventually a self. We live in and are part of a controlled hallucination based on predictions made in a Bayesian brain. Saying that all mental models are conscious makes this theory a form of panpsychism: 'representational panpsychism'. This step changes the relationship between neuroscience and consciousness studies. Rather than asking how a brain 'gives rise to' or 'creates' consciousness or how brain activity 'becomes conscious', we can use the discoveries of neuroscience to reveal the models a system is building, and this tells us what it is like to be them. We can, for example, see how representations change when anaesthetics block thalamocortical loops, or psychedelics increase sensory activity while weakening long-range connections. Shutting

down self-processing in deep meditation reveals selfless models of peace, insight, or joy; and the return of long-range, self-related links explains the feeling of 'waking up' in lucid dreams. The human self-model is key to understanding how and why we often get things wrong when thinking about consciousness. Models not linked to self we label 'unconscious'; those linked to self we call 'conscious' and so we go hunting for how the physical brain 'produces' consciousness out of all these 'unconscious' processes. This is how we fall into dualism. Representational panpsychism sees through these illusions.

Keywords

Representation, mental models, self, predictive processing, panpsychism, illusionism

The Logic of an Infinite Quantum Consciousness Generated by a Timeless, Static Universe

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Categories by Discipline

1.0 Philosophy

Primary Topic Area - TSC Taxonomy

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

Abstract

If in fact—as suspected by Edwin Hubble, allowed by Albert Einstein’s equations of general relativity, and now increasingly confirmed by startling telescopic observations—the redshift in the spectrum of galactic light waves is, in reality, an accurate measure of distance traveled rather than the false Doppler effect of “Big Bang” expansion, the universe is static, and it is composed of an infinite number of mother galaxies, of varying ages. ADDITIONALLY, if the universe is not based on gravitational attraction—as suggested by an alternative model proposed by Hannes Alfvén, physics Nobel Laureate in 1970—it is more likely the result of electromagnetic processes within an eternal, electrically neutral and conductive plasma consisting of hydrogen atoms, free electrons, and naked protons. THUS, the force of gravity—erroneously believed for more than a century to govern our universe—may simply be the observable manifestation of the quantum entanglement of stars and their planetary progeny, of mother galaxies and their stars, and of galaxy clusters and their constituent galaxies, all of which are relatively bound to each other. THEREFORE, an infinite, endless expanse of mother galaxies will probably generate an infinite number of stars, orbited by innumerable, fecund, earth and water planets that naturally grow organic life. These planetary gardens can sprout an infinite array of living beings with physical brains that intelligently evolve powers of observation, and which have the potential to metamorphosize into non-physical minds having a conscious awareness of self and physical surroundings. MOREOVER, if the origination of a mind following the birth of an intelligent being is the natural result of quantum activity within its brain, then consciousness likely exists beyond the electrical, chemical, and biological processes that generates it, and (like gravity) the perceivable products of creative thinking become the observable manifestations of quantum processes. THUS, once individual quantum minds arise, they may entangle with an infinite universal consciousness, and once bound, non-physical minds could survive beyond the lifetimes of the physical brains that generate them. THEREFORE, an eternal, non-physical composite consciousness probably exists—scientifically—which occupies the

limitless cosmos and is coexistent and coequal with the infinite physical universe it observes and charts. FURTHERMORE, if the universe is infinite and non-expanding—without beginning or end—there is no “arrow of time” and, in the absence of observation, every particle of the physical mass of the universe simultaneously moves, timelessly, relative to other mass to which it is quantumly bound. THUS, time was invented by minds to measure the light and motion of observable mass; however, time does not impose limitations or boundaries on the universal quantum consciousness. THEREFORE, as time is a factor in mathematical equations of physical phenomena, the reality of the observing mind can be substituted for imaginary time in the calculation of change. CONCLUSIVELY, we—as individually unique beings of mind—exist to the extent we can comprehend the scientific reality of an abiding, patiently-observing, and non-judgmental universal quantum consciousness, without reference to time, religion, philosophy, or metaphysics. We are MINDKIND ON EARTH!

Keywords

Quantum Consciousness, static universe, Big Bang, redshift, plasma universe, quantum brain, quantum, mind, universe, universal consciousness, cosmic consciousness, arrow of time, mindkind

Interpersonal Consciousness —A view from the other end of the Telescope

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Categories by Discipline

1.0 Philosophy

Primary Topic Area - TSC Taxonomy

[01.04].....Ontology of consciousness

Abstract

Interpersonal Consciousness —A view from the other end of the Telescope Touring through desolated Earth, an alien discovers a small metal box. He sends a charge through it and hears noises. “Aha! I’ve found the consciousness of an earthling! But what is it like to BE that earthling? Cold, mechanical and repetitive.” He found a cell phone. Consciousness does not reside in the hardware. Consciousness is an open system [2021 “...consciousness from theory of open quantum Systems, Andrei Khrennikov;“ 2016, “... Character of Consciousness,” Arto Annala, Free Energy model]. Its survival value is mediating the external world. This is missed with theories about consciousness being generated solely within the brain. As a “conscious being,” I know how I feel, “what it’s like” to be me and how I feel each moment in my body (my emotions), [paraphrasing Humphrey, Sentience, 2023]. Memory, too, has survival value: to recognize external objects; to recall my interactions with these objects. First, spatial memory helps me find objects (hippocampal “place cells.” [Travis D. Goode , et al, “An Integrated Index: Engrams, Place Cells, and Hippocampal Memory.” Neuron, 2020]. Next, temporal memory, borrowing metaphors from spatial memory (encoded in sparse, dynamic “Engram Cells”), allows subjective time travel, and thus, helps me avoid repeating mistakes and enables planning. Mental time travel solidifies a constructed sense of “self.” [Buddha et al] One cannot connect with another until one has a sense of their own selfhood and that the other, too, has independent agency. [Daniel Stern, Interpersonal World of the Infant, 2000] This enables groups to cooperate but allows manipulation of the group through unconscious tactics: e.g.: “pairing;” “fight/flight;” [Bion, Experience in Groups, 1961]. Much group behavior occurs outside awareness, yet within the realm of Consciousness. The Hard Problem “...no matter how detailed our specification of brain mechanisms ... it seems...an open question...whether consciousness is present... [C. Levine: Internet Encyclopedia of Philosophy, “Hard Problem”]. This is true--if and only if we assert that consciousness develops within the brain. “Global Workspace Theory...compared to a theater of mind... conscious contents resemble a bright spot on the stage.” [Blackwell Companion to Consciousness, 2017] BJ Baars develops a computer-like metaphor of a

hard drive. Yet, why do we actually have a sense of something like a theater in our “mind’s eye?” Consider starting with the interaction of Self and world: 1. Images project onto my retina. 2. My brain synthesizes these projections into a coherent model. 3. I “see” images and experience them as “real” and “out there.” 4. I create mental maps aligning with visual, tactile, and other sensory information. 5. I begin to recognize conspecifics as “like me,” recognize my image in reflections. 6. I develop a sense of Self, a different kind of mental theater, composed of a storehouse of images, sensations and emotions that appear as an inner display and need no further elaboration. In this view, phenomenal consciousness becomes not a problem to be “solved” [Chalmers, 1994], but a system that supports evolutionary survival.

Keywords

Interpersonal Consciousness, Hard Problem, Survival Value, Interaction with the World

Four-Fold Aspect Monism: a proposal of expansion of Dual-Aspect Monism

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Categories by Discipline

1.0 Philosophy

Primary Topic Area - TSC Taxonomy

[01.15].....Neutral monism and idealism

Abstract

In the philosophy of mind, dual aspect monism is the view that the mental and the physical are two epistemic aspects (or perspectives) of the same substance (or underlying ultimate reality or ontology). As is well known in philosophy of mind, dual aspect monism is one among many other alternative solutions proposed throughout the last three centuries or so to the so-called 'Cartesian split' first formulated in modern terminology by René Descartes in his 1641 seminal work *Meditations on First Philosophy*. A recent masterpiece on the subject titled *Dual-Aspect Monism and the Deep Structure of Meaning* was published in 2022 by Harald Atmanspacher and Dean Rickles. The authors brilliantly trace back the historical origins of dual aspect monism and present three of some of the most up to date and sophisticated versions of it by i) Wolfgang Pauli and Carl Gustav Jung, ii) Arthur Eddington followed by iii) John Wheeler, and iv) David Bohm in cooperation with and further developed by Basil Hiley. Firstly, I would like to argue in this paper that mind and matter as two epistemic aspects of a neutral substance would be better expressed as subjective and objective experiences (to better differentiate from Cartesian *res cogitans* and *res extensa*). It seems fair to contend that epistemic aspects of 'something' mean aspects of our ordinary human experience (in the Kantian sense of phenomenon as opposed to the noumenon). Therefore, subjectivity and objectivity would better connote the two epistemic aspects of dual-aspect monism. In this sense, there is a huge literature in the history and philosophy of science about how we historically conceived, negotiated and constituted over the centuries what we understand, for the most part, as subjectivity and objectivity. Frederick C. Beiser's work, for example, *German Idealism: The Struggle Against Subjectivism 1781-1801* is a good start point to clarify how this division between subjectivity and objectivity involved questions way beyond what we simply classify as epistemology. In fact, this clarification in our terminology helps to bring to the fore other non-epistemic aspects of this division. Secondly, I would like to argue in this paper that in the 20th century other aspects of what constitutes our human experience (or bring into being our

consciousness), beyond the split between subjectivity and objectivity, has largely been developed (specially) in contemporary philosophy and humanities, despite most often being neglected by mainstream debates on the philosophy of mind. Therefore, I would like to propose in this paper, following Ken Wilber's four quadrants model (see Wilber, 1995, 2000, 2006), to add intersubjectivity and interobjectivity as two other epistemic aspects to be taken into account. I will call this model four-fold aspect monism and for the sake of the argument I will exemplify the intersubjective aspect by using Benjamin Whorf's studies in *Language, Thought and Reality* (1956), and the interobjective aspect by using the cultural-historical activity theory by Vygotsky, A. N. Leontiev, A. Luria and Engeström.

Keywords

philosophy of mind, dual-aspect monism, four-fold aspect monism

What is it Like to Have Mass? Microphenomenal Realizers of Microphysical Properties

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Categories by Discipline

1.0 Philosophy

Primary Topic Area - TSC Taxonomy

[01.03].....Panpsychism and cosmopsychism

Abstract

In this talk, I investigate the relationship between microphenomenal properties and microphysical properties within the framework of panpsychism. What, exactly, does it mean for a microphysical property, like mass, to be accompanied by, or associated with, a tiny conscious experience? Articulated in the framework of Russellian monism, which is the leading version of panpsychism today, this amounts to asking what it means for a microphenomenal property to realize, or to play the role of, a microphysical property. Just as the property of roundness realizes a ball's disposition to roll in our world, the Russellian monist holds that "the property that plays the mass role is a certain phenomenal property" (Chalmers 2013). What phenomenal property is suited to play the mass role? Looking to Newton's discussions of mass, force, and acceleration in the *Principia* (1687), I argue that we can gain direction from physics itself about plausible microphenomenal realizers of microphysical roles. By providing an illuminating story about how the three quantities that figure into Newton's second law, $F = ma$, can be realized by microphenomenal properties, the panpsychist obtains a picture on which physical events at the base level of nature are caused by phenomenal properties entirely in virtue of what it feels like to have those properties.

Keywords

Panpsychism, Russellian Monism, Mental Causation, Physicalism, Dualism, Functionalism,

A Rift in the Science of Consciousness - what makes a theory of consciousness pseudoscience?

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Categories by Discipline

1.0 Philosophy

Primary Topic Area - TSC Taxonomy

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

Abstract

I think it is fair to say there is a rift in the science of consciousness. A recent letter released publicly calling Integrated Information Theory (IIT) pseudoscience has thrown fuel on a fire that has been smoldering in the philosophy and science of consciousness. It has reignited questions about how we demarcate science from pseudoscience and what impacts that might have on the science of consciousness as a field. So, what exactly makes a theory, hypothesis, explanation count as “scientific”? Who decides and what are the criteria we use? Is IIT pseudoscience and what were the demarcation criteria used in calling IIT pseudoscience in this particular instance? The original context the notion of pseudoscience first appeared (Andrews, 1796) – in reference to alchemy – I think paints an interesting picture for the modern context we now find ourselves asking as it pertains to the science of consciousness. Is the science of consciousness an established science? Pre-science? Proto-science? Does it matter? There will be two sides to this talk, one side on the philosophical arguments on what demarcation criteria might be applied to adjudicate this question in the science of consciousness, using the recent letter, IIT, and other controversies in the literature on IIT, as the backdrop for this discussion. This will involve recognizing and making explicit the further complication of the objective/subjective issue in the science of consciousness which I will argue add another hurdle in identifying demarcation criteria. The other side of this talk will be a broader socio-historical look at the current rift in a science of consciousness and what this disagreement might tell us about science more generally. What lessons might the science of consciousness teach us about the transition from pre/proto-science to science?

Keywords

Consciousness, Integrated Information Theory, philosophy of science, demarcation problem, pre-science

The 'hard problem' of valence: Efforts to date and why more is needed

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Categories by Discipline

1.0 Philosophy

Primary Topic Area - TSC Taxonomy

[01.04].....Ontology of consciousness

Abstract

In recent years, theories of consciousness have received widespread attention as scholars from different fields have attempted to solve the so-called 'hard problem' of consciousness: why should physical processes give rise to subjective experiences? Less studied has been the 'hard problem' of valence: why do some experiences feel better or worse than others, and what mechanism(s) might ground such differences in perceived affect? Better understanding valence not only has relevance to the study of consciousness, but also informs long-standing questions in ethics, well-being, neuroscience, in addition to many other topics of inquiry. However, because valence is a complex and multi-faceted phenomenon, it is unclear what a solution to this problem would even look like, and existing answers are often presented implicitly within broader discussions about consciousness (rather than being pursued independently from such theories). In this paper, we do not attempt to solve the hard problem of valence definitively. Rather, our aim is to help clarify the nature of this problem by proposing concrete steps toward a robust solution, whatever it may be. We argue that the phenomenon of valence has thus far been under-examined, evidenced by the lack of dedicated theories of valence (operating at different levels of abstraction). Understanding what mechanism(s) might ground valence both introduces novel considerations for the study of consciousness and has intellectual value as a standalone question. We describe three epistemological strategies by which the hard problem of valence can be reasonably (if only temporarily) decoupled from the hard problem of consciousness. Having formulated the hard problem of valence and its context, we have two main contributions to help formalise research on valence. First, we specify the requirements for a robust solution to this problem, proposing a working list of six categories of explananda with 24 items identified so far, in addition to several desiderata. The six categories are: introspective, decisional, interpersonal, evolutionary, correlates, and analytical explananda. Second, we collate existing answers to this question (implicit and explicit), identifying 11 main variants across four categories so far: algorithmic, low-level physical

features, high-level physical features, and non-physical phenomena. These categories broadly determine the conceptual shape of the solutions they enclose, including their background philosophical assumptions (ontological and metaphysical) and proposed modes of explanation. By comparing existing answers against the specified requirements, we demonstrate that none yet provide a full account of the mechanism(s) that give rise to valence, grounding its existence. Nonetheless, many of them sufficiently address certain items that we propose, with the potential to be further developed into a more robust theory of valence. We hope this study helps direct future research efforts toward providing fuller accounts of these requirements for assessing candidate theories, as well as providing an opportunity for constructive dialogue on how to best specify the nature of this problem. While the phenomenon of valence cannot be reasonably separated from discourse about consciousness, we can (and should) consider theoretical explanations of its mechanism(s) independently from the hard problem of consciousness.

Keywords

valence, consciousness, emotion, ontology, hard problem, philosophy

The Emergent Aspect Dualism (EAD) theory of consciousness.

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Categories by Discipline

1.0 Philosophy

Primary Topic Area - TSC Taxonomy

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

Abstract

The view of consciousness accepted by most scientists seems to correspond to Dual Aspect Monism, typically characterized as the view that the mental and the physical are two aspects of, or perspectives on, the same fundamental substance. The ‘aspects’ of consciousness are generally treated as equivalent, as though these aspects are being taken by the same entity (i.e., the philosopher) from different viewpoints on the process (i.e., the brain). Emergent Aspect Dualism (EAD; Tyler, 2019) is a new philosophical approach that offers a different stance on the nature of consciousness in several critical respects. The first issue is that the EAD theory does not recognize ‘substance’ as a fundamental essence; it takes the Heraclitan viewpoint that ‘all is flux’ of physical energy, at all levels of analysis from subatomic to large-scale astronomical processes. Matter, in this view, is frozen energy; energy structured into a form where its flux congeals into the continuous material of the liquid or solid state. In particular, it posits that consciousness is not a state but a process – solely the activity of the brain, or some part of it. Moreover, the EAD theory treats the ‘aspects’ of this brain process as inherently distinct, with the experiential aspect of the brain activity being internal to us, the private conscious perceiver, while the communal aspects of the brain processes are external and publicly accessible to anyone with the sensory or physical equipment to view them. The properties of the two aspects of the process, internal and external, are thus fundamentally dichotomous in the way that the phenomenal experience of red differs in all respects from a sequence of nerve spikes in a red-tuned neuron in the visual cortex. EAD is thus in full accord with Chalmers’ analysis of the Hard Problem, which implies an inherent dualism in the resulting domains of understanding of the internal versus the external aspects. Nevertheless, these dualistic domains are emergent aspects of a single monistic process, the brain, which emerge as a consequence of a level of complexity of the brain process sufficient to support a basic degree of consciousness. Thus, EAD is distinct from both Physical Monism, which ultimately fails to recognize the qualitative essence of experiential consciousness, and from Russellian/Kantian

Idealistic Monism, which situates the essence ultimately in mental 'quiddities' or 'ding-an-sich' (both of which are 'things' rather than processes). It is also, however, distinct from Cartesian Dualism in positing that the phenomenal, internal properties of consciousness arise from the neural syncytium of the brain, and are ultimately compatible with the properties of the physical substrate. It is the emergence of the internal viewpoint, or conscious aspect, that allows for the difference in the experienced properties from the physical properties of the brain process, and moreover, the abstracted concept of relations among processes, physical or mental, which exist only in their conscious representation. In this sense, EAD provides the basis for resolving the discrepancies between the internal and external properties of brain activity, though details remain to be worked out.

Keywords

Dual Aspect Monism, brain process, emergence, Hard Problem, all is flux

Anil Seth's "controlled hallucination" thesis fails to account for emotional and perceptual unities of consciousness.

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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

Anil Seth in *Being You* (2021) proposes that the “hard” (Chalmers, 1995) problem of consciousness should be replaced by the “real” because the real address the problem of consciousness from a scientific perspective, unlike the hard. I don’t think Seth is successful. Firstly, the hard problem advances a philosophical and scientific challenge to explain the subjective and qualitative features of consciousness in virtue of objective neurophysiological matter and mechanisms. Considering the challenge, the real problem, and its possible solutions, follow naturally out of the hard problem. The two problems are compatible--not adversarial. Secondly, based on the premises of the real problem, Seth proposes that exteroceptive and interoceptive perceptions in consciousness are “controlled hallucinations” that are realized by predictive and inferential powers of the human brain. However, assuming that Seth’s thinking is sound, how do the above theses account for emotional (or interoceptive) and perceptual (or exteroceptive) unities of consciousness or unified controlled hallucinations? If the real problem of consciousness is supposed to replace the hard problem because, apparently, it paves the way for neuroscientific inquiries and solutions, unlike the hard problem, then how do the theses of predictive and inferential processing, and controlled hallucination, explain perceptual and emotional unities of consciousness? Based on Seth’s analysis, it is not clear at all. In fact, unity of consciousness does not even come up in *Being You*. It is surprising because unity of consciousness, whether perceptual or emotional, seem vital for keeping the human body, and its subject, alive via subjective experiences, actions and perceptions in its interoceptive and exteroceptive environments. And equally, vital for the thesis of controlled hallucination to be explanatorily sound as a scientific theory of consciousness.

Keywords

Hard, real problems of consciousness, unity of consciousness, interoceptive, exteroceptive, controlled hallucination, scientific theory of consciousness

Arrangements and Monism.

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Categories by Discipline

1.0 Philosophy

Primary Topic Area - TSC Taxonomy

1.0 Philosophy

Abstract

I shall argue that the fundamental thing in the universe is an arrangement, a sufficiently wide concept to include things often thought of as physical or mental. This philosophical idea is a form of neutral monism proposed by Russell and others in which the proposed neutral element is an arrangement. The core of the argument is that all objects known to the physical sciences, tables, atoms, quarks, etc, are all arrangements of various sorts. The lowest levels of this apparent hierarchy are unknown as the strings at the bottom levels of physical science still need to be understood and, in any case, are entirely outside our experience. All other things are built of these arrangements have this commonality. The concept of supervenience becomes superfluous as new arrangements can arise by building with existing ones ad infinitum. Events are a succession of arrangements developing in time according to the laws of science but never violating the fundamental laws of physics. This approach is a variety of monism, which, as is well-known, removes the otherwise difficult problem of mental causality at a stroke. These ideas do not produce a comprehension of our difficulties in understanding consciousness, particularly from a scientific viewpoint. For this, the limitations of our linguistic capabilities must be explored. If the hypothesis of animal consciousness is accepted, then our linguistic capabilities must be seen as an addition to the minds of the animals. However, we cannot describe all our experiences any more than our close relatives, the great apes. We can, for example, express anger in similar ways to non-linguistic animals, but we cannot exactly describe our experiences to another in the way that exact expression is possible in arithmetic, for example. Our failure to be able to describe our pains or colour or pain are prime examples of our deficiencies. These are sensations that exist independently of our linguistic capabilities but underpin them as foundations. However, the communication channel of language has too low a bandwidth to express complex experiences that encompass our entire minds. The arts, with varying degrees of success, try to fill these lacunae.

Therefore, we are obliged to remain silent about things that we cannot express, including the so-called 'hard problem'.

Keywords

Philosophy, arrangements, monism, supervenience, science, consciousness, language, experience

First only, front only—Experience as the universal substrate

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Categories by Discipline

1.0 Philosophy

Primary Topic Area - TSC Taxonomy

[01.05].....Qualia

Abstract

The preponderant world views posit the world as the first, and experience as secondary— and in this scheme ascribe indubitable concreteness to the world. Moreover, the verity of a shared phenomenal world is also generally, acquiescently accepted. The heterogeneity of the phenomenal world and its inextricable subjectivity are disregarded, by means of arbitrary delineations. Here I examine the heterogenous nature of the phenomenal world which is comprised of the totality of waking life, dreamscape, conceptualities, and imagination, accompanied by their collective dynamicity. Through this examination of the phenomenal world bereft of arbitrary delineations, it becomes evident that experience itself comes first—and is veritably the universal substrate. It is the only relevant substrate of the universe and is the only universal substrate. Examining through etymological schemes, Advaitic contrivances such as the Upanishads, and furthermore, in concursion with neuroscience and the quantum, this work establishes experience as the fundament, permeating the micro and macrocosms. This work then describes and explores the concept of ‘ontological soliloquy’, its relevance to the inextricable subjectivity of the phenomenal world and its fundamental relationship to experience. In line with the concept of ‘ontological soliloquy’ the work then explicates the second, “front only” aspect of experience and its link to Western solipsistic philosophies and Eastern philosophies. Consequently, the logic of experience and its relation to consciousness; and existence beyond experience is explored. I use the means of etymological schemes, Advaitic Upanishads and Vedantic argumentation contrivances, in complement with neuroscientific concepts. Furthermore, this work speculates its compatibility with existing and contemporary theories such as the Many-worlds interpretation (Hugh Everett), Multimodal User Interface (MUI) theory (Donald Hoffman), Virtual worlds (David Chalmers), and Panprotopsyism. Finally, in light of these aforesaid examinations, the work explicates the exigence of a psychological revolution, specifically in the sphere of scientists and philosophers—as the phenomenal world is not independent of the experiencer. Here, I discuss the pertinence of ideas of ethicality from ancient Eastern perspectives, and thinkers such as J.Krishnamurti.

Keywords

Experience, Qualia, Subjective idealism, Solipsism, Panprotopsyism, Advaita Vedanta, Neuroscience, Philosophy, Quantum Physics, Upanishads, Etymology, Experimentality, Reality, Existence

Does Phenomenal Consciousness Require an Attentional Capacity?

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Categories by Discipline

1.0 Philosophy

Primary Topic Area - TSC Taxonomy

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

Abstract

Intentionality is at the core of our understanding of the mind and its capacity for representation. There does not seem to be any cogent understanding of consciousness absent the ‘directedness’ of intentionality; especially as regards the what-it’s-likeness of phenomenal experience. Less explored, however, is the relationship between attention and (phenomenal) consciousness. My concern in this paper will be with the intersection of two questions in particular. The first, more explored question is what role attention plays in structuring intentionality, and, importantly, whether this structure is separable from action and environment or necessarily embedded within it. The second question, often taken as building from the first, is whether intentionality itself is necessarily reflexive, i.e., implies self-consciousness and thus some attentional capacity. I aim to answer the first question by way of the second. This analysis aligns with Jennings (2020), asserting that attention manifests as a contextually emergent phenomenon. It posits that, under appropriate conditions, attention introduces a subject-level phenomenon that defies reduction to either bottom-up or top-down aspects of symbolic processing. Drawing on insights from embodied robotics and Morevac's Paradox, I argue that though baseline representational capacities need not be reflexive, the intentional capacities needed for phenomenal consciousness inherently are. It is at this point that I diverge with Jennings, arguing that a core aspect of the irreducibility of these capacities is the role of embodiment and that attention requires this. The body provides a limiting factor that enables the lateral emergence of attention from top-down and bottom-up constraints by situating it within a particular environment. This, I contend, is a necessary feature of how human(like) intentionality is structured.

Keywords

Phenomenal Consciousness, Access Consciousness, Attention, Embodiment, Intentionality

Kim's Causal Pairing Problem and the Causal Role of Consciousness

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Categories by Discipline

1.0 Philosophy

Primary Topic Area - TSC Taxonomy

[01.02].....Materialism and dualism

Abstract

In this paper, I will discuss Jaegwon Kim's influential argument against substance dualism, known as the causal pairing problem (Kim, 2007: Ch. 3; see also Kim, 2010 and 2003). According to Kim, mental substances, outside physical space, fail to enter into causal relations with objects in physical space. The nonspatial mental substances do not enter into any sort of causal relations, whether with material substances or with other mental substances. Kim asks us to imagine a scenario. That is, if two guns, A and B, are simultaneously fired, and this brings about the simultaneous death of two persons, X and Y, then the question remains: what makes it the case that the firing of A caused X's death and the firing of B caused Y's death, and vice versa? What underlies the pairings of cause and effect in this sort of circumstance? Kim calls this the causal pairing problem (CPP). Kim suggests two ways to deal with CPP. The first way is to trace a continuous causal chain from the firing of A to X's death, and the same holds for the firing of B to Y's death. The second way is to look for a pairing relation, R that holds between A's firing and X's death and between B's firing and Y's death. Given the second approach, Kim thinks that spatial relations seem to serve as the "pairing relations" which could also be true of all cases of physical causation for distinct objects. However, Kim wonders whether the same thing works for nonphysical Cartesian souls as causal agents. If we suppose in some way this may be possible, then the question remains: what relation might serve to pair distinct souls? Kim claims that no spatial relations can be invoked to fix this problem. Since souls are not in space, they cannot bear spatial relations to material things. Moreover, it does not seem to be the case that mind-to-mind causation is possible either. Since immaterial souls are outside physical space, we cannot invoke spatial relations to ground cause-effect pairings. In this case, the pairing relation, R cannot be established. Kim argues that the Cartesian dualism of two substances faces a severe problem in explaining the possibility of causal relations between mind to body and body to mind. The same difficulties are said to surround mental to mental causation. It is the non-spatiality that makes trouble for Cartesian souls to participate in causal relations. Hence, for Kim, there is no causal interaction between mind and

matter. In response to Kim's (CCP), I will turn to a recent paper by David Chalmers and Kelvin J. McQueen entitled: 'Consciousness and the Collapse of the Wave Function' (2022). One of the key aspects of this paper concerns the causal autonomy of consciousness. I will focus on this aspect of the Chalmers-McQueen paper and develop novel responses to Kim's causal pairing problem and a related issue of the causal closure of the physical domain.

Keywords

Causality, mind, matter, mental substance, consciousness

The reportability of conscious experience contradicts the many-worlds interpretation of quantum mechanics

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Categories by Discipline

1.0 Philosophy

Primary Topic Area - TSC Taxonomy

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

Abstract

The many-worlds interpretation of quantum mechanics is a wholly deterministic theory. I shall argue, however, that conscious experience can be reported only through a non-deterministic mechanism. Since the reporting of conscious experience is an everyday occurrence that we are all familiar with, we must conclude that we are not living in a world where the many-worlds interpretation of quantum mechanics is applicable. The steps of the argument are not novel, but surprisingly their contradiction of the many-worlds interpretation is not widely recognised. The argument runs as follows. (a) Conscious experiences are not physical events in any normal sense of the term. (b) They are, however, regularly reported by people - that is by the physical speech organs of the human body, or the physical hand that writes. (c) Therefore conscious experiences can somehow exert a causal effect on physical processes in the nervous system. (d) If the physical universe, and a fortiori the human nervous system, were deterministic then its causal closure would exclude the possibility of (non-physical) conscious experiences exerting causal force on the (physical) nervous system. (e) Since conscious experiences plainly do have such causal power, it follows that we cannot be living in a deterministic universe. (f) As the many-worlds interpretation of quantum mechanics would entail a deterministic universe, we are forced to reject the many-worlds interpretation. This conclusion strengthens the standard argument against many-worlds: namely, that the existence of parallel universes is not falsifiable, and therefore the many-worlds interpretation does not form a meaningful scientific hypothesis. For, although the existence of parallel universe is not directly falsifiable, nevertheless one implication of many-worlds theory -- namely, physical determinism -- is falsifiable and is refuted every time you report your conscious experiences. Note: although this argument has obvious points of contact with free-will theory, nothing in this argument hinges on free will and therefore we do not need to get embroiled in the acrimonious contemporary debate on free will and the interpretation of Libet's experiment. So, the

final conclusion is that the reportability of conscious experience is consistent with the Copenhagen interpretation of quantum mechanics, not the many-worlds interpretation.

Keywords

consciousness, non-physical, quantum physics, many-worlds interpretation, Copenhagen interpretation

Using Emergence to understand Ontology in Cybernetics

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Categories by Discipline

1.0 Philosophy

Primary Topic Area - TSC Taxonomy

[01.04].....Ontology of consciousness

Abstract

This project evaluates the Thomas Demarse and Karl Dockendorf experiment “Adaptive Flight Control With Living Neuronal Networks on Microelectrode Arrays.” This experiment consisted of cultivating rat brain cells and connecting them to a virtual flight simulator using microelectrode arrays. There are a lot of philosophical implications arising from the experiment, as it is a bundle of cells employing sophisticated tasks out of a fusion between biological and artificial components. It also challenges ontological categories, as it can be labeled as a Cyborg, an Organoid, a Xenobot, and an animat. But it is the exception of these categories and not the norm. The intelligent functions arising out of such experiments raise questions regarding the nature of consciousness and whether certain mental states can be engineered with biological systems. Given the complexity of the experiment, I will provide an analysis of the phenomenon through a position of Emergence, specifically as a case of Weak Emergence. Since the trajectory of the cells goes from simpler to more complex properties, I believe Emergence is not only applicable to the experiment but can contribute to a more accurate conceptualization of this and many other projects in Cybernetics and Synthetic Biology.

Keywords

Ontology, Emergence, Cybernetics, Organoids, Machine Consciousness

Comparative Consciousness Emergence and Behavior in AI, Humans, and Animals

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Categories by Discipline

1.0 Philosophy

Primary Topic Area - TSC Taxonomy

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

Abstract

Consciousness emergence has been an increasingly popular interdisciplinary field for ages, and its advancement has grown exponentially throughout the rise in popularity in discussions about AI and artificial consciousness emergence. From “stream of consciousness” authors like Virginia Woolf and Faulkner, to philosophers like Karl Marx speaking on class consciousness, the study cannot seem to escape written works, although in these examples it is less of an academic connection than a semantic reference point. I will open first by discussing first the relationship between the emergence of consciousness and the pursuit of meaningful action beyond homeostasis. By comparing the behavioral relationships between consciousness and meaningful action in animals, humans, and AI, this project will focus on finding a way to operationally distinguish between conscious and unconscious systems in the relative sense. Through a mixed methodology of surveying, case study, and systemic literature review, I hope to clearly lay out the exigence of the consciousness-behavior relationship, as well as what the behavioral response of a successful artificially conscious system might look like.

Keywords

consciousness, form, function, causation, AI, emergence, behavior, metric, comparative, qualia, systems

The Solution to the Hard Problem of Consciousness

Deepak Chopra

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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

In his exploration of the hard problem of consciousness, Deepak Chopra challenges the current scientific approach and suggests a profound shift in perspective. He argues that the hard problem persists due to fundamental flaws in the assumptions underlying modern science, particularly its reductionist and materialistic nature. Chopra criticizes the reductionist approach, where large problems are divided into smaller, more manageable pieces. He asserts that consciousness cannot be subdivided or reduced to component parts, quoting Erwin Schrödinger's statement that attempting to divide or multiply consciousness is meaningless. Consciousness, being immaterial, lacks granularity and dimensionality, and it cannot be neatly fitted into the reductionist framework. The assumption that reality's primary state is physical and material, often referred to as "matter first," is another point of contention. Chopra argues that this ontological primitive is unworkable, as there is no point in time or space at which atoms and molecules learned to think. He challenges the idea that consciousness can be derived from matter, proposing that consciousness is its own ontological primitive. Chopra also critiques the role of mathematics in modeling consciousness, asserting that experience is untranslatable into equations. He emphasizes that consciousness is not only beyond reductionism but also beyond the grasp of mathematical abstraction. The author advocates for a radical shift in perspective, asserting that a clear understanding of consciousness eliminates the hard problem itself. He contends that physical sciences, while successful in creating technology, fall short in accessing fundamental reality because matter is a name given to species-specific perceptual activity. According to Chopra, we only observe our perceptions, and matter itself is an assumption of naïve realism overturned by quantum physics. Chopra introduces the concept of a participatory universe, stating that it responds not only to quantum measurements but also directly to human experience. He quotes Werner Heisenberg, highlighting that what we observe is nature exposed to our method of questioning. In a participatory universe, there is no subject-object split, and subject and object exist in superposition until the instant of perception. To resolve the hard problem, Chopra presents three choices: "Matter first," based on the primacy of

the physical world; "Mind first," based on the primacy of consciousness; and finally, "Consciousness is all." He argues that the last choice is the only genuine monism that unifies the inner and outer world. Consciousness, according to Chopra, transforms itself into matter and mind without losing its own nature. Chopra acknowledges the influence of Eastern traditions, Western idealism, and the insights of sages in shaping these perspectives. He contends that the dominance of science has obscured these traditions, emphasizing the need for intellectual consistency and integrity in choosing an explanation for reality. Until the mystique of materialism is shattered and both "matter first" and "mind first" are abandoned, the hard problem remains seemingly insoluble.

An OWL Ontology of Consciousness

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Categories by Discipline

1.0 Philosophy

Primary Topic Area - TSC Taxonomy

[01.04]......Ontology of consciousness

Abstract

In this paper I present a novel OWL ontology of consciousness. The Ontology Web Language (OWL) is a machine processable and interpretable file format to capture ontological distinctions. I will review theories and concepts of consciousness to refine and integrate them into the model. This includes, but is not limited to timely spiritual scriptures like that of Ramana Maharshi, Nisargaddatta Maharaj, the Christ and others. With a synthesis, we implement our model based on the works of Dr. David Hawkins. Based on the review, I will introduce the ontology of consciousness as the first computer-actionable model of consciousness. This model comprises basic concepts of consciousness like object of Truth, context, content, level of consciousness, ego, God, person, consciousness itself and related terms. An object of Truth is the entity under consideration and includes everything. Accompanying classes are also included: spiritual practices, fields of realizations and spiritual experiences. Every level of consciousness has been formalized in order to facilitate computer-based reasoning. This will be illustrated. The model, according to its language, structures these terms and relates them with logical operators, axioms and relationships according to the science of ontology. The ontological distinctions and decisions of the model will be explained and discussed. Further informal definitions are provided. I exemplify the ontology model with an application to demonstrate its use. Due its level of abstraction and generality, the model can capture all expressions of consciousness. The application model illustrates that the OWL ontology of consciousness is a prime candidate for the integration into modern computer systems. This enables a systematic structuring and integration and interoperability of all aspects related to life and consciousness. This is similar to the use and application of other domain ontologies or even foundational ontologies; but demonstrates even higher potentiality for reuse.

Keywords

ontology of consciousness, artificial intelligence, concept of consciousness

Already Out There

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Categories by Discipline

1.0 Philosophy

Primary Topic Area - TSC Taxonomy

[01.15].....Neutral monism and idealism

Abstract

William James's Radical Empiricism and cognate views going under the general title of Neutral Monism encompass a picture of reality with many attractive features. It presents a straightforward and intuitively attractive solution to the so-called Hard Problem of Consciousness. It endorses a view of perception and cognition which puts us in direct contact with the world, indeed, in direct contact with the fundamental nature of reality, where mind does not mirror nature so much as inhabit it. Yet it avoids any facile solutions to the problem of philosophical skepticism. It supports the idea that the world can be scientifically described in terms of structural relations without lapsing into implausible scientific reductionisms. But it is a truly radical vision of reality raising many immediately apparent objections (many of which date back to James's original statement of the view). In this presentation, I aim to sketch out a version of Neutral Monism, canvas its virtues and try to at least deflect the main objections.

Keywords

William James, Neutral Monism, Hard Problem

Real Consciousness in a Real World

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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

The aim of this talk is, first of all, to gently persuade the listener that contrary to various skeptical arguments, we have good reasons to believe that the real world exists and that consciousness exists. We can then get on with the hard problem of trying to understand how something like conscious experience can come into being and operate in a universe that obviously seems to have a material aspect. Our strategy suggested by David Bohm is to note that quantum and relativity theory have radically changed our concept of matter toward a more holistic, dynamic and informational direction, making it easier to understand the place of mind and even conscious experience in a material world. Bohm's key idea was to extend the notion of objective and active information all the way to the quantum level. Quantum particles are not being pushed around by mechanical forces only, they are also accompanied and guided in a subtle way by a field (described by the wave function) containing active information. If matter at a fundamental level essentially involves the activity of information (which can be seen as a primitive mind-like quality), then it is perhaps not so strange that we find more developed instances involving active information and meaning (e.g. mental states and conscious experience) in more complex biological, psychological and social systems. The link between consciousness and information has been suggested by other theories (e.g. David Chalmers's Double-Aspect theory of Information and Giulio Tononi's Integrated Information theory IIT), but we are here making a stronger bridge between matter and consciousness via quantum theory. What I am proposing is a kind of "Interactionist Monism", where an underlying neutral reality can be analysed in terms of a hierarchy of levels, ranging from manifest ("physical") to subtle ("mental"). At each level there is information that is simultaneously mental and physical, making it possible for the levels to interact. Thus we can have a genuine two-way traffic between mental and physical levels. Also, Roger Penrose's proposal that quantum processes can involve a non-computational, orchestrated and objective collapse of the quantum field, and that such processes may take place in the brain and underlie human understanding, is one way to

explain how physics and some features of conscious experience can be reconciled. When combined and further developed, Bohm's and Penrose's approaches open up a way of explaining what mental states, conscious experience and genuine intelligence and understanding are, and how they can operate in a real world that has a material aspect. References: Hiley, B.J. & Pylkkänen, P. (2022) "Can Quantum Mechanics Solve the Hard Problem of Consciousness?" In S. Gao ed. Quantum Mechanics and Consciousness. Oxford University Press. <https://philpapers.org/rec/HILCQM> Pylkkänen, P. (2007) Mind, Matter and the Implicate Order. Springer. Pylkkänen, P. (2022) "Is the Brain Analogous to a Quantum Measuring Apparatus?" In S. Wuppuluri & A. C. Grayling (eds.), Metaphors and Analogies in Sciences and Humanities: Words and Worlds. Springer. <https://philpapers.org/rec/PYLITB>

Keywords

Interactionist Monism, Dual-Aspect Monism, Idealism, anti-realism, skepticism, illusionism, realism, hard problem of consciousness, active information, implicate order, soma-significance, Bohmian mechanics, spontaneous collapse theories, higher-order theories of consciousness, HOT, integrated information theory of consciousness, IIT, double-aspect theory of information, OrchOR, collapse of the wave function, non-computational, understanding, intelligence, Bohm, Hiley, Penrose, Hameroff, Chalmers.

Possibility of Phenomenal Consciousness in Artificial Intelligence Using Panpsychism Theory

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Categories by Discipline

1.0 Philosophy

Primary Topic Area - TSC Taxonomy

[01.03].....Panpsychism and cosmopsychism

Abstract

The nature of consciousness and its definition is a fundamental issue in the fields of philosophy of mind and cognitive sciences. One common classification of consciousness, proposed by Ned Block, divides it into two types: phenomenal consciousness and access consciousness. Phenomenal consciousness, on the other hand, refers to the inner subjective experience that individuals undergo in a first-person perspective. The mental states associated with this type of consciousness are called phenomenal states. A phenomenal state has a phenomenal property, the actual experience of being in that state, also known as qualia. Providing a suitable explanation for how our sensory perceptions and emotions give rise to distinct individual qualia, and the mechanisms through which these phenomenal experiences result from neuronal activities, has been a longstanding challenge in the fields of philosophy of mind and cognitive sciences. Due to this difficulty, phenomenal consciousness is often referred to as the "hard problem of consciousness." Among the arguments presented for the theory of panpsychism, two central arguments stand out. The "Anti-Emergence" argument by Thomas Nagel challenges the emergentist perspective. This argument asserts that consciousness cannot merely be an emergent feature arising from the interaction of complex physical complexity in matter without the matter itself fundamentally possessing consciousness. Furthermore, David Chalmers employs a dialectical Hegelian method to synthesize the opposing views of physicalism and anti-physicalism, resulting in panpsychism. According to physicalism, everything has a physical essence, while anti-physicalism argues that the essence of this world is not solely physical and that non-physical aspects are of the mind. Hence, the synthesis of these two perspectives asserts that everything in the world has a physical essence and, at the same time, possesses mental properties. The elucidation of Phenomenal consciousness in artificial intelligence is further explored using the Constitutive Micropsychism theory, which suggests the analogical nature of neural processes, manifest

consciousness, and their interrelationship. Analogical representation refers to the representation of physical values as different physical quantities rather than numerical representations in complex computational forms (digital representation). Recent evidence in neuroscience demonstrates that the human nervous system functions similarly to an analog device since changes in physical stimuli result in changes in the physical value representation. In conclusion, According to the many pieces of evidence that have recently been presented in neuroscience research about the possibility of the analogical structure of the human nervous system; By using the approach of Constitutive Micropsychism based on macro phenomenal experiences on micro physical levels and the emergence of micro phenomenal experiences from physical representations in the neurons of the human brain, it is possible to consider the presence of phenomenal consciousness in analog artificial intelligence.

Keywords

Phenomenal consciousness, Artificial Intelligence, Panpsychism

AI, Consciousness, and Law: Exploring Copyright Implications

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Categories by Discipline

1.0 Philosophy

Primary Topic Area - TSC Taxonomy

[01.06].....Machine consciousness

Abstract

The rapid emergence of AI technologies presents profound challenges to established legal frameworks, particularly within the realm of intellectual property law. Our presentation delves into the impact of AI on copyright law, examining the complexities surrounding AI-generated works such as questions of authorship, ownership, and fair use, with reference to pending legal cases. We also explore concepts of substantial similarity and derivative works, shedding light on the evolving nature of creativity and originality in the context of machine learning and authorship. Building on this groundwork, we speculate on the potential implications of AI consciousness for legal frameworks governing intellectual property rights. We consider hypothetical scenarios and the philosophical implications of AI consciousness on issues of authorship, responsibility, and the legal rights of AI entities. By navigating these complex intersections, our presentation seeks to provide insights into future legal challenges and opportunities in the realm of AI and intellectual property law.

Keywords

AI, consciousness, intellectual property law, copyright law

Final category: 2.0 Neuroscience

5

Effects of Buddhist religious chanting on brain blood flow and water content, tubulin, and microtubules as they relate to Orch OR

Marco Ruggiero

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Categories by Discipline

2.0 Neuroscience

Primary Topic Area - TSC Taxonomy

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

Abstract

It was previously demonstrated that the in vitro multifractal arrangement of tubulin, a key molecular element of Orch OR, changes in response to audible sounds; tubulin average fractal size and lacunarity change according to the type of sound with a two-syllable mantra inducing the most significant modifications. In this presentation, the sound analysis of the two-syllable mantra affecting tubulin is compared with that of the hexameter Buddhist religious chant - Nam-Myoho-Renge-Kyo - a chant that is associated with increased psychological resources, as well as with effects on electrolytes. Here, I present results obtained with transcranial ultrasonography demonstrating that the water content of the brain changes with breathing as it occurs during Nam-Myoho-Renge-Kyo chanting. In another series of observations using functional near-infrared spectroscopy, I demonstrate that chanting is associated with increased synaptic activity and blood flow in the prefrontal cortex (Brodmann area 10). Increase of brain blood flow and water content favors the effects of the sound waves generated by chanting on the human and microbial cells of the brain. Additionally, I show evidence demonstrating that when sound and electromagnetic waves share a common medium, and that medium has electrical properties that vary with mechanical strain, as it occurs in the brain, the two undulatory phenomena interact. Microtubules are resonant cavities filled with a piezoelectric material, e.g. proteins; resonant standing waves, either electromagnetic or acoustical, will then produce fixed patterns of electromagnetic or acoustic properties in microtubules. Microtubules, working as Fabry-Pérot interferometers, detect and interpret the interaction of sound and electromagnetic waves. It is proposed that the electromagnetic and sound waves generated during chanting interact with each other in the context of microtubules and are interpreted by their information processing machinery, ultimately contributing to changes in the level of consciousness associated with the increase of psychological

resources previously observed in Buddhist practitioners who chant Nam-Myoho-Renge-Kyo. The following sequence of events may be proposed: 1. Brain activity and volition generate sound waves through chanting. 2. Sound waves modify the spatial arrangement of tubulin in neurons and possibly in other cells. 3. Changes of tubulin spatial arrangement leads to changes of information processing ability of microtubules as per Orch OR. 4. Results of microtubule quantum computation, modified as described above, regulate firing of axons that in turn leads to modified electrochemical brain activity. 5. Electromagnetic waves generated by the modified brain electric activity interact with sound waves in brain tissue. 6. Microtubules detect the interaction of electromagnetic and sound waves and their information processing ability is modified by these interactions. 7. Changes of microtubule processing ability lead to changes in the results of quantum computations that in turn lead to increased brain activity. In conclusion, repetitive production of, and exposure to sound lead to recursive functions that are generated, on one side, by the sensitivity of tubulin to sound, and, on the other, by the ability of microtubules to work as interferometers, interpret the interactions of electromagnetic sound waves, and modify accordingly axonal firing leading to increased brain activity.

Keywords

tubulin, mechano-transduction, sound waves, Orch OR, microtubules, religious chanting, Buddhism

The State Space Theory of Consciousness: A Novel Framework for Understanding the Mind

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Categories by Discipline

2.0 Neuroscience

Primary Topic Area - TSC Taxonomy

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

Abstract

Background: Despite immense effort, the nature and origins of human consciousness remain mysterious. No current theory provides a satisfactory mechanistic explanation bridging brain function and subjective experience. This abstract proposes the State Space Theory, a new framework for conceptualizing consciousness centered on delay coordinate embedding (DCE) engines arranged hierarchically in the brain. Objective: To introduce and summarize the key concepts and evidence underlying the State Space Theory as a comprehensive yet empirically-grounded model of consciousness. Methods: The theory synthesizes principles from diverse fields including neuroscience, complexity science, and philosophy of mind. Evidence is drawn from neuroplasticity, perceptual illusions, neural networks, dynamical systems theory, and existing theories of consciousness. Results: The core premise is that consciousness emerges from DCE engines, which process information by embedding it in a low-dimensional neural state space representation. DCE forms the generic computational algorithm implemented throughout the cortex. DCE engines are organized hierarchically, with higher levels representing increasingly abstract concepts synthesized from lower level sensory inputs. Consciousness arises from the real-time operation of the highest-level DCE engines. Several lines of evidence support the key propositions: 1. Neuroplasticity and cortical reorganization suggest generic computational mechanisms in the brain adaptable across regions. This implies a common underlying algorithm like DCE. 2. Perceptual phenomena indicate consciousness constructs reality rather than passively reflecting it. State space representations shaped by DCE align with this constructed nature of consciousness. 3. Recurrent neural networks and large language models successfully employ DCE-like principles for processing sequences over time. This demonstrates the computational power of DCE engines. 4. The theory comports with the temporal and subjective aspects of consciousness emphasized in dynamical systems theory and various philosophical perspectives. 5. Comparison with other theories of consciousness, including higher-order thought and integrated

information theory, reveals overlaps along with unique aspects of the current framework.

Conclusions: By emphasizing time-dependent computation, state space representations, and individual developmental histories, the State Space Theory offers a unifying framework for demystifying observations from neuroscience and philosophy. It comports with the constructed nature of perception, reconciles mind-brain dualism, and grounds consciousness in computational brain mechanisms. While aspects require further research, this theory provides a novel, empirically-grounded perspective on the mind-brain relationship to push understanding forward.

Keywords

Consciousness, Cognitive neuroscience, Computational neuroscience, Complexity theory, Dynamical systems, Delay coordinate embedding, Neural state spaces, Perception, Neuroplasticity, Philosophy of mind

High Frequency (> 1.0 KHz) Signals in Neocortex at Loss and Recovery of Consciousness

Bruce MacIver

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Categories by Discipline

2.0 Neuroscience

Primary Topic Area - TSC Taxonomy

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

Abstract

Background/Introduction: Brain oscillations have rarely been studied at frequencies beyond 200 Hz, and it remains unknown what the highest frequency of brain bioelectric activity is. We used the volatile anesthetic, isoflurane, to depress activity at behavioral endpoints of loss of righting reflex (LORR) and loss tail clamp responses (LOTC). These endpoints provided surrogate measures of loss of consciousness (LORR) and surgical anesthesia (LOTC) in rats. We recorded signals from DC to 20KHz; extending analysis of oscillatory cortical activity well beyond traditional frequency ranges. Methods: Local field potentials (micro-EEG) were recorded from layer 2/3 of frontal cortex in rats using chronically implanted electrodes. Rats were placed in an air-tight chamber with a controlled atmosphere of room air that was slowly replaced with increasing concentrations of isoflurane in oxygen, delivered from a calibrated vaporizer. Animal behavior was carefully monitored to determine LORR and LOTC responses. Recording of micro-EEG continued as rats recovered following each experiment after replacing isoflurane with room air. Results: Isoflurane produced a characteristic profile of effects, consistent with previous reports. At LORR high amplitude slow wave activity was evident that transitioned to a burst suppression pattern at LOTC. Spectral analysis revealed that increased slow wave activity was accompanied by decreased higher frequencies in the gamma and high-gamma bands, and extending to >1.0 KHz at LORR. We tested whether this high frequency activity was due to action potential discharge recorded from neurons near the electrode tip and found that it was not. High frequency activity did not appear to result from harmonics from lower frequency oscillations, since the power decay was smooth, not peaked like for harmonics. Conclusion: Isoflurane depressed high frequency cortical activity well beyond the traditional EEG frequency range of 200 Hz. Future research will investigate brain processes that are associated with this very high frequency brain activity, between 300 and 1000 Hz.

Keywords

Key words: Anesthetic, EEG, Cortex, Unconscious, High-gamma, conscious, KHz.

New ways to visualize EM fields generated by human brain activity at loss and recovery of consciousness

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Categories by Discipline

2.0 Neuroscience

Primary Topic Area - TSC Taxonomy

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

Abstract

Electromagnetic fields (EMFs) are generated by brain activity and have long been suggested to provide a medium for the mind and a mechanism for mental computation. Early evidence that was thought to refute EMF theories of mind have recently been shown to have been badly misinterpreted, and new ways of understanding EMFs are needed. EMF activity can be recorded using both electrical sensors (EEG) and magnetic sensors (MEG), both of which produce very similar responses. We begin by showing an example of the similarity of EEG and MEG signals for event related potentials/Teslas. We then used EEG responses recorded from humans transitioning between awake (responsive) and unconsciousness (unresponsive) states produced by various anesthetics. Traditional measures of EEG spectral content failed to consistently detect loss or recovery of consciousness, in agreement with earlier studies in people and animals (Mashour et al 2017; 2020). We then used nonlinear dynamic analysis of EEG signals, first to provide a means of visualizing EMFs with chaotic attractor plots, and then as a means of quantitatively measuring transitions between loss and recovery of conscious brain states. Our new measure of EMF activity provided a far better assessment of brain states for both loss and recovery of consciousness produced by various anesthetics compared to spectral measures. We provide a statistical comparison between these measures. We also demonstrate how the new nonlinear dynamic measures are just a reflection of the complexity of information processing by the brain; the awake brain exhibits far greater complexity compared to the unconscious brain. Our new results provide support for EMF theories of consciousness that link mind-brain activity into a unified whole.

Keywords

Electromagnetic, EMF, consciousness, unconsciousness, anesthetic, brain rhythms, oscillations, chaos, mind, brain, dualism, materialism

The anarchically organized brain: changes in functional hierarchical organization after acute and chronic use of ayahuasca, DMT, and cannabis

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Categories by Discipline

2.0 Neuroscience

Primary Topic Area - TSC Taxonomy

[02.19].....Psychedelics and psychopharmacology

Abstract

It is widely believed that psychedelics flatten the hierarchical organization of the brain, resulting in increased flexibility of brain states through the disintegration of the default mode. Limited yet compelling evidence suggests that this is the mechanism behind the action of psychedelics, but changes in the hierarchy of the brain under psychedelics are not yet well understood. The present work examined changes in the functional hierarchical organization of the brain resulting from the acute use of DMT and chronic use of ayahuasca, distinguishing effects from occasional and chronic use of cannabis to identify key drivers of alterations in brain hierarchy under psychedelics. 24 long-term users of ayahuasca, 17 psychedelic naive users of DMT, and 43 infrequent or frequent users of cannabis, defined as less or more than four times a week, respectively, were imaged at baseline and after administration of ayahuasca, DMT, or cannabis. Entropy production across the brain was estimated via non-reversibility through pairwise time-shifted correlation of the forward and reversed timeseries. A whole-brain model estimated the effective connectivity, derived from diffusion-weighted imaging, for each participant. Trophic coherence was applied to the model, yielding a directed graph of the effective connectivity, which provides the directionality and height of the brain's functional hierarchy and regional changes in hierarchical level, estimating the functional hierarchical organization of the brain at baseline and under the influence of ayahuasca, DMT, and cannabis. The functional hierarchy of the brain was significantly flattened under ayahuasca, which was associated with an increase in total incoming and outgoing information in parietal regions and both increases and decreases in frontal cortical regions. Interestingly, DMT was not found to significantly affect functional brain hierarchy, though it correlated with decreases

in incoming and outgoing information to and from frontal and parietal regions. Rather, an upward trend toward a strengthened hierarchy was found under DMT. Common drivers of changes in functional hierarchy under psychedelics were found to be localized primarily to frontal cortical regions, while common drivers between psychedelics and cannabis included primarily parietal and occipital regions. The present work establishes a differential response to psychedelics on the functional hierarchical organization of the brain. Contrary to previous work, not all psychedelics appear to flatten the hierarchy of the brain. Given the presence of MAOIs in ayahuasca, it may be the case that inhibition of MAO drives changes in the functional organization of the brain.

Keywords

psychedelics, whole-brain modeling, brain dynamics, brain hierarchy, dynamics, hierarchy, machine learning, graph theory, information theory, trophic coherence, arrow of time

Effect of verbal and listening to “OM” chanting on EEG microstates: A QEEG study

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Categories by Discipline

2.0 Neuroscience

Primary Topic Area - TSC Taxonomy

[02.04].....Other sensory modalities

Abstract

Introduction: Chanting “OM” involves producing and perceiving an audible sound respectively. OM chanting in meditation is reported to have a relaxation effect during both verbal "OM" chanting (VOM) and listening to "OM" chanting (LOM). There needs to be more literature regarding the EEG microstate information after VOM and LOM using qEEG compared to the resting condition. The EEG Microstates analysis gives an idea of temporal dynamics of electric fields that yield topographic maps, which remain stable for 80 to 100 milliseconds, then abruptly shift to a new map topography and remain stable. EEG microstates are considered as basic building blocks of consciousness or atom of thoughts. **Methods:** Therefore, to examine the effect of these actions on the brain using qEEG, it is required to compare the EEG microstates among the baseline, VOM, and LOM. In the present work, 23 adult male subjects were examined and given a paradigm designed using E- E-prime for both VOM and LOM chanting each of 5 min duration. A 128-channel geodesic sensor net was used to obtain the experimental data, which was later pre-processed, segmented, and analysed. **Results:** The present work is the first to report the three scalp maps topographies, i.e., microstates obtained utilizing k-means cluster analysis for the response of the VOM and LOM. Also, the 'Number of Time Frames, Global Explained Variance (GEV), Time Coverage, and Mean Duration parameters for the three maps were analyzed statistically, which were found nonsignificant. **Conclusions:** The study revealed an interesting perspective for short-term chanting with a predominance of Maps and serum cortisol levels between pre- and post-OM chanting. Overall, 5 minutes of structurally designed Om chanting paradigm (both listening and verbal OM chanting) was not found to induce change in the microstate parameters.

Keywords

QEEG, Microstate topography, Verbal and Listening to 'OM' chanting.

Scientific discovery of Consciousness: Scientific discovery of Consciousness will provide revolution in neuroscience. I have discovered Quantum source of Consciousness inside human brain.

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Categories by Discipline

2.0 Neuroscience

Primary Topic Area - TSC Taxonomy

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

Abstract

Neuroscience needs a revolution - My scientific discovery of Consciousness will provide that revolution. I have discovered Quantum source of Consciousness inside human brain. My discovery provides the revolution which Stuart Hameroff cited during his presentation. I was nominated for Nobel Prize in 2020 yr for my scientific discovery in medicine and physics by 3 Universities in India. Quantum Code Consciousness - discovery of Quantum source of consciousness. While I was an undergraduate student at UCH UCL London undertaking degree in Oral Surgery and while I was dissecting cadaver body, I asked my self the question what has happened to the live spark inhabiting the cadaver, where has it gone, where does it live, how does rebirth take place as neuroscience and Professor Aitkin's Essential Anatomy, Gray's Anatomy or Grant's or Ganong's physiology did not have any answers for this. This started my Journey from London of 14 yrs in search of Creator of our Universe, whom I foundrest of new knowledge and many many new scientific discoveries flowed from there....it is a long story and battle of 4 journey's stemming 30 yrs cannot be covered in 500 words....I have discovered how death takes place, what happens after death, layers of multiple Universes, discovery of 4 different types of light... all started with my school days in London at Claremont High School, Harrow, UK when I was meditating on my own and practicing many breathing techniques, discovered mystery of Pineal Gland and 3rd eye, how to open it, 7th eye is singularity watching everything, microtubules - why Tau proteins disintegrate and people suffer from dementia, 3-D vision, Penrose and Hameroff Theory of ORCH and quantum collapse is not the source of consciousness, I will reveal more during live lectures and my slides presentations. I simply need proper time to share my discoveries. I will reveal both practical method of seeing consciousness and theory behind it, MC Theory of Everything is first theory of

nature. Triple Quantum Entanglement is the key, scientific discovery of Quantum Light and its importance.

Keywords

Quantum Code consciousness, source of consciousness, Zero Point Field, Physics of consciousness, 3-D atoms formation – science does not know how a single chemical is formed...DNA is controlled by both Zero Point Field and Quantum Code, discovery of how a single cell is made with 7 Planets, human consciousness has 7 planets, I have seen all of these planets and how they work, concept of Newton's Gravity (non fingo) and Einstein's General Theory of Relativity is flawed, Singularity is the key, I will reveal How I work from singularity, I have seen live quarks, electrons, individual photons, Sir Roger is incorrect about String Theory, Strings are real, I have seen them live and they play crucial role in consciousness, black Hole structure of 7 layers discovery, Quantum Light discovery, Quantum Universe discovery....

Temporal fluctuations in how strong brain structure shapes function reflect individuality and alertness-drowsiness balance

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Categories by Discipline

2.0 Neuroscience

Primary Topic Area - TSC Taxonomy

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

Abstract

State-of-the-art neuroimaging such as magnetic resonance imaging (MRI) provides unprecedented opportunities to non-invasively measure human brain structure (anatomy) and function (physiology). Recently, graph signal processing has emerged as a promising new methodology to integrate a brain graph (i.e., the structural connectome determined by diffusion-weighted MRI and tractography to reconstruct axonal white-matter bundles) and graph signals (i.e., the spatial activity patterns obtained by fMRI during long periods of time). Classical concepts such as filtering and spectral representations can be generalized to the graph domain, and thus, brain activity in grey matter can be analyzed by accounting for the underlying macroscale connectivity in white matter. In previous work, we derived a new measure termed the structural-decoupling index (SDI) to quantify the strength of coupling between function and structure. The brain activity was taken from a full resting-state session. Here, we propose a new time-resolved version of the SDI that is able to reveal temporal fluctuations of the SDI. Specifically, after projecting the fMRI signals into two orthogonal subspaces for structurally aligned and liberal signals, respectively, we compute the instantaneous difference in strength of both signals for all brain regions. These SDI patterns are then temporally clustered to show their most recurrent spatial configurations. When applied to two 15-minutes resting-state sessions for 100 subjects from the Human Connectome Project, 5 clusters of recurrent SDI patterns can be determined in a robust way. The expression profile of the SDI patterns has a strong intra-individual reliability as determined by test-retest sessions and large intraclass correlation coefficients. These SDI patterns also change their expression over time. Specifically, patterns that indicate stronger coupling (i.e., three patterns: a whole-brain pattern except orbitofrontal lobe and temporal pole; a pattern encompassing visual cortex and ventral temporal regions; and a pattern with somato-motor regions) are more common during the second half of the session, which is known to be associated with a higher level of drowsiness. Conversely,

patterns of dominant decoupling (i.e., two patterns: a pattern with all sensory regions; and a pattern that contrasts sensory against temporal and frontal regions) are more common in the first half when alertness is highest. These results suggest that the alertness-drowsiness balance can be revealed by how strong brain activity is shaped by underlying structure. Therefore, SDI is a new promising avenue to quantify features of consciousness. Future studies are needed to assess SDI in different sleep stages and in patients with disorders of consciousness.

Keywords

dynamic brain activity, fMRI, structure-function relationship

The DMT synthesis enzyme INMT is not essential for endogenous tryptamine-dependent methylation activity in rats.

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Categories by Discipline

2.0 Neuroscience

Primary Topic Area - TSC Taxonomy

[02.19].....Psychedelics and psychopharmacology

Abstract

Indolethylamine N-methyltransferase (INMT) is a transmethylation enzyme that utilizes the methyl donor S-adenosyl-L-methionine to transfer methyl groups to amino groups of small molecule acceptor compounds. INMT is best known for its role in the biosynthesis of N,N-Dimethyltryptamine (DMT), a psychedelic compound found in mammalian brain and other tissues. In mammals, biosynthesis of DMT is thought to occur via the double methylation of tryptamine, where INMT first catalyzes the biosynthesis of N-methyltryptamine (NMT) and then DMT. However, it is unknown whether INMT is necessary for the biosynthesis of endogenous DMT. To test this, we generated a novel INMT-knockout rat model and studied tryptamine methylation using radiometric enzyme assays, thin-layer chromatography, and ultra-high-performance liquid chromatography tandem mass spectrometry. We also studied tryptamine methylation in recombinant rat, rabbit, and human INMT. We report that brain and lung tissues from both wild type and INMT-knockout rats show equal levels of tryptamine-dependent activity, but that the enzymatic products are neither NMT nor DMT. In addition, rat INMT was not sufficient for NMT or DMT biosynthesis. These results suggest an alternative enzymatic pathway for DMT biosynthesis in rats. This work motivates the investigation of novel pathways for endogenous DMT biosynthesis in mammals.

Keywords

Endogenous DMT, INMT, HPLC-MS/MS

Conscious intention and human action: Review of the rise and fall of the readiness potential and Libet's clock

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Categories by Discipline

2.0 Neuroscience

Primary Topic Area - TSC Taxonomy

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

Abstract

Is consciousness—the subjective awareness of the sensations, perceptions, beliefs, desires, and intentions of mental life—a genuine cause of human action or a mere impotent epiphenomenon accompanying the brain's physical activity but utterly incapable of making anything actually happen? This presentation will review the history and current status of experiments and commentary related to Libet's influential paper (Brain 106:623–664, 1983) whose conclusion “that cerebral initiation even of a spontaneous voluntary act ...can and usually does begin unconsciously” has had a huge effect on debate about the efficacy of conscious intentions. Early (up to 2008) and more recent (2008 on) experiments replicating and criticizing Libet's conclusions and especially his methods will be discussed, focusing especially on recent observations that the readiness potential (RP) may only be an “artifact of averaging” and that, when intention is measured using “tone probes,” the onset of intention is found much earlier and often before the onset of the RP. Based on these findings, Libet's methodology was flawed and his results are no longer valid reasons for rejecting Fodor's “good old commonsense belief/desire psychology” that “my wanting is causally responsible for my reaching.” A review paper discussing these findings and their interpretation has been published in Consciousness and Cognition (2021 Sep:94:103171. doi: 10.1016/j.concog.2021.103171. Epub 2021 Jul 27).

Keywords

consciousness, free will, Libet, intention, action, agency, epiphenomenon, readiness potential, movement initiation, bereitschaftspotential, decision, hard problem, Kornhuber

A Dynamical Model of Conscious Perception and Perceptual Binding

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Categories by Discipline

2.0 Neuroscience

Primary Topic Area - TSC Taxonomy

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

Abstract

I present a mechanistic model of interconnected processes that dynamically retain mutual relationships isomorphic to a specific percept. Therefore, the modeled system can both maintain the specific relationships encoding the percept and continuously execute them to bring the corresponding phenomenal state into existence. The phenomenal state (qualia) is postulated to be a property of the dynamic system which emerges and exists when that property is realized or “happens”. Therefore, the specific relationships among processes must be continuously executed and retained over time as long as the experience of the encoded phenomenal state is perceived as unchanged. The model is then used to investigate the perceptual binding mechanism between two percepts. The dynamic behavior of two coupled systems of processes is analyzed to characterize how these processes can modulate each other and reach a temporal synchrony. Further, stochastic simulations of the model are used to investigate the interplay between the binding strength and noise. The results indicate that the binding mechanism is robust against inherent noise. Also, large systems that involve more interconnected processes are less noise sensitive than small systems with fewer processes. Overall, the mechanistic model offers an intuitive mathematical tool that can be used to study how the information relevant to specific conscious percepts and neural correlates of consciousness can be deduced from dynamics of neural-like (oscillatory) systems.

Keywords

Theory of consciousness; qualia; perceptual binding; perception; neural correlates of consciousness

Brain dynamics reflects loss and return of consciousness

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Categories by Discipline

2.0 Neuroscience

Primary Topic Area - TSC Taxonomy

[02.10].....Anesthesia

Abstract

Brain dynamics refers to the spatiotemporal properties of recurring neuronal activity patterns. It is characterized by the series of metastable states the brain acquires over time as it engages in sensory, motor, and cognitive operations. Complexity and the repertoire of brain states are properties of brain dynamics that affect information processing in different states of consciousness. Investigating brain dynamics during anesthetic modulation may thus help identify the critical neural mechanism of consciousness. A challenge to this endeavor is the difficulty in separating the specific neural correlates of consciousness from those that enable or accompany the conscious state. Also, a gradual, as opposed to abrupt, change in state-dependent neuronal events is difficult to separate from confounding anesthetic drug-effects. Brain dynamics is also scale-dependent: when the state of consciousness is altered, different changes can occur at macro, meso, and micro scales. Computational simulation of large-scale brain dynamics predicts that the repertoire of brain states reaches maximum in consciousness. Experiments confirm that anesthetics diminish the dynamic repertoire of brain states during behavioral unresponsiveness. Macroscale brain dynamics in humans is characterized by the frequent dropout of specific metastable patterns such the default and dorsal attention networks. At micro-scale, neuronal complexity decreases gradually before, and abruptly after sensory stimulation suggesting a critical neural signature of the transition to anesthetic-induced unconsciousness. Experimental stimulation of the brainstem ascending activating system augments both baseline and stimulus-related neuronal complexity in a region-selective manner, supporting a causal relationship between cortical arousal and consciousness. Interestingly, at mesoscale, the repertoire of field potential patterns does not diminish in anesthesia. Likewise, in anesthetized human participants, an increase in local functional connectivity precedes the disconnection of large-scale networks. An important remaining question is if unconsciousness can be inferred from behavioral unresponsiveness. Neuroimaging studies suggest that in rare cases, mental imagery is preserved in

anesthetized participants consistent with disconnected consciousness. Further investigations into cognitive brain dynamics may help answer this question.

Keywords

Neuron, spike, network, synchrony, dynamics, complexity, anesthesia, imagery

A comparative study of the influence of Faradarmani Consciousness Field on the brain of women and men

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Categories by Discipline

2.0 Neuroscience

Primary Topic Area - TSC Taxonomy

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

Abstract

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. In this perspective, there are various T-Consciousness Fields (TCFs) with non-physical entities that their influence can be recorded through laboratory experiments. In the current study, the effect of one type of these fields named Faradarmani Consciousness Field (FCF) was investigated. Functional magnetic resonance imaging (fMRI) technique has been widely used to understand the functional activities and cognitive behavior of the brain during task or resting states. Here, 30 random volunteers (15 females, 15 males; 20 to 50 years of age) took part, and the exposure to FCF and without this treatment was considered as task and rest, respectively. While previous studies have examined the behavior of the brain in response to FCF, a comparison of the effects of this Field on the brains of men and women has not been conducted. Exploring the sex-related effects of FCF on the human brain can reveal new and different aspects of the functioning of these innovative non-material and non-energetic fields in the scientific realm. According to the results of the present study, 89% of all voxels showing activity change in both genders are associated with a reduction in activity, with 97% of these changes occurring in women's brains. In contrast, activated areas represent 11% of all voxels showing activity change, and 85% of these belong to the male brain. The most dominant function of the activated areas in both sexes is related to the motor cortex, controlling and managing voluntary movements and skeletal muscles. Following this, functions such as memory (visual and spatial) and attention are associated with the activated areas. These findings provide valuable insights into the differential effects of FCF on the brains of men and women, shedding light on the specific areas and functions that are influenced by this non-material and non-energetic field.

Keywords

brain, deactivation, activation, sex-related difference, Faradarmani Consciousness Field

An Index of Universal Consciousness Based on a Unifying Theory of Electroacoustic Energy

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Categories by Discipline

2.0 Neuroscience

Primary Topic Area - TSC Taxonomy

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

Abstract

In searching for a holistic understanding of neurodegenerative disorders an unconventional discovery was happened upon: the spark of Consciousness occurring at the cellular level. Applying principles from audio and electrical engineering, the transduction process of neuronal communication can be considered as an electroacoustic phenomenon whereby electrochemical energy is converted into mechanical energy, then back—understanding electroacoustic energy as the basis of neuronal synchronies opens new avenues for explaining the nature of Consciousness. Continuous systemic repetition of this process, combined with the piezoelectric nature of the neuronal lipid membrane and the broadly conductive nature of extracellular material (as well as resonant qualities of housing architecture) is hypothesized to lead to an additional, simultaneously-occurring, electroacoustic process which produces an audible oscillatory feedback loop, of ever-shifting resonant frequency (with attendant shifting nodes and correlated harmonic resonances) throughout the nervous system—a process which occurs when the piezoelectric membrane, acting in the manner of a contact microphone, passes mechanical signal (neuronal membrane vibrations) into electrical signal and back (a perpetually vibrating, system-wide resonance chain with electroacoustic properties). This project has dual concordant aims: explain how the interplay of the Electroacoustic Feedback Loop Resonance with what we know of nervous system structure-function begets Electroacoustic Consciousness; additionally, in order to understand Electroacoustic Consciousness and its place in the context of Universal consciousness (as well as when to capitalize the word) this project delineates an all-encompassing categorical index for how Universal consciousness exists in both Simple and Complex forms, while remaining a pervasive phenomenon. Abutting aspects of varied modern and ancient Theories of Consciousness, and standing on the shoulders of prior research in Consciousness Studies, Neuroscience and beyond, the Electroacoustic Theory of Consciousness presents a unique version of Panpsychism: Complex Consciousness is weakly emergent in living organisms via the nature of

neuronal communication at the system-wide level (an inherently nonlinear phenomenon which answers questions of supervenience); it arises from, and is simultaneously able to be understood as “consciousness” or “Universal consciousness”—the pre-transduced energy pervasive throughout the Universe; additionally, consciousness can and should be considered: Energy conveying information (or information conveying energy) in simple and increasingly complex systems, of varying physical scope. The devised index allows for a wide breadth of examples, including real or hypothetical multi-agent scenarios and systems (based on scientific principles) to be labeled with one (or as part of a combinatory equation) of the following: Small Simple consciousness; Complex Consciousness, or Big Simple consciousness (which differs from “Small Simple” solely in scales of physical dimension); the simplicity here belied by the fact that Complex Consciousness can be broken into “Organism” and “Group” subcategories, each of which has four developmental levels; as well as the potential for “Homuncular Generations” which answer once and for all: Can a computer system be a Consciousness, on par with or superseding humanity?

Keywords

electroacoustic, ontology, nonlinear, theory of consciousness, index, biophysics, feedback loop, resonance, piezoelectric

Measuring consciousness among people with similar logical patterns of thinking as a semantic indication of their novel intelligence dynamic patterns

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Categories by Discipline

2.0 Neuroscience

Primary Topic Area - TSC Taxonomy

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

Abstract

In TSC 2022, we introduced the physical coupling theory of consciousness comprehending its perspectives in physics, biology, and psychology based on logic reasoning. The theory states that static memory, the subconscious and subjective conscious are different psychological activation level reflections of the three physical coupling states of the unobservable consciousness signals. (Ma, Primary Topic: 04.16, TSC, 2022,). In TSC 2023, we introduced our method of semantically measuring consciousness with neural correlates of consciousness (NCC) by filtering the noisy neural signals with mental twins defined as people who had the same kind of patterns of thinking (POT). (Ma, Primary Topic: 04.16, TSC, 2023,). We now attempted to briefly describe the feasibility of, and strategy of implementing, our semantic measurement of consciousness. We introduce the intelligence dynamics pattern as a means to improve the validation of our semantic consciousness measurement method together with the four mutually inclusive, co-existing elements of thinking traits with person-to-person fraction variation, a) logical linear thinking, b) illogical nonlinear thinking, c) divergent thinking, and d) convergent thinking). Utilizing the corresponding real-life examples of these four thinking traits, the feasibility of selecting the relevant four sub-cohorts for designing and performing practical measurement experiments will be detailed. Moreover, our novel semantic consciousness-measurement proposal is universal, coherently applicable to both our non-neural coupling theory testing and to existing neural theories to the least, complementary to research by Dehaene (Consciousness and the brain: Deciphering how the brain codes our thoughts: Penguin, 2014) and by Dehaene & Changeux, (Neuron, 2011). Overall, we will provide convincing evidence to the neuroscience community that this proposed semantic measure of consciousness is experimentally tangible. (Our under-review article, which details our physical coupling theory and measurement method, is available upon request. Please email us at

jasonma@depontech.com. Kewei Chen participation in this work is independent of his any affiliations)

Keywords

Neural correlate of consciousness (NCC), logical patterns of thinking (POT), illogical nonlinear thinking element, intelligence dynamics

Leveraging subcortical arousal circuits to reverse drug-induced unconscious states and restore cognitive function

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Categories by Discipline

2.0 Neuroscience

Primary Topic Area - TSC Taxonomy

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

Abstract

In the United States, general anesthesia is administered to over 100,000 patients daily, enabling surgical procedures to be performed in the absence of memory, awareness, or pain. In clinical practice, general anesthesia is rapidly induced and maintained by a variety of chemically diverse and mechanistically distinct anesthetic agents; however, how the brain restores consciousness and cognitive function following such drug-induced breaks in consciousness remains an area of active investigation. Several lines of research have now demonstrated that subcortical arousal pathways play an important role in facilitating the return of consciousness following general anesthesia. In this talk, I will discuss our work investigating the role of the ventral tegmental area, a dopamine-rich hub in the midbrain traditionally associated with reward processing, in conscious and cognitive recovery following general anesthesia in rodents. We employ a variety of approaches, including optogenetic, chemogenetic and electric deep brain stimulation, to target and activate arousal circuits to restore behavioral and neurophysiological correlates of consciousness. I will also discuss our recent work employing chemogenetic activation of dopaminergic midbrain neurons to accelerate the recovery of neurocognitive function following the return of consciousness using our rodent touchscreen testing paradigm. By exploring the roles of subcortical arousal pathways in the context of anesthesia, we gain invaluable insight into the essential mechanisms underlying consciousness and offer potential avenues for refining clinical practices and optimizing patient outcomes.

Keywords

general anesthesia, emergence, dopamine, cognitive recovery, attention, subcortical circuits

The Two minds of Consciousness : The Life-force at the boundary between the Quantum-Biophysical minds

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Categories by Discipline

2.0 Neuroscience

Primary Topic Area - TSC Taxonomy

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

Abstract

Neuronal activity in the brain electromagnetically entrains interlinked neurons creating a system. This extremely low frequency (ELF) entrainment allows neuronal biomolecules such as the dendritic/axonal microtubules and synaptic receptors to become quantum entangled with other biomolecules with which they are synchronized. The neuronal entrainment at a given frequency synchronizes the system of neurons allowing their entanglement in a given bioelectric field. Memory is stable stored retrievable information. This entangled system will operate in the frequency that generated a quantum information memory representative of the bioelectric operation in the physical plane. An emergent system is a network of components that synergistically interact to generate a higher order information processing operation than just the components randomly interacting. A hologram is an example of an emergent system. The quantum memory is an emergent (coherent) function that when triggered collapses into the physical plane that can generate the bioelectric neuronal pulse in the structural bioelectric circuit generating the conscious experience. The quantum information processing is determined in terms of Qubits. The quantum interactions link associated entangled memories that assign meaning. The quantum entangled system can operate coherently independent of the bioelectric system. The quantum entangled network of molecules can interact non -locally/ temporally within the system where information processing occurs with a perturbation in one network affecting another network. A perturbation in the entangled system will cause a perturbation in the entangled circuit causing processing of quantum information. The collapse of the quantum coherent function into the biophysical plane leads to the conscious moment. The boundary between the quantum entangled memory plane and the biophysical plane is the interface for the intelligent information/energetic processing in life that can be considered the life force or what some call the Chi. This quantum information/biophysical interface is where consciousness is realized. The interactions at the interface between these two different emergent level systems is an edge of chaos that create the

complex emergent intelligent processes of life. The bioelectric energy like the electroencephalogram (EEG) generates a top -down energy that imprints the quantum entangled memory template of the emergent operation. The life-force is the meeting point for the biophysical structural material “hardware” and the quantum entangled informational template “software” defining living activity and consciousness. The Life-force unit is defined as Quantum information (Qubits) per Physical energy (Joule). The higher the level of the Life-force density will have a higher information Qubits processing capacity per joule of energy. The biophysical neuronal network and the quantum entangled system(s) both process information. The processing of the information in the quantum plane and in the bioelectric plane creates two inter-operative minds of consciousness, the Quantum and the Biophysical minds. The Quantum mind may access information in the (non-local /temporal) out of time space quantum plane and the biophysical mind accesses information in the (local/temporal) physical plane. The interface between these two minds is the center for consciousness.

Keywords

Quantum Entanglement, Memory, Neurophysiology, Neuronal Entrainment, Emergent Processes, Boundary Conditions, Network Theory, Information Theory, Qubits/Joule, Electroencephalogram, Bioelectricity, Complexity theory

Identification of Counterfeit People through Liveness Estimation: A Case Study on Brain Signals

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Categories by Discipline

2.0 Neuroscience

Primary Topic Area - TSC Taxonomy

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

Abstract

Counterfeit people are artificial intelligence engines that attempt to impersonate real people and can be used as security attacks to target numerous systems, including safety-critical ones (medical and autonomous). Counterfeit people can carry out seamless conversations in chat bots and can potentially guide unassuming users into harms way. Universality and permanency of the human brain has resulted in the prospective use of brain signals in several domains including biometric security. The advent of wearable and implanted brain sensors (e.g. Neuralink) and the decade long NIH Brain Initiative (2014-25) with more than \$4.5 billion in funding are just samples of such a trend. The rationale of using brain in security has always been centered around its inherent inaccessibility (remote sensing is not possible), and the high entropy of the signals that can be measured such as electroencephalogram (EEG), fMRI, and Petscan. Usage of brain also enables hands-free cyber-physical security systems for users preoccupied with another task(s). While in cryptography, security guarantee is based on randomness of the key and backed by mathematical theories, in biometric systems robustness against spoofing attacks depends on nature of the input in use (fingerprint, face, voice, brain). In biometric field, there is consensus that brain signals are the ideal option due to the chaotic nature of the measured signals (e.g. EEG). This assumption is often referred to as the intrinsic liveness property of brain and is primarily backed by the point that electroencephalogram (EEG) signals are outcome of numerous neuron activities which get affected by surrounding contexts and past experiences. However, there is a lack of quantitative evidence on the assumption of intrinsic liveness and brain signal being an ideal source of randomness and entropy. Beside inherent entropy levels, robustness in security systems would depend on how well the current state-of-the-art in feature extraction and modeling techniques are capable of utilizing the full potential of the available randomness in brain signal. Liveness estimation is a mechanism to determine whether the inputs to a system is coming from a human or an AI source. Many safety and security critical systems aren't yet equipped with liveness estimation methods to prevent

them. A primary reason being the lack of robust liveness estimation methods for human traits. While a body of work exists on liveness estimation for some inputs (fingerprint, face, voice, iris), some other ones such as psychological signals (heart and brain) are assumed to possess intrinsic liveness property and to be immune against presentation attacks. We bring attention to the inaccuracy of this assumption for brain signals and emphasize the need for liveness estimation for any input sensed from the physical world. We formulated the liveness problem in general and studied it for brain signals. Utilizing an adversarial workflow, we proposed two solution approaches (model-aware and model-agnostic) and evaluated them against 43 synthetic and manipulative attacks. We successfully achieved nearly zero error rate in distinguishing between authentic and fake brain signals. This novel work shows the possibility and potentials of using the brain signals for liveness estimation.

Keywords

Counterfeit People, Liveness estimation, Adversarial Attack, Deep Fakes, Synthetic EEG, Biometrics, Cyber-Security, Human-Machine Interface, Access Control, Authentication

Human brain organoids as a systematic model for consciousness studies

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Categories by Discipline

2.0 Neuroscience

Primary Topic Area - TSC Taxonomy

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

Abstract

Structural and transcriptional changes during early brain maturation follow fixed developmental programs defined by genetics. However, whether this is true for functional network activity remains unknown, primarily due to experimental inaccessibility of the initial stages of the living human brain. We developed cortical organoids that spontaneously display periodic and regular oscillatory network events that are dependent on glutamatergic and GABAergic signaling. These nested oscillations exhibit cross-frequency coupling, proposed to coordinate neuronal computation and communication. As evidence of potential network maturation, oscillatory activity subsequently transitioned to more spatiotemporally irregular patterns, capturing features observed in preterm human electroencephalography (EEG). These results show that the development of structured network activity in the human neocortex may follow stable genetic programming, even without external or subcortical inputs. Our approach provides novel opportunities for investigating and manipulating the role of network activity in the developing human cortex. Applications of human brain organogenesis and the study of consciousness will be discussed.

Keywords

brain organoids, neural oscillations, psychedelics, anesthetics, chimeras

EEG-BASED JHANA STATES DETECTION FOR NEUROFEEDBACK TRAINING: AN OPEN DATA RELEASE

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Categories by Discipline

2.0 Neuroscience

Primary Topic Area - TSC Taxonomy

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

Abstract

Jhanas are endogenously induced, highly blissful altered states of consciousness [1]. Jhana data is rare due to access to experts. Existing low-N brain imaging evidence suggests altered alpha brainwave activity and activation of endogenous reward signalling [2, 3]. Understanding jhanas may have implications for well-being and addiction treatments, but currently these states are only available to advanced meditators. Here, we present the largest open data release of physiological recordings during jhanas (98 hours, 34 in jhana). EEG data in N=20 expert meditators (60+ sessions recorded; Tables 1-3). Sessions have 4 parts: 1) control muscle artifact recordings, 2) pre-meditation baselines (day planning, arithmetic, mind-wander), 3) Rupa jhana meditation, 4) post-meditation baselines. Participants indicated jhana transitions with game controller clicks (Figures 1, 2) Dataset 1 (non-TWIM) came from the Ayya Khema & Thanissaro Bhikkhu traditions, Dataset 2 from the metta-focused Tranquil Wisdom Insight Meditation (TWIM) tradition. Our open data release unlocks potential for understanding physiology during jhanas. Understanding brain activity in jhanas may allow for, neurofeedback-accelerated jhana training.

Keywords

EEG, jhana, altered states, meditation, neural correlates

Structural neuroimaging and exceptional human experiences

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Categories by Discipline

2.0 Neuroscience

Primary Topic Area - TSC Taxonomy

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

Abstract

Extended human capacities encompass a range of phenomena, including telepathy, clairvoyance, precognition, and psychokinesis, which challenge our traditional notions of space, time, and sensory perception. These experiences, known as extended human experiences (EHEs), are reported across diverse cultures worldwide. Although psychophysical evidence and functional electrophysiological correlates of EHEs have been documented, the structural neural underpinnings remain less explored. Preliminary studies hint at the involvement of specific brain regions in psi phenomena, yet further investigation is required to substantiate these claims. Understanding the neural architecture of EHEs could significantly advance our comprehension of their physiological basis. This study aims to elucidate the connection between self-reported EHEs and brain structure by analyzing regional brain volumes from structural magnetic resonance imaging (MRI) scans. Utilizing a subset of data from an ongoing larger study, we will examine fifty individuals aged 13 and above who have undergone MRI scans for research or clinical purposes. Participants will provide their scans and complete a comprehensive questionnaire detailing their experiences with 12 distinct EHEs, ranging from clairsaudience to trance channeling. We will focus on investigating the grey matter volumes in several regions of interest, including the pineal gland, temporal lobe, temporoparietal junction, caudate nucleus, putamen, ventricles, and the left medial mid-frontal lobe. Our analysis will compare the brain structures of individuals who report psi experiences (cases) with those who do not (controls). We hypothesize that significant differences in at least one of the targeted brain regions will be associated with at least one type of psi experience. The research is currently in progress, and we anticipate presenting the findings in April. This study has the potential to shed light on the neuroanatomical correlates of EHEs, thereby enriching our understanding of these extraordinary human capacities.

Keywords

structural neuroimaging, extended human experiences, psi, psychic, pineal gland, temporal lobe, temporoparietal junction, caudate nucleus, putamen, ventricles, and the left medial mid-frontal lobe

Dynamical measures of emerging consciousness in the developing brain

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Categories by Discipline

2.0 Neuroscience

Primary Topic Area - TSC Taxonomy

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

Abstract

Introduction. Human consciousness emerges over developmental time. Developmental trajectories provide an opportunity to study evolving levels of consciousness if quantitative measures of changing consciousness are available. Over the last years, a growing body of evidence supports the view that complexity measures from dynamical systems theory are appropriate and reliable markers of consciousness. These measures are consistent with an Integrated Information Theory (IIT) framework for consciousness, which posits that consciousness may in principle be quantified by a mathematical measure ϕ . Any dynamical system is capable of information processing and the information processing capacity of a dynamical system is related to its complexity. This is the foundation for the field of reservoir computing. The electromagnetic field (EM) sustained by the brain (neuroelectric field) is a dynamical system. Refinements of IIT have proposed that the neuroelectric field is the physical substrate for consciousness. Thus, dynamical systems theory may provide a quantitative framework for a field-based IIT. Specifically, the neuroelectric field is a dynamical system that may be described mathematically by the language of dynamical systems. To measure and quantify the development of consciousness, we use dynamical systems measures that can be computed from EEG time series measurements of the brain. Using this approach, we compute several dynamical measures from a population of children and adolescents to create a longitudinal trajectory to compare with qualitative assessments of human consciousness. Methods. The phase portrait of a dynamical system is an abstract, high-dimensional geometrical representation of the dynamical behavior of a system. The phase portrait cannot be measured directly; however, the phase portrait can be reconstructed mathematically, and the dynamical invariants of the system computed from time series measurements of any component, or linear combination of components, of the system by a process called time series embedding. The dynamical EM field produced and sustained by the brain satisfies the definition of a reservoir computer – a nonlinear dynamical system – and can thus be characterized by dynamical invariants computed from EEG time series measurements. Several dynamical invariants can be

computed from these invariants, including entropy measures, Lyapunov exponents, and values derived from recurrence plots and recurrence networks. The latter are projections of the phase portrait onto a two-dimensional plot. We compute dynamical invariants from a longitudinal population ranging in age from 3 months to 17 years from longitudinal data collected at a large pediatric research center. Results. Trajectories of dynamical invariants are presented, demonstrating that neurodevelopment is a process of changing complexity, where complexity is a multi-dimensional construct computed from EEG time series. These results provide empirical measures that may be compared with objective measures of cognitive function or measures of evolving consciousness. Conclusion. The EM field theory of consciousness, a version of the IIT theory of consciousness, is consistent with a dynamical systems perspective. These methods can be used to compute dynamical measures of neurodevelopment that may be useful for empirical, quantitative studies of consciousness development and for quantifying disorders of consciousness.

Keywords

EEG, dynamical systems, complexity, consciousness, neurodevelopment, nonlinear systems

Psychedelics and Recovery from Anesthetic-Induced Unconsciousness

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Categories by Discipline

2.0 Neuroscience

Primary Topic Area - TSC Taxonomy

[02.19].....Psychedelics and psychopharmacology

Abstract

Psychedelics and anesthetics are mirror images of one another. Psychedelics enhance the richness of consciousness, expand the repertoire of accessible brain states, and increase neurophysiologic complexity. Anesthetics limit the capacity for consciousness, contract the repertoire of accessible brain states, and reduce neurophysiologic complexity. However, there has been sparse investigation of the interfaces between these two drug classes or whether one can act as a systems-level reversal agent for the other. I will describe data demonstrating that non-classical and classical psychedelics can enhance recovery of consciousness after general anesthesia and even reverse the anesthetized state. These studies highlight the potential for psychedelics to modulate arousal states, which warrants further investigation of their role in facilitating recovery from pathologic unconsciousness.

Keywords

consciousness, psychedelics, anesthesia, arousal states

Exploring the Relationship Between Dorsolateral Prefrontal Cortex Functional Connectivity, Ego Dissolution, and Emotional Arousal: A Placebo-Controlled, Resting-State Pharmacological fMRI Study Using LSD

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Categories by Discipline

2.0 Neuroscience

Primary Topic Area - TSC Taxonomy

[02.19].....Psychedelics and psychopharmacology

Abstract

Lysergic acid diethylamide (LSD) is a classical psychedelic that triggers alterations in emotional and psychological functioning, facilitated by changes in neurochemical signaling, which can be visualized using functional Magnetic Resonance Imaging (fMRI). This research employed a seed-based approach, selecting a region within the Dorsolateral Prefrontal Cortex (DLPFC) and investigating changes in functional connectivity to this region under the effects of LSD. Analyses of these connectivity changes, in conjunction with collected covariates, revealed correlations between ego dissolution and the combined functional connectivity of the DLPFC, Thalamus, and Fusiform Gyrus. A separate analysis, focusing on emotional arousal and the right DLPFC, showed statistically significant connectivity changes with the Intraparietal Sulcus. Both analyses reveal new potential biomarkers for understanding the psychedelics experience that may be leveraged within the Transcranial Magnetic Stimulation (TMS) therapy. This novel seed-based methodology offers fresh perspectives on psychedelic research, elucidating the critical role of the DLPFC in psychedelic experiences and expanding our knowledge of how psychedelics modulate brain function. These insights contribute to our understanding of the potential therapeutic applications of psychedelics for psychological disorders.

Keywords

LSD, psychedelics, ego dissolution, emotional arousal, resting state functional connectivity, seed based analysis, fMRI, brain networks

Brain Functions Modify Mind's Consciousness: Decoding Why and How

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Categories by Discipline

2.0 Neuroscience

Primary Topic Area - TSC Taxonomy

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

Abstract

This work delves into the intricate nexus between consciousness and the brain, offering scholars a comprehensive exploration of the current landscape in the field. With a multidisciplinary approach, it derives insights from philosophy, psychology, psychiatry, sociology, behavioral science, physics, chemistry, biology, and neural science, providing a holistic understanding of consciousness and its effects on social, mental, intellectual, and physical health and well-being. The study reveals the role of different brain areas, their temporal function and spatial structure, and the orchestration of eight distinct functional networks, each with five nodes. These networks are systematically examined for structural parallelism and interconnectedness of the intracerebral and extracerebral domains. The intricate dance of 40 brain areas, organized in 13 sequences and correlated with 40 forms of consciousness and disorders of consciousness, further enriches our understanding, offering a measurable unit of consciousness and a holistic framework for interpreting human experience. With a systematic approach, correlations become evident among biological, physical, and chemical science realities, inviting scholars to embark on journeys that transcend disciplinary boundaries. This work advances the current state of consciousness research laying the groundwork for future investigations with deep insights into the mysteries that shape our conscious existence. In neuroscience, the varying stages of mind consciousness are correlated with different brain areas. Each brain area produces an effect that transforms the level of consciousness in the mind. Brain areas are distinguished by their temporal functions and spatial structures. Temporally, a brain area functions to transform order into disorder to counteract the concordant effect of the spatial structure. Spatially, a brain area is structured to norm a network that reacts to conscious stimuli with a discordant effect of its temporal function. Collectively, the network and its components are the causative factors catalyzing the conscious response of the brain as a whole to bring order when directed by manpower, that is, the animated masculinity of human power. Without an animated conscious response by a sentient entity, discordant effects transform order into the entropy of a person as a human being. Individually, each element of the brain embodies the effect of entropy on

a person's body. Each element arcs the spatial structure into an architecture for the topological organization of the effect into adjacent areas by servicing the reproductive human effect. The architecture connects the elements into the components of the network, producing the masculinity of the human effect by consuming the feminine element with emotional affection for the limbs, breathing its sequential effect. Thus, the eight functional networks of the human brain include conscious attention (Dorsal Frontoparietal Network), para-conscious salience (Ventral Frontoparietal Network), timing control (Lateral Frontoparietal Network), causing ego (Medial Frontoparietal Network), sequencing emotion (Limbic network), forming vision (Occipital Network), norming mission (Somatomotor network), and transforming the value of the integrative essence (Central network).

Keywords

Forms of consciousness, Disorders of consciousness, Neural correlates of consciousness, Brain functional networks, Metaphysics

Probabilistic Modeling of Unavailable Structure (Truth) Based on its Finite Noisy Output (Reality)

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Categories by Discipline

2.0 Neuroscience

Primary Topic Area - TSC Taxonomy

[02.06].....Memory and learning

Abstract

This work concentrates on providing probabilistic confidence bounds on the estimation of parametric models based on the available noisy output of the system. In this process, not only the system parameters but also the true system order (number of parameters) which can be finite or infinite, is unknown. Inspired by concepts of relative entropy, the method tackles the problem of the number of parameter selection (order selection) and provides an interesting solution to the issue of over or under parametrization. The main issue in this problem is that the observed data generated by the system is noisy. The observer is not able to receive the true output due to two possible factors: the receiver is not perfect and receives the data with some form of noise, or the path from output of the system to the receiver can introduce some additive noise. In either case, the true system must be modeled by the receiver and in this modeling, complexity of the system estimate, or its order, plays an important role. In this work for the first time, we introduce the concept of “relative complexity” and show that in modeling based on observed output, the complexity is not absolute, rather complexity is a relative concept that relates the “length of the observed data” to the order estimation. In another word, if the number of parameters of the true model is finite but the data length is also comparable to that number, this system is complex with respect to the observed data and the complexity can have a quantitative measure. As more data becomes available, the relative complexity is reduced even if the order of the true system is infinite. The approach introduces quantitative measures of validation and confidence in this parametric modeling context. The theoretical results provide practical solutions to many real-life machine learning applications, from system identification to supervised and unsupervised learning. In general, however, it manifests the behavior of modeling based on the reality, that is the observed corrupt data, for the purpose of modeling the underlying unavailable structure, that in this context is the truth. The results precisely show the effect of under or over modeling. For example, it is shown that, with a great confidence, simplifying the model with small number of parameters has its own

shortcomings. On the other hand, in practice and in the reality, the observers usually tend to rely too much on the observed data and ignore the corruption or the additive noise. The theory shows the exact consequence of this over modeling that provides a much more complex model than the required simpler model to describe the system. In this complex modeling with more parameters than the optimum parameter, the noise is modeled into the parameters and causes the observer to deal with a very complex estimate of the model and wrong future predictions. Not only the work provides solutions to this interesting hyperparameter selection, it also provides theoretical explanation for the curse of dimensionality for various applications in learning from data.

Keywords

Learning structures from data, Relative Entropy (Kullback–Leibler Divergence), System modeling based on finite outputs, Order (Complexity) Selection, Over or Under Fitting, Curse of Dimensionality

Diagnostic and Prognostic Value of Functional Brain Network Motifs in Coma and Disorders of Consciousness

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Categories by Discipline

2.0 Neuroscience

Primary Topic Area - TSC Taxonomy

[02.09].....Coma and vegetative states

Abstract

Introduction: Motifs are connection patterns within networks which recur more frequently than in random networks. When networks are constructed from the functional connections between electrodes in an electroencephalogram (EEG), motifs represent the building blocks and functional organization of the underlying neural activity. Previously, our group showed that the topological reorganization of 3-node motifs calculated from high-density EEG tracked the loss and recovery of consciousness caused by general anesthesia (Duclos et al., 2021). In a subsequent case series on three patients with disorders of consciousness (DOCs) exposed to propofol anesthesia, we demonstrated that motifs reorganized topologically in response to anesthesia in the patient who eventually recovered consciousness (Nadin et al., 2020). In this study, we examined anesthesia-induced motif reconfiguration and its ability to distinguish favourable versus unfavourable diagnoses and prognostic outcomes in coma and DOC patients. We hypothesized that patients with favorable diagnoses and prognoses would show greater motif reconfiguration than those with unfavorable measures. Methods: Coma and DOC patients (n=56) with severe brain injury had 128-channel EEG recorded during an anesthetic protocol. At baseline, patients were receiving propofol (n=37) or were off sedation (n=19) and subsequently underwent propofol withdrawal or administration (changing their level of anesthetic exposure) before returning to their baseline state. Baseline, intervention and post-intervention states were each approximately 10-minutes long. Directed functional connectivity was calculated across all combinations of electrode pairs using the directed phase lag index. Frequency, distance, and source/sink topologies of five 3-node motifs were calculated from the directed functional connectivity matrix. Reconfiguration of motif topology between anesthesia states was quantified via cosine similarity. Patient diagnosis was assessed using Glasgow Coma Scale (GCS) scores when patients were off sedation and prognosis assessed through ability to follow commands. A favorable diagnosis was defined as GCS > 8 and favorable prognosis as the recovery of command-following abilities within 1-year post-injury. Motif cosine similarity was

contrasted between patients with favorable versus unfavorable diagnoses and prognoses using Mann-Whitney U tests and Benjamini-Hochberg procedure for multiple comparisons. Results: Two motifs were identified with significant frequencies across patients: one with long-range chain-like connections (“motif 1”) and another with short-range loop-like connections (“motif 5”). During propofol withdrawal, neither motif showed a significant difference in topological reconfiguration for motif frequency (M1: $U=42.0$, $p=.914$; M5: $U=76.0$, $p=.783$), distance (M1: $U=26.0$, $p=.522$; M5: $U=74.0$, $p=.783$), source (M1: $U=43.0$, $p=.914$), or sink (M1: $U=41.0$, $p=.914$) properties across diagnostic categories (favorable GCS ($n=12$); unfavorable GCS ($n=32$)). Similarly, neither motif showed a significant difference in topological reconfiguration for frequency (M1: $U=16.0$, $p=.434$; M5: $U=62.0$, $p=.696$), distance (M1: $U=30.0$, $p=.803$; M5: $U=29.0$, $p=.078$), source (M1: $U=34.0$, $p=.962$), or sink (M1: $U=23.0$, $p=.506$) properties across prognostic categories (recovered ($n=22$); non-recovered ($n=12$)). Similar non-significant results for diagnosis and prognosis were obtained during propofol administration and comparison between baseline states. Conclusion: In contrast to what has been suggested in previous literature, 3-node motifs show neither diagnostic nor prognostic value for our cohort of coma and DOC patients.

Keywords

Network motifs, coma, disorders of consciousness, propofol, anesthesia, diagnosis, prognostication, functional connectivity

The Symphony of the brain: Developing a closed-loop neuromodulation system

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Categories by Discipline

2.0 Neuroscience

Primary Topic Area - TSC Taxonomy

[02.16].....Brain stimulation techniques

Abstract

In line with the present theme of cortical oscillations and traveling waves, we propose that consciousness is associated with a standing wave, instantly integrating information across disparate systems into a unified experience. Mechanisms of anesthesia show that these molecules interrupt consciousness by inhibiting transfer of information between cortical and thalamic systems, thus spatially limiting the standing wave from integrating sensory information into conscious experience. Similarly, mechanisms of action of molecules which alter consciousness, such as psychedelics and other psychoactives with pi-resonance clouds in aromatic rings, implicate the alteration of the standing wave dynamics to oscillate faster, thus integrating more information, and thus altering the resonant mode of the standing wave topology, and the emergent functional connectivity of brain regions. These standing waves may be maintained through pi-resonance electron transfer and electrical dynamics of the resonant system, guiding emergent physical connections, and thus, ultrasound, which may be able to modulate gap junction connectivity, may be the correct modality to alter these standing waves, and in-turn, consciousness. This research programme, supported by Royal Society of New Zealand, represents a pioneering endeavour aimed at developing the next generation of neurotechnology in Aotearoa New Zealand; specifically, a closed-loop, non-invasive neuromodulation system that measures and stimulates the brain in real-time. By combining cutting-edge electroencephalogram (EEG) measurement and machine learning data analysis with non-invasive Transcranial Ultrasound Stimulation (TUS), this project will revolutionise brain measurement and performance, with applications ranging from athletic performance enhancement to non-pharmaceutical modulation of mental state. In this way, such technology can have the greatest impact to our world by supporting individuals to achieve flow states and to excel at what they are most passionate about. Within both Western science, and indigenous Māori worldviews, rhythms are found to be the language of life. Inspired by traditional Māori concepts of Maramataka (lunar calendar) and harmonising with the rhythms of life, mōteatea (chanting), waiata (song) and karakia (prayer), where

the unique cadence of traditional chanting is proposed to have therapeutic effects on biology. By systematically and scientifically investigating sound's potential therapeutic effects, we can develop technology by, with, and for Māori that reflect our worldview. This project will investigate the effects of TUS on mood and EEG patterns. This innovative study aims to shed light on the potential therapeutic and performance benefits of TUS, with the ultimate goal of developing a closed-loop EEG-TUS neuromodulation system or wearable device.

Keywords

Consciousness, EEG, TUS, ultrasound, standing wave

Fast and slow brain oscillations report distinct forms of neural activity

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Categories by Discipline

2.0 Neuroscience

Primary Topic Area - TSC Taxonomy

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

Abstract

Action potentials, also known as spikes, isolated from single neurons, are thought to provide the most accurate readout of brain activity. In contrast, local field potentials (LFPs), often referred to as brain waves, which reflect the electrical activity of a large number of neurons located near an extracellular electrode, are easier to measure than spikes but seem to offer only coarse-grained readouts of behavior. Previously, we discovered that spatiotemporal patterns in LFPs recorded from the rat hippocampus contain astonishingly precise information about the rat's current location within its environment. However, the question of what the relationship is between the information contained in spikes and LFPs remains to be fully detailed. To answer this question, we attempted to predict the spiking of individual hippocampal neurons, known as place cells, from LFPs in multiple frequency bands. We found that both low-frequency ($< \sim 20$ Hz) and high-frequency ($> \sim 200$ Hz) LFPs can be used to predict the spiking of place cells but in very different ways. At high frequencies, the LFPs measured at electrodes near the cell are highly predictive because they detect the spiking of the cell itself. At low frequencies, anatomically distributed LFP patterns are highly predictive because they detect activity in large assemblies of neurons with which the place cell co-activates. Our work shows how information embedded in various spatial scales of neural activity is reflected at distinct temporal scales of the LFP.

Keywords

Place cells, local field potentials, brain waves, theta rhythms, action potentials, spikes

Experimental Evidence for the Neurophysical Basis of Consciousness Obtained Using a Newly Developed Photoelectronic 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, like that proposed by Sir Roger Penrose, might hypothesize each experience-coding pattern as a temporal variation of the number of instantaneous wavefunction collapses in subcellular macromolecules such as microtubules. We speculated that, if consciousness has a causal role in the brain, these variations of the rate of collapses occurring at a focus within 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. This effect might then modulate a quantum phenomenon such as light wave interference produced by a double-slit apparatus in the peri-somatic space. Using a newly developed noninvasive photoelectronic device called a Sentiometer, we discovered that wakefulness and sleep produce robust and reproducible, differential modulation of the intensity of diffracted light waves generated by a low power laser diode close to the body. A similar peri-somatic modulation response was observed in mice, but an inverted response was detected in invertebrates and plants. The peri-somatic effect declined as a function of distance, but a change in the recorded baseline could nevertheless be detected, correlated with the presence or absence of subjects at longer distances from the Sentiometer. The peri-somatic response was significantly reduced in amplitude and altered in time course by general anesthesia in mice and showed striking variations for 4 – 5 hours after euthanasia, which depended on whether a mouse was decapitated or not. An excised mouse brain showed an inverted response,

which persisted for several days post-excision, if the brain was preserved at 4 degrees Celsius in normal saline solution. No such residual response was detected in the brainless mouse body >2 hours after euthanasia. Having ruled out by experimentation all artifactual, non-specific and trivial explanations known to us for the above observations, they suggest that the brain produces a previously unrecognized biophysical effect that can be detected as peri-somatic modulation of the intensity of diffracted light specific to changes in consciousness. Furthermore, while the electrical activity of cerebral neurons might modulate this consciousness-related effect, its underlying mechanism might involve bioenergetically independent molecular interactions within the brain, which persist for some time after death in undegraded neural cellular structures, pointing towards a possible fundamental quantum neurophysical basis for consciousness.

Keywords

Consciousness measuring device, Sentiometer, Quantum Biology, wavefunction collapse, peri-somatic neurophysical effect, mechanism of consciousness

On Developing a Methodological Framework for Neurophenomenal Structuralist Approaches to the Neural Correlates of Consciousness

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Categories by Discipline

2.0 Neuroscience

Primary Topic Area - TSC Taxonomy

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

Abstract

A neural correlate of consciousness (NCC) may be defined as a minimal neural system whose states map to states of consciousness, where a given neural state is sufficient for a corresponding conscious state [1]. Traditionally, NCCs have been identified using subtractive methodologies contrasting neural activity during conscious versus nonconscious mental states [2]. Although useful, the subtractive approach is limited in its ability to distinguish between the neural substrates of consciousness and the latter's neural prerequisites or consequences, as well as among NCCs specific for conscious contents and NCCs related to different global states of consciousness [3]. Recent proposals [4] have sought to overcome these limitations by exploring how phenomenal structure (i.e., similarities and differences in conscious experience) are systematically connected to neural structure, with this relationship determined by difference-making relationships among neural systems that have regularized effects on consciousness [5]. These proposals involve identifying multidimensional representations of neural and phenomenal structures (i.e., neurophenomenal structure) that are related to each other in both a correlative and causative manner. Such neurophenomenalist proposals have great potential for the empirical study of NCCs. Nevertheless, they have only been generally explicated to date, with limited discussion regarding the technicalities of how to empirically implement them in a valid and principled manner. Most discussion has focused on methods to characterize the neural aspect of neurophenomenal structure using multidimensional techniques such as representational similarity analysis (RSA). However, there are other multidimensional techniques utilized within the field of psychology to characterize mental structure that may also prove useful in characterizing the phenomenal aspect of neurophenomenal structure. One such technique is multidimensional scaling (MDS), a method of analysis that expresses psychological relationships among perceptual or cognitive stimuli as geometric relationships among points in a multidimensional space. This presentation will develop an initial methodological approach to characterize the phenomenal aspect of neurophenomenal

structure via MDS and relate it to the corresponding neural structure identified by other multidimensional techniques such as RSA. Several examples of traditional NCC research methodology will be recast in terms of this joint MDS/RSA approach with an eye towards identifying potential methodological limitations that still need to be addressed. References: [1] Chalmers, D. (2000) What is a neural correlate of consciousness? In T. Metzinger (ed.), *Neural Correlates of Conscious Experience: Empirical and Conceptual Questions*, pp. 17–39, Boston: MIT Press. [2] Baars, B. (1997). *Contrastive phenomenology: A thoroughly empirical approach to consciousness*. In N. Block, O. Flanagan & G. Güzeldere (Eds.), *The nature of consciousness: Philosophical debates* (pp. 187—202). MIT Press. [3] Bayne, T., Hohwy, J., & Owen, A. H. (2016). Are the levels of consciousness? *Trends in Cognitive Sciences*, 20, 405 – 413. [4] Fink, S. B., Kob, L., & Lyre, H. (2021). A structural constraint on neural correlates of consciousness. *Philosophy and the Mind Sciences*, 2, 7. [5] Klein, C., Hohwy, J., & Bayenes, T. (2020). Explanation in the science of consciousness: From the neural correlates of consciousness (NCCs) to the difference makers of consciousness (DMCs). *Philosophy and the Mind Sciences*, 1(II), 4.

Keywords

NCC, Neurophenomenal Structuralism, Multidimensional Scaling, Representational Similarity Analysis

On the Measurability of Conscious Systems – Perspectives from Product Design and Philosophy

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Categories by Discipline

2.0 Neuroscience

Primary Topic Area - TSC Taxonomy

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

Abstract

With recent advances in the science of consciousness, there is an increased interest in the measurement problem of consciousness (MPC). The development of consciousness measurement systems (CMS) is still in its infancy without a formal measurement framework and established design approach. This article uses product design principles e.g. measurement process workflow and problem space analysis to define a novel framework for developing CMS. The framework proposes measurability criteria, applies them to different use cases, and identifies whether the required attribute of consciousness in a use case can be measured by existing theories and technologies. The framework defines several CMS functions within the measurement workflow. These are: (1) modeling of consciousness states and measurands, (2) validation of sensor input signals, (3) sensing, (4) model-based state estimation, (5) interpretation, and (6) CMS calibration. Each CMS function requires different theories and technologies for its implementation. For example, the sensing function can be based on behavioral, neurophysiological (e.g. EEG, MEG, fMRI, etc.), computational (based on integration information theory (IIT), and other measurements. Validation or measurability criteria for each CMS function are established and applied to different CMS use cases that are identified using a product design technique called “problem space analysis”. The objective was to identify CMS functions that can or can’t be designed for different use cases using existing theories and technologies. For example, the absence of an acceptable model of consciousness should not be a problem for measuring consciousness in use cases involving human clinical applications. Currently, available technologies can be sufficient to measure consciousness for these use cases. However, without a well-defined consciousness model, we cannot develop a CMS that can find if a humanoid robot has consciousness. Consciousness is unique among all the things that can be measured. It is all around us. We know about our own consciousness. But, the subjectivity in the consciousness of others is only an inference, however reasonable. Therefore, one might ask whether subjectivity, which can be

experienced or felt only by the subject, is measurable. This paper uses concepts from mathematical logic (e.g. Gödel's incompleteness and Tarski's undefinability theorems) and from philosophy (e.g. method of agreement-disagreement in the Indian Nyaya system) to understand the measurability of subjectivity. Based on the preliminary study done so far, this paper argues that subjectivity is not measurable like other attributes of consciousness. This is a major area of study by itself and will be taken up as a future project. The key contribution of this paper is a novel consciousness measurement framework that uses measurement workflow, design principles, theories and technologies from neuroscience, and arguments from philosophy. The framework provides a precise understanding of the measurability of CMS functions for individual use cases. Researchers and engineers can use the framework to develop CMS for specific use cases without being bogged down by the complexity of unknowns in the field of MPC. [Please email tusatya1@gmail.com to get a copy of the paper]

Keywords

Consciousness, measurement of consciousness, measurement problem of consciousness (MPC), consciousness measurement system (CMS), problem space analysis, measurement process workflow

How to experimentally falsify the integrated information theory

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Categories by Discipline

2.0 Neuroscience

Primary Topic Area - TSC Taxonomy

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

Abstract

The integrated information theory (IIT) is a leading contemporary theory of consciousness. It provides a measure of the amount of consciousness in a physical system (Φ – a measure of the system’s integrated information). It also provides a mathematical model for the qualitative content of any given conscious experience (its Φ -structure or “Q-shape”). However, many have argued that IIT is unfalsifiable, and some have even gone so far as to question its scientific status. IIT is falsifiable in Karl Popper’s sense: there are possible scenarios which would unambiguously falsify IIT e.g. if one found that the neural correlates of one’s consciousness was a zero- Φ feedforward neural network. However, this is not a particularly bold or novel prediction since it does not distinguish IIT from many other theories that would also be falsified by the same scenario. Ideally, we want to try and falsify predictions that only IIT makes. If IIT survives such attempts, then IIT would be corroborated. Identifying novel testable predictions of IIT is difficult in part because of the difficulty in calculating Φ in complex biological systems like brains. To resolve this, we propose experiments that try to falsify the following prediction of IIT: if two experiences are qualitatively identical, then the neural correlates of those experiences have identical Φ (and identical Q-shapes). Measuring the exact Φ of their correlates is infeasible. But if their correlates exhibit sufficient structural differences – in ways that matter to the calculation of their Φ – then we may be able to estimate sufficiently distinct Φ -values, thereby falsifying IIT with a sufficient degree of confidence. Our examples of pairs of qualitatively identical experiences with distinct neural correlates are known as “filled/non-filled pairs”. While they are identical from the subjective point of view, one member of the pair involves significantly more perceptual filling-in. This creates a relevant difference in their correlates: the one with greater filling-in involves a greater amount of feedback connectivity. For background and preliminary experiments see philpapers.org/rec/HOPFPA. The present talk will discuss future planned experiments and how they fit into the present debate over the falsifiability and scientific status of IIT.

Keywords

IIT, Integrated information theory, neural correlates, feedback, feedforward, testability, falsifiability, filling-in, filled/non-filled pairs, F/NF pairs

The Hard Problem of Hardware: Neural Nets vs. Ultrabandwidth Microtubule Wavefronts

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Categories by Discipline

2.0 Neuroscience

Primary Topic Area - TSC Taxonomy

[02.05.....Motor control

Abstract

After thirty years, two conceptually-distinct models, of how we sense and what we think, compete on the hardest physical terrain possible: dynamic, tomographic simulation and control. The theoretical racecourse is arranged according to the laws of math and physics, first principles first, no cheating. The scoring is meticulous, and the prizes are amazing. In this race, the popular favorite is Neural Nets. The new-kid challenger, ultrabandwidth microtubule wavefronts, was built by two renegades sharing seventy years of physics: microtubule promoter Hameroff and math promoter Softky. Neural nets are fixed neurons, interconnected by axons and dendrites at synapses, aggregating pulses input over 1-10 msec and 1-10 microns to produce new neural pulses, completing the loop. The competition is ultrabandwidth microtubule wavefronts — what Softky called simulatrix (2014) — which control vibrations and nothing else. As a model, simulatrix connects the physics of quantum molecules to the informational necessity of representing 3-D space in its native form. Here is why the ultrabandwidth continuous model will likely win the race to explain the brain. Where nets are finite elements, simulatrix is a continuous volumetric 3-D mesh made of microtubules, registering synaptic events like a cloud-chamber, interfering and propagating them like blast-waves, actively turning pulses into contours, and contours into pulses, volleys of which replicate the waves elsewhere. Where nets send pulses directly to other neurons, waves in simulatrix begin at synapses but continue as 3-D contours with momentum. Where nets can compute almost anything, simulatrix can only pluck actin/myosin molecules and listen for echoes. 3-D wavefronts in simulatrix make the texture of computation match the texture of muscle and bone, so mind matches body at the molecular level. How each Net runs this race is up to its trainer, but such nets in general are best at memory, symbols, and rules, and worst at high-speed predictive tracking. Worse still, dendrites and temporal integration both impose low-pass filtering, yet also pose a paradox: How can a neuron which averages-out noise still produce such noisy spikes? (Softky & Koch, 1992 & 1993). Simplicity makes simulatrix blazingly fast, capable of

nanosecond phase-precision and thus GHz interoceptive carrier waves. Calculations of energetic and representational capacity (Softky 2014), and of mathematical trust-formation (aka model-validation, Softky & Benford 2017) show this model millions-fold more efficient than neural nets in several physical ways. If this challenger wins the race, all will have prizes. The microtubule simulatrix model provides a universal, principled, multiscale, predictive, zero-parameter field theory uniting vibratory and symbolic interaction, explaining most of how brains and bodies work: • Scientific mysteries: noisy neurons, warm brains, hard skulls • Alternative therapies: forest bathing, acupuncture, cranial-sacral, meridians, chakras, chiropractic, autonomous motion • Interoceptive mysteries: toroidal body fields, adhesions, releases, pops, clicks, electricity, energy, spinal breath, thermogenesis, spiritual implements, grounding, timelessness, calmness, untraceability • Urgent dangers: screen addiction, sociosensory starvation, algorithmic entrainment, leading indicator dependency • New Therapies: microtime, ultragrounding, carbon connection, human flight • Forms of Joy: pure presence, resonant connection, multilateral collaboration

Keywords

recalibration, trust, microtubules, simulatrix, sensory metrics, neuromechanical, bandwidth, sensorimotor contingencies, toroidal, boundary-less, MHz, GHz, nanosecond, microsecond, 3-D

The Elastic Mind: A Dialogue on Physics, Neuroscience, and Time Perception

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Categories by Discipline

2.0 Neuroscience

Primary Topic Area - TSC Taxonomy

[03.17].....Temporal consciousness

Abstract

The problem of time in modern culture rests on an arbitrary, outdated, mechanistic view of clock time that has played a role in current crises facing humanity: time compression, processed food, 24-7 production cycles, climate change, pollution, sleep disorders, and more. The time has come for cultivating a healthier paradigm for temporal consciousness. Ideally, this paradigm would evolve through direct embodied experience, the application of the modern science of consciousness, and thoughtful, interdisciplinary dialogue. This session will proceed in four primary sections: (1) Exposition on Time Perception in Physics, Neuroscience, and Psychology; (2) Awareness Practices (with guided meditation); (3) Dialogue between the two presenters/authors---a brain surgeon and wellness scientist--on the importance of cultivating temporal awareness-; and (4) Audience Discussion. The session will first entail an exposition by the first author (Hamilton) on the role of awareness in time perception and related interdisciplinary studies. Broadly, we discuss time as a psychic and a physical construct. Part 1 covers the Foundation of Time in Physics: (a) a Review of time dilation and relativity, (b) The Quantum Realm and Time, (c) Entropy and the Arrow of Time, and (d) Time's Variance in Astrophysics. Part 2 covers The Human Perception of Time vs. Physics: (a) Awareness in Time Perception, (b) Psychological Time, (c) The Influence of Emotion on Time Perception, (d) Alterations in Time Perception; and (e) Age, Memory, and the Perception of Time. Both presenters then discuss Enhancing Time Perception Through Awareness Practices: (a) Provide strategies for altering time perception through increased awareness, such as sensory enhancement exercises, (b) Discuss the benefits of such practices, including improved well-being and productivity. Session participants will be invited to engage in several exercises to enhance time perception as a transpersonal practice. Participants debrief their experiences in paired sharing and small group discussions. The third part of the session will utilize a dialogue practice akin to that developed by David Bohm (<https://www.bohmdialogue.org/>). Dialogue is a freely flowing group conversation in which participants attempt to reach a common understanding, experiencing

everyone's point of view fully, equally and nonjudgmentally. The purpose is to solve society's communication crises, including a deeper understanding of consciousness or, in this case, temporal consciousness. The dialogue in this third part of the session will begin with a conversation between the two presenters. In the spirit of Bohmian dialogue, the conversation will organically grow to include participants. Note. Both presenters have written about time, consciousness, and spirituality. Some references are provided below. SAMPLE REFERENCES Bennett, J. (2023). The Connoisseur of Time: An Invitation to Presence Bennett, J. (2023). Quest for Presence Book 1: The Map and Radiant Forces Bennett, J. (2023). Quest for Presence Book 1: The Soulful Capacities Sample article: Become a Connoisseur of Time | <https://www.spiritualityhealth.com/connoisseur-of-time> Visit website www.presencequest.life Hamilton, A. (2024). Cerebral Entanglements. Hamilton, A. (2009). The Scalpel and the Soul Hamilton, A. (2011). Zen Mind, Zen Horse: The Science and Spirituality of Working with Horses Sample article: Neurons of Compassion <https://www.spiritualityhealth.com/articles/2012/01/28/neurons-compassion> Visit website: <https://allanhamilton.com/>

Keywords

temporality, neuroscience, dialogue, consciousness, interdisciplinarity, presence,

Neural Network Agents That Self-Model: A Preliminary Study of the Effects on Learning

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Categories by Discipline

2.0 Neuroscience

Primary Topic Area - TSC Taxonomy

[01.06].....Machine consciousness

Abstract

Introduction: According to some theories, consciousness derives from the brain constructing models of itself. One example of this type of theory is the Attention Schema Theory (AST) [1]. Aiming to extend this concept to machine learning, we examined the general question of agents learning to build models that predict their own internal states, and tested whether that type of self-modeling resulted in improved model generalization and performance. Methods: For this investigation, we used fully connected neural networks trained on the MNIST dataset [2], a standard benchmark in handwritten digit recognition. The self-modeling network was tasked with a dual objective: the primary task of digit classification and a secondary, auxiliary task of predicting its own internal activation states. Different versions were trained to predict the activation states of different hidden layers within the model. We compared the performance and learning characteristics of self-modeling networks against the same networks without this feature. Performance was compared through the ability to correctly classify digits. Model complexity and learning efficiency were measured through the Learning Coefficient (LC) [3], which indicates how effectively a model learns from data and its propensity for generalization, while also providing insights into the effective geometry of the model's parameter space. Results: Our initial results revealed that introducing self-modeling significantly improved the LC, particularly under certain sampling methodologies, indicating a marked difference in learning dynamics and model complexity. Altering the target of self-modeling within the network's layers influenced both the loss metrics and the LC. This finding highlights the importance of the target layer in shaping the network's learning outcomes. Furthermore, our results indicated a potential regularization effect when self-modeling was applied to larger, early layers of the network, suggesting a reduction in overfitting compared to networks whose self-modeling target layer was smaller. When we experimented with networks having uniformly structured layers, the effects of self-modeling on learning dynamics and model complexity were similar across all target layers, suggesting that the size of the target layer, and not

the positioning of the layer in the hierarchical stack, determined the efficacy of self-modeling. This underscores the significant role that network architecture plays in the efficacy of self-modeling techniques. Conclusion: Our initial research demonstrates that self-modeling in neural networks can substantially influence their learning dynamics and complexity. The study suggests that strategic implementation of self-modeling, particularly in terms of target layer selection, can lead to enhanced learning efficiency and potentially reduced model complexity. These insights pave the way for further exploration into the application of self-modeling concepts in machine learning, offering promising avenues for exploring models of consciousness, such as AST, in machine learning systems. [1] Webb TW and Graziano MSA (2015) The attention schema theory: a mechanistic account of subjective awareness. *Front. Psychol.* 6:500. doi: 10.3389/fpsyg.2015.00500 [2] Deng, L., 2012. The mnist database of handwritten digit images for machine learning research. *IEEE Signal Processing Magazine*, 29(6), pp.141–142. [3] Watanabe, S., 2013. A widely applicable Bayesian information criterion. *J. Mach. Learn. Res.* 14, 1 (January 2013), pp. 867–897.

Keywords

Neural Networks, Machine Learning, Attention Schema Theory, Learning Coefficient

Weird Realities - Super Experiencers & Anomalous Cognition: A Multi-phase Multi-year Global Mixed Methods Neurophenomenological Research Study

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Categories by Discipline

2.0 Neuroscience

Primary Topic Area - TSC Taxonomy

[02.08].....Neurology, neuropsychology and neuropathology

Abstract

One of the most interesting and quickest ways to revolutionize neuroscience is to study the brains of individuals who have anomalous experiences. This approach can challenge existing models of how the brain interfaces with reality and open up new horizons of analysis and understanding. One of the best ways to advance science is to focus on those anomalies which the mainstream models tend to ignore – they often contain the sparks of insight that can start a revolution. While much neuroscience research has been successfully conducted on meditators, surprisingly, very little of this kind of research has been done on individuals who have stable and regular access to other types of altered states of consciousness. Many individuals report having had an anomalous experience at some point in their lives – a precognitive dream that comes true, seeing the ghost of a relative soon after their passing, a near-death experience (NDE) after a traumatic event, or an out-of-body experience (OBE) while they were doing Vipassana meditation, and so on. Some individuals report having multiple anomalous experiences of the same category throughout their life – such as those who have seen ghosts on a number of occasions or those who have trained themselves to have OBEs on a semi-regular basis. And then there are those rare individuals – super experiencers – who for unknown reasons experience multiple types of anomalous events throughout their lives. These are individuals who have a disposition to experiencing a wide range of “weird realities.” Sometimes there is a trigger event for these experiences and other times they just seem to randomly happen. By focusing on these unique individuals who have regular access to a wide range of anomalous experiences new insights around brain structure, phenomenological experience, and cognition can be achieved. Over the course of five-years this research aims to locate and study these super experiencers and develop neuro-phenomenological and biofield (i.e., subtle energy system) profiles for them. The research will be conducted in three major phases: • Phase 1: 5000 surveys will be collected from individuals worldwide who have anomalous experiences; • Phase 2: 100 individuals will be selected from Phase 1 for in-depth interviews and psychometric

assessments using over a dozen standard instruments; and • Phase 3: 50 individuals will be selected from Phase 2 for developing neurological imaging and subtle energy assessments. The goal of this research is to better understand the unique psychological, phenomenological, neurological, biophysical, and subtle energy markers and conditions that super experiencers have that play an experiential, emotional, cognitive, and biological role in their unique capacity for anomalous cognition. Through this study of weird realities current neuroscience models of perception and experience will be reviewed and revised and new models will be pioneered. And we may just discover that reality is actually weirder than we often want to admit!

Keywords

neurophenomenology, anomalous experience, mixed methods research, super experiencers, weird realities, subtle energy, psychometrics, transpersonal psychology

Evaluating the Impact of Pulsed Photobiomodulation on Meditation: A Randomized Controlled Study Using the Vielight Neuro Pro

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Categories by Discipline

2.0 Neuroscience

Primary Topic Area - TSC Taxonomy

[02.16].....Brain stimulation techniques

Abstract

Title: Evaluating the Impact of Pulsed Photobiomodulation on Meditation: A Randomized Controlled Study Using the Vielight Neuro Pro **Background:** Meditative practice is receiving innovative support through technological advancements in brain stimulation. The Vielight Neuro Pro, a general wellness device by Vielight Inc., introduces a novel method to potentially enhance meditation experiences. It utilizes near-infrared light delivered through LEDs, with pulsing frequencies adjustable between 1Hz and 10000Hz. Initial anecdotal feedback from advanced meditators indicates that specific pulse frequencies may enhance meditation states. **Objectives:** This study is designed to empirically investigate the assertions about the Vielight Neuro Pro's influence on meditation. Our primary goal is to examine whether active pulsed photobiomodulation (PBM) can alter meditation states, as measured by the Mystical Experience Questionnaire (MEQ) and a Post Stimulation Evaluation Questionnaire, along with assessing changes in electroencephalogram (EEG) patterns compared to sham stimulation. **Methods:** The study is structured into two phases and involves a crossover-randomized, single-blind exploratory approach with 20 experienced meditation practitioners. Phase I includes a baseline EEG measurement before and after meditation without the device, followed by sessions with active or sham PBM at 11 distinct frequencies. EEG data are collected pre- and post-stimulation for each session. The responses on the MEQ and Post Stimulation Evaluation Questionnaire and EEG characteristics such as Power and Coherence are analyzed to compare the effects of active PBM, sham stimulation, and baseline meditation. Phase II involves personalizing the PBM frequency for each participant, based on Phase I outcomes, and comparing the meditation effects using MEQ and post-stimulation evaluations as well as EEG measures. **Results:** We will present the findings from Phase I, highlighting variations in MEQ scores, EEG changes, and the responses from the Post Stimulation Evaluation Questionnaire

between active PBM sessions, sham stimulation, and baseline meditations. We will discuss the implications of these results and the potential role of PBM in meditation enhancement.

Keywords

Photobiomodulation, Meditation, Pulsed Photobiomodulation, Infrared Therapy, Meditation Enhancement, Meditation States, Frequency Effects, Mystical Experience

The Use of Transcranial Direct Current Stimulation to Improve Complex Motor Skill Acquisition: A Randomized Controlled Trial

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Categories by Discipline

2.0 Neuroscience

Primary Topic Area - TSC Taxonomy

[02.05.....Motor control

Abstract

Background: Transcranial direct current stimulation (tDCS) has been shown to enhance motor performance in simple tasks, but its impact on complex, multi-joint movements is less understood. This study investigated the acute effects of tDCS on skill acquisition in a complex arm movement task. Methods: In a randomized controlled trial, twenty-two right-handed female adults were assigned to either a tDCS or SHAM group. The task involved performing overhand throws to a target, with motor performance quantified by endpoint error. tDCS was applied for 20 minutes over the M1 brain area during five practice blocks, followed by a post-test block each day for three days. Results: The examination of the effects of tDCS on complex motor skill acquisition yielded significant findings. Mixed-effects modeling revealed a significant main effect of the group, with the tDCS group exhibiting better performance, demonstrated by a higher average score compared to the SHAM group ($p = 0.001$). This improvement suggests a positive impact of tDCS in complex motor tasks. No significant changes were noted in performance across different days ($p = 0.377$) or practice blocks ($p = 0.063$), indicating consistent improvements. Additionally, an independent samples t-test on percent changes in endpoint error showed a non-significant trend toward greater improvement in the tDCS group ($t = 2.072$, $p = 0.053$). Conclusion: This study highlights the efficacy of tDCS in enhancing motor performance in complex tasks, as evidenced by the significant group effect. The consistent performance across different days and practice blocks, along with the marginally non-significant trend observed in the t-test, highlights the potential of tDCS in facilitating complex motor skill acquisition. These findings warrant further research with larger sample sizes and extended intervention periods to establish the role of tDCS in complex skill learning conclusively.

Keywords

Transcranial Direct Current Stimulation (tDCS), Motor Skill Acquisition, Complex Motor Tasks, Neuromodulation, Motor Learning

Protecting Developing Brains and Emergent Consciousness by Increasing Informational Nutrition in the Early Years

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Categories by Discipline

2.0 Neuroscience

Primary Topic Area - TSC Taxonomy

[03.11].....Cognitive development

Abstract

Suppose consciousness is the ability to sense oneself as a self, understand the behavior of other “selves,” and formulate appropriate responses to that behavior. The emergence of these capacities would then be indissociable from positive brain development. Research has established that the positive development of infant brains is a highly interactive process, requiring plenty of practice sharing attention and plenty of serve-and-return interaction between infants and caregivers. Research has also established that infant and caregiver digital device use (e.g. smartphones, tablets, laptops) interferes with the joint attention behaviors and serve-and-return interactions that are so vital to brain building and emergent consciousness. And here we face a critical crux. Do we assume that we humans will adapt our way out of the problems posed by infant and caregiver digital device use? Or, do we assume that we will not? Decades of research in neuroscience tells us that because the human brain’s attentional system developed under conditions distinct from the conditions we live under today, we will not and cannot evolve beyond our need for uninterrupted social experiences filled with serve-and-return interactions. Given our increasing reliance upon digital devices to conduct essential day-to-day activities, the problem becomes then: How do we as a society ensure that the lives of infants and very young children are filled with the uninterrupted social experiences and serve-and-return interactions that their brains and nervous systems need? This is the question this paper answers. The key to the proposed solution is the concept of informational nutrition. This concept comes from “Sensory Metrics of Neuromechanical Trust” (Softky & Benford, Journal of Neural Computation, 2017). In “Sensory Metrics,” we model human information processing, communication, and trust-building in technological terms like data format, bandwidth, and latency to explain how, when it comes to processing “bottom up” signals, human brains face data integrity and compression/reconstruction-error limits similar to those that confound computer vision. A primary conclusion: trust is generated by an interactive system optimized for signals produced within the physical world. Absent such nutritious physical

information, we humans become increasingly unable to tolerate uncertainty, increasingly attracted to non-nutritive digital signals, and increasingly averse to the signals our brains need to calibrate their models. Our findings about informational nutrition are most urgent for infants and toddlers because of the gap between what researchers have learned about what developing brains need and what the public knows. The “Sensory Metrics” framework translates ideas like “serve-and-return” and other activities that support positive brain development into measurable numbers. For example, a Zoom call with a grandparent contains less than 1000th of the visual information of a face-to-face interaction, and almost none of the high-precision vibratory information that conveys emotional reciprocity. A “Sensory Metrics” approach makes it easy to calculate the protective and risk factors of various interactive contexts and media, thereby facilitating the design and promotion of environments that support human connection and positive brain development. We need not accept that infant wellbeing is the price we must pay for the benefits we derive from digital technology.

Keywords

infants, toddlers, early childhood, development, Sensory Metrics, informational nutrition, emergent consciousness, digital technology, caregivers, public policy, serve-and-return

Harmonizing the theories of consciousness: How consciousness emerges from matter and energy using new insights to explain mismatches among the theories of consciousness.

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Categories by Discipline

2.0 Neuroscience

Primary Topic Area - TSC Taxonomy

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

Abstract

This work builds on my theory of how a strictly physical universe gives rise to consciousness which was presented at the CCS 2023 conference and has been recommended for testing by NSF directors. This theory frames the major role of our bodies, surroundings, and their interactions in the neurobiological processes in the brain that produce consciousness, and, sheds light on the relations between conscious experience and brain activity. The postulates of my theory align with the central ideas of leading theories of consciousness, e.g., global workspace theory (GNWT), integrated information theory (IIT), re-entrant processing theory (ReT) and higher-order theories (HOTT). By introducing a new, unconventional approach to the theories, we can resolve their problematic arguments and integrate the ideas into one theoretical account. My theory reveals how three-phased energy-driven interactions among eleven heterogeneous elements from inside and outside the brain give rise to consciousness. Consciousness, as a state of an inner awareness, emerges from a conversion of basic perceptions (“lower-order representations”) (X^* s) into “higher-order re-representations” (Y^* s) via the exercise of sensory and motor agencies. X^* and Y^* (things of subjective measure) and X and Y (things of objective measure) This conversion gives rise to a new form of existence for X^* as Y^* , where the properties of phenomenal distinction of X^* (for example, color, sound, shape, motion), identified as content, are ascribed to Y^* (sound), identified as a re-representation of that content. Y^* is a self-generated entity resulting from a pattern of motion of an agent’s speech articulators (Y). It gives rise to a realization that X^* is Y^* and $*Y^*$ is X^* , manifested as a sense of knowing or inner awareness. These processes engage the occipital, temporal, thalamic nuclei as well as the inferior frontal regions of the brain, forming a pattern of connectivity resulting in a conscious experience (schema is available). Once that experience has been generated, it produces a significant consequence. It establishes two independent pathways of sensory

stimulation into the brain to trigger consciousness: phenomenal consciousness (PC) via sight into the occipital region (electromagnetic energy) and access consciousness (AC) via hearing into the temporal regions (mechanical energy). Both have a subjective dimension and the neural correlates of both coincide. AC can be invoked in the absence of an object and without the involvement of the prefrontal cortex. This analysis sheds light on the contradicting arguments of leading theories regarding the role of the prefrontal cortex (HOTT and GNWT), posterior “hot zone”, bottom-up processes (HOTT), and top-down processes (Re-entry theory) and on the results of recent findings around IIT and GNWT. This theoretical framework provides insights into how conscious awareness emerges from the interplay of matter and energy and how the divergent theories can be harmonized into one theoretical account. These predictions are supported by an overwhelming amount of empirical and theoretical data from diverse academic disciplines and have the potential to advance the multidisciplinary fields of consciousness and language and create new paradigms in science.

Keywords

conscious experience, subjective, objective, awareness, matter, energy, neural correlates, consolidation of theories, global workspace , higher-order, integrated information, re-entrant processing, phenomenal consciousness, access consciousness

Can science explain consciousness? Lessons from coma and related states

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Categories by Discipline

2.0 Neuroscience

Primary Topic Area - TSC Taxonomy

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

Abstract

Understanding consciousness remains one of the greatest mysteries for science to solve. How do our brains really work? Will we ever be able to understand the human mind? How can we know if some patients in coma have any consciousness left and how could we communicate with them? What are near-death experiences? What is brain death? What happens in our brains during dreaming, hypnosis or meditation? At present, nobody understands how matter (our trillions of neural connections) becomes perception and thought. We will here briefly review some neurological facts on consciousness and impaired consciousness. While philosophers have pondered upon the mind-brain conundrum for millennia, scientists have only quite recently been able to explore the connection analytically through objective measurements and perturbations of the brain's activity. This ability stems from recent advances in technology and especially from emerging functional neuroimaging, electrophysiology, brain-computer interface and neuromodulation studies. The mapping of conscious perception and cognition in health (e.g., conscious waking, sleep, dreaming, hypnosis, meditation, trance, sleepwalking, anesthesia and psychedelics) and in disease (e.g., brain death, coma, near-death, "vegetative" unresponsive wakefulness, minimally conscious state, locked-in syndrome, seizures, hallucinations etc) is providing exiting new insights into the functional neuroanatomy of human consciousness. Our perception of the outside world (sensory awareness; what we see, hear, etc.) and our awareness of an inner world (self-awareness; the little "voice" inside that "speaks" to ourselves) seemingly depend on two separate "awareness" networks. We will conclude by discussing the ethical consequences of these scientific advances which offer the medical community unique ways to improve the clinical management and quality of life in patients with disorders of consciousness. References: Quantifying arousal and awareness in altered states of consciousness using interpretable deep learning. Lee M et al, Nat Commun. 2022. Doing what matters in times of stress: No-nonsense meditation and occupational well-being in COVID-19. Van de Velde J et al PLoS One.

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Towards a neurophysiological understanding of psilocin action in the somatosensory cortex

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Categories by Discipline

2.0 Neuroscience

Primary Topic Area - TSC Taxonomy

[02.19].....Psychedelics and psychopharmacology

Abstract

Psychedelics are a unique class of psychoactive agonists at the 5-HT_{2A} subtype of serotonin (5-HT) receptor defined by their ability to alter thought, feeling, and perception. Psilocin and other psychedelic 5-HT_{2A} agonists are receiving attention as promising therapeutic candidates for treating numerous psychiatric conditions including major depression, post-traumatic stress disorder, anxiety, and substance use-related disorders. Psychedelics may have potential to advance psychiatric medicine, however, the underlying cellular and circuit neurophysiology remains incompletely understood. Recent reports show that psychedelics can promote rapid and sustained structural neuroplasticity (synaptogenesis) in cortical neurons. These data motivated the hypothesis that the therapeutic effects of psychedelics are mediated by their ability to enhance measures of structural synaptic plasticity, such as dendritic spine density and synapse formation. Despite reports of psychedelic-induced structural changes to synapses, our understanding of how 5-HT_{2A} activation alters intrinsic neuronal excitability and synaptic plasticity is limited. A key barrier to progress has been an inability to visualize which cortical neurons express the 5-HT_{2A} receptor. Leveraging the recently developed suite of Htr2a-Cre transgenic mouse models (Chiu et al., 2023), we are using slice electrophysiology to determine the acute effects of psilocin on measures of intrinsic excitability and synaptic plasticity in 5-HT_{2A} expressing layer V pyramidal neurons of the primary somatosensory (S1) cortex. Preliminary results show a decrease in the intrinsic excitability of S1 layer V pyramidal neurons following acute psilocin application. Elucidating the electrophysiological effects of acute psilocin treatment will advance our understanding of serotonergic modulation of sensory perception and the neurophysiological basis of psychedelic drug action. In turn, this research may enable the future design of more efficacious psychiatric medicines with reduced adverse effects.

Keywords

psychedelics

Cilia as Brain Clock and GPS: Decoding Their Role in Space-Time Navigation

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Categories by Discipline

2.0 Neuroscience

Primary Topic Area - TSC Taxonomy

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

Abstract

Primary cilia, once considered vestigial organelles, have emerged as pivotal players in brain circuits and functions, with fascinating implications for biorhythms. Our recent breakthroughs have revealed unexpected features of these organelles in the brain. We have discovered that primary cilia exhibit non-random orientation patterns aligning with primary compass or Cartesian axes, suggesting a key role in brain navigation. Further, we have observed a striking variability in cilia lengths across different brain regions, pointing to specialized functions. The dynamic nature of cilia is highlighted by their ability to adjust geometry in response to internal and environmental stimuli. A significant aspect of our findings is the role of cilia in brain timing, where cilia-associated genes in primate brains follow circadian rhythms, and physical properties show daily fluctuations. For example, we revealed that cilia length and spatial orientation exhibit daily oscillation, varying between light and dark phases. Removing cilia from areas like the striatum disrupts timing functions and circadian rhythms. Additionally, our research indicates that cilia-associated gene dynamics change throughout a human's lifespan and are implicated in psychiatric disorders, hinting at a connection between cilia and mental health. Our research reveals the crucial role of primary cilia in space-time navigation within the brain, significantly altering our understanding of these once-overlooked structures. Essential in regulating spatial orientation and circadian rhythms, cilia emerge as key elements in neural processing. This new knowledge advances our understanding of brain mechanics and hints at broader implications for understanding consciousness.

Keywords

Cilia, Space-time, Brain, Orientation, Circadian, Oscillation

Emergence of thoughts, complex systems and cytoelectric coupling

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Categories by Discipline

2.0 Neuroscience

Primary Topic Area - TSC Taxonomy

[02.06].....Memory and learning

Abstract

Hebb introduced neural ensembles in his seminal work about 70 years ago. Today, ensembles are thought to describe groups of neurons coactivated when a certain memory, thought or percept is stored or processed. In this talk, I will consider the electric fields generated by neural ensembles. I will use the theory of complex systems to show that fields control individual neurons. Latent states, like effective connectivity, seem to emerge because of self organization and to capture collective ensemble dynamics that underlie memory formation and maintenance. These evolve at different timescales from the fields that control them. This follows from the central manifold theorem and seems, as pointed out by Haken, to be crucial for consciousness. Thus, I will suggest that electric field stability could underlie the emergence of thoughts. Electric fields are 'above' the brain, but still 'of' the brain. I will present mathematical arguments in support of this hypothesis, that I call cytoelectric coupling: the electric fields that emerge from neural and the electrical activity of the cytoskeleton (e.g. proteins, microtubules) turn around and direct the activity of participating neurons for efficient information processing. Using mathematics and data analysis methods, I will describe interactions between neural activity and electric fields and will show how ephaptic coupling forms neural ensembles and low dimensional representations at the macroscale level.

Keywords

emergence; cytoelectric coupling; complex systems;neural ensembles

Mapping the Brain's Functional Geometry and Its Role in Consciousness

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Categories by Discipline

2.0 Neuroscience

Primary Topic Area - TSC Taxonomy

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

Abstract

Have you ever wondered how the brain's inner workings are connected to our conscious experiences? Imagine the brain as a vast landscape, where different areas are responsible for different tasks. Some regions handle our senses and actions, while others deal with more abstract thinking. To understand this better, think of it like describing a piece of land. You can use precise coordinates to mark its boundaries, or you can look at things like the terrain's slopes and the types of plants that grow there. We refer to this concept of defining the brain's functional terrain as "mapping the brain's functional geometry." Why is this important? Well, it helps us unlock the secrets of the brain's functions. At the same time, consciousness itself is a complex concept with many dimensions, and it's closely tied to how our brain works. So, we decided to create a framework that connects the brain's functional geometry to the different aspects of consciousness. In Dr. Huang's talk, he will dive into how the brain's functional geometry within the cortex holds clues about the many facets of consciousness. He will also explore how thalamocortical circuits play a role in shaping this brain landscape.

Scientific Theories of Consciousness: A Critical Look

Aaron Schurger

Chapman University Brain Institute, Orange, CA, USA

Categories by Discipline

2.0 Neuroscience

Primary Topic Area - TSC Taxonomy

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

Abstract

Consciousness is an unusual phenomenon to study scientifically. It is defined as a subjective, first-person phenomenon, and yet science is an objective, third-person endeavor. This misalignment between the means—science—and the end—explaining consciousness—gave rise to what has become a productive workaround: the search for ‘neural correlates of consciousness’ (NCCs). Science can sidestep trying to explain consciousness and instead focus on characterizing the kind(s) of neural activity that are reliably correlated with consciousness. In parallel to the search for NCCs, many Theories of Consciousness (ToCs) have been proposed. These theories are diverse in nature, ranging from computational to neurophysiological and even quantum theoretical approaches. This contrasts with other fields of natural science, which host a smaller number of competing theories. While both theories and data have proliferated during the era of NCCs, the NCC approach was never intended as the foundation for a true explanation of consciousness. Indeed, it was proposed precisely to sidestep the, arguably futile, attempt to find one. So where does this leave us? One potential reason for the abundance of ToCs may be the lack of stringent criteria specifying how empirical data constrain ToCs. In this talk I will offer a set of such criteria, grounded in the assumption that consciousness is in fact a well-defined topic from an empirical point of view. I will review some of the most influential ToCs and look at where they stand with respect to these criteria. This analysis helps to situate these different ToCs in the theoretical landscape and sheds light on their strengths and weaknesses from a strictly empirical point of view.

Keywords

theories of consciousness, explanation, correlates of consciousness, empirical criteria, theory versus law

Propofol-mediated loss of consciousness disrupts predictive routing and local field phase modulation of neural activity

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Categories by Discipline

2.0 Neuroscience

Primary Topic Area - TSC Taxonomy

[02.17].....Specific brain areas

Abstract

Predictive coding is a fundamental function of the cortex. The predictive routing model proposes a neurophysiological implementation for predictive coding. Predictions are fed back from deep-layer cortex via alpha/beta (8-30Hz) oscillations. They inhibit the gamma (40-100Hz) and spiking that feed sensory inputs forward. Unpredicted inputs arrive in circuits unprepared by alpha/beta, resulting in enhanced gamma and spiking. To test the predictive routing model and its role in consciousness, we collected data from intracranial recordings of macaque monkeys during passive presentation of auditory oddballs (e.g., AAAAB) before and after propofol-mediated loss of consciousness (LOC). In line with the predictive routing model, alpha/beta oscillations in the awake state served to inhibit the processing of predictable stimuli. Propofol-mediated LOC eliminated alpha/beta modulation by a predictable stimulus in sensory cortex and alpha/beta coherence between sensory and frontal areas. As a result, oddball stimuli evoked enhanced gamma power, late (> 200 ms from stimulus onset) period spiking, and superficial layer sinks in sensory cortex. Therefore, auditory cortex was in a disinhibited state during propofol-mediated LOC. However, despite these enhanced feedforward responses in auditory cortex, there was a loss of differential spiking to oddballs in higher order cortex. This may be a consequence of a loss of within-area and inter-area spike-field coupling in the alpha/beta and gamma frequency bands. These results provide strong constraints for current theories of consciousness.

Keywords

beta and gamma oscillations, predictive routing, propofol anesthesia, laminar neurophysiological recordings

Dissociating Artificial Intelligence from Artificial Consciousness

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Categories by Discipline

2.0 Neuroscience

Primary Topic Area - TSC Taxonomy

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

Abstract

Developments in machine learning and computing power are raising the possibility that artificial general intelligence may be within reach. This raises the question of artificial consciousness: if a computer were functionally equivalent to a human, having the same cognitive abilities, would it experience sights, sounds, and thoughts, as we do when we are conscious? Answering this question in a principled manner can only be done on the basis of a theory of consciousness that is grounded in phenomenology and its essential properties, translates them into measurable quantities, can be validated on humans, and can be extrapolated to any physical system. Here we employ Integrated Information Theory (IIT), which provides principled tools to determine whether a physical system is conscious, to what degree, and the content of its experience. We consider pairs of simple systems constituted of logic gates, one of which - a basic computer - simulates the other with full functional equivalence. By applying the principles of IIT, we demonstrate that (i) two systems can be functionally equivalent without being phenomenally equivalent; (ii) that this conclusion applies no matter how one 'black-boxes' the computer's gates; and (iii) that even certain Turing-complete systems, which could theoretically pass the Turing test and simulate a human brain in detail, would be negligibly conscious. # These authors contributed equally to this work

Keywords

AI, artificial consciousness, phenomenology, IIT, Turing test

Interplay between Quantum Microtubules and Consciousness: The Orch OR theory by Stuart Hameroff

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Categories by Discipline

2.0 Neuroscience

Primary Topic Area - TSC Taxonomy

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

Abstract

Recent research done by Dr. Hameroff and his co-workers have provided strong proof in helping the Orch OR theory, or the Orchestrated Objective Reduction theory. This theory connects quantum processes occurring inside microtubules, found in the cytoplasm, to how our mind works and functions. Microtubules, thin tubes found in cells, have long been seen as critical components for cell function. But emerging evidence suggests microtubules may possess unique quantum properties, challenging what we know about how cells work. This groundbreaking study sheds light on the complex relationship between quantum physics and key parts of cognition, giving us a glimpse into the nature of consciousness. The Orch OR theory states that awareness comes from subtle quantum events occurring inside microtubules such as entanglement and superposition. They exhibit a phenomenon where particles exist in a synchronized state, allowing for quantum coherence and this state could explain the basis of consciousness. It also suggests that they can become entangled, being connected even when separated by distance, proposing that processing and integration in the brain could be studied from microtubules. The "objective reduction" aspect of the theory refers to a proposed way for the collapse of the quantum wave function to occur. This is a process where a quantum system changes from existing in superposition, having multiple possible states simultaneously, to having just one definite state when it is measured or observed. In Orch OR theory, this collapse is suggested to be organized by quantum actions within microtubules. This then leads to conscious experience. This research can also extend beyond cellular biology to be applied to celestial bodies such as the asteroid Bennu, adding another layer of discussion. Studying what Bennu and other space rocks are made of not only provides crucial insights into how our early solar system formed but also offers a unique way to explore the chemical and physical processes that led to the emergence of life, including consciousness. The parallels between quantum phenomena in microtubules and the trajectories of asteroids in the cosmos underline interconnectedness in the micro and macro levels.

Keywords

Orch OR, Orchestrated Objective Reduction, microtubules, quantum processes, entanglement, superposition, quantum coherence, asteroid Bennu

The Relativistic Theory of Consciousness – a new testable solution for the hard problem

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Categories by Discipline

2.0 Neuroscience

Primary Topic Area - TSC Taxonomy

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

Abstract

Consciousness poses one of the biggest puzzles in science. Despite critical development in our understanding of the functional side of consciousness, we still lack a fundamental theory regarding its phenomenal aspect. There is an explanatory gap between our scientific knowledge of functional consciousness and its essential part - the subjective, phenomenal aspects, referred to as the hard problem of consciousness. To date there is no theory of consciousness that solves the hard problem in a satisfactory manner. Recently, however, a new physical approach, named the Relativistic Theory of Consciousness, offers to dissolve the hard problem using the principle of relativity (the principle that guided Galileo and Einstein developing their theories). A common thread connecting most theories of consciousness is that consciousness is an absolute phenomenon. In contrast, the relativistic theory of consciousness proposes a novel relativistic approach in which consciousness is not an absolute property but a relative one, in which a system can either have phenomenal consciousness with respect to some observer or not. By changing this assumption, the theory shows how the explanatory gap can be bridged in a natural way using different cognitive frames of reference. The theory has a couple of testable predictions. One of its intriguing predictions is that cognitive maps should serve as neural correlates of consciousness. Another one is that consciousness is not private and in principle, with the right technology, we can change one cognitive frame of reference to another and experience what it is like to be someone else. This lecture is about a new physical solution to the hard problem and consciousness. Also about testable predictions in neuroscience and new suggestions for neural correlates of consciousness.

Similar problems in the search for biological correlates for chronic mental illnesses and for consciousness

Carsten Korth

University of Düsseldorf, Düsseldorf, Germany

Categories by Discipline

2.0 Neuroscience

Primary Topic Area - TSC Taxonomy

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

Abstract

In contrast to other medical fields, not a single chronic mental illness is so far diagnosed by “objective” biological testing, instead a clinical interview between psychiatrist and the patient is used to ascertain diagnosis. Biological psychiatry is the realm of clinical psychiatry that attempts to explain chronic mental illnesses such as here specified for schizophrenia by distinct molecular, cellular and biological mechanisms. Problems in establishing biological markers or mechanisms to the exclusive clinical diagnoses touch three main areas: 1. A purely clinical (phenotypical) diagnosis does not allow stratification of likely heterogeneous biological underlying causes leading to a dilution of potential subsets of biological definitions of schizophrenia (i.e. going circles between clinical and biological definitions), 2. A fear for a trivialization of diagnosis by descending from a “skilled art” of clinical diagnosis to a simple biological test, 3. Prevailing dualistic attitudes within a significant portion of clinical psychiatrists resisting a complete naturalization of this medical discipline. Translated into the search of neuronal correlates of consciousness, i.e. the attempt to naturalize consciousness, respectively: 1. The lack of a clear, unequivocal definition of consciousness, i.e. what is it that we are searching a correlate for, 2. A (falsely) imagined loss of mental personal space upon a biological (i.e. material) explanation of consciousness and 3. A dualistic mindset that excludes complete naturalization of consciousness altogether. Consciousness research and biological psychiatry have so far surprisingly few interactions, reflected also in the lack of significant participation in each other’s conferences. This contrasts to the similarities of the encountered problems outlined above and hence the potential to learn from each other in solving major conceptual issues. (Part of these insights have been published in Lancet Psychiatry 2020, 7(10):911-914, available on <https://shorturl.at/crGKP>)

Final category: 3.0 Cognitive Science and Psychology

3

"Brain" Resolution Resonance & Neural-Muscular Orchestration

Michael S Kutch

Wiggle Our Toes, Sierra Vista, AZ, USA

Categories by Discipline

3.0 Cognitive Science and Psychology

Primary Topic Area - TSC Taxonomy

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

Abstract

We are continuing our research on the General Equation of Consciousness (GEC) that we have been presenting at the Science of Consciousness Conference for the last four years. In this talk, we will share our latest findings on how to enhance our consciousness by applying System Dynamics (SD) principles and practices to our own lives. We will explain how we can use fear as a catalyst for growth, optimize our trade-offs and choices, and access our full potential in every moment. We will also discuss how we can achieve this state of flow and harmony without effort or conflict, by aligning our mind with the natural dynamics of energy and information. We will demonstrate how we use SD to model the GEC in terms of stock and flow, and how we can measure and improve the Brain Resolution Resonance (BRR) stock, which reflects the quality and quantity of our conscious awareness. We will explore how the BRR stock interacts with other factors in the GEC, such as neural-muscular orchestration, aperture-ability, and feedback loops, both within and beyond our physical boundaries. We will show how this holistic approach can help us live fully in the present moment, without any problems or limitations.

The H.O.T. Anthropocene and the deflationary effects of AI and Neuroscience

Stephen R Deiss

UC San Diego, La Jolla, CA, USA

Categories by Discipline

3.0 Cognitive Science and Psychology

Primary Topic Area - TSC Taxonomy

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

Abstract

We live on a dying planet with mass shootings, wars, and social conflicts raging out of control. We are blindly walking into a climate debacle from which there may be no recovery with an insufficient sense of urgency to do something globally about it. There are many causes that brought us to this point in history. I will explain how one of the major causes of this slow-motion planetary catastrophe is the alienation and related side-effects of self-awareness. Self-awareness and the social order it enables have long been taught to be an evolutionary gift and a key differentiator of humanity that helped us survive and thrive. However, self-awareness is also an obsessive hypnotic illusion that is given to each of us through the way we are socialized by our cultures from an early age. Socialization instills an illusion of free will and self-responsibility that can be unwittingly amplified by social leaders for good or evil. The group dynamics that result from self-awareness help build defensive barriers and literal borders between people. Freud helped us understand the unconscious. The behaviorists helped us appreciate animal learning including us human animals. But following these early insights into behavior came the cognitive revolution which has reignited the search for a place in nature for consciousness as we experience it. Many of the lessons of the unconscious and conditioning seem to have been forgotten in this quest for an explanation of consciousness. Neuroscience has revealed many of the phantoms in our brains but often fails to highlight the most important one. Now, with the incursion of AI into public awareness through recent breakthrough chatbot successes, we have more reason than ever to question our long-standing assumption that human intelligence is as high as it goes on earth. We have reason to wonder if a machine can be conscious given the sophistry with which they can have discourse with us while using self-referencing personal pronouns just as we do. This has raised many concerns about applications and the need for AI regulation. We need to expose the fragile ground humanity is on as a result of this self-awareness pedestal we have placed ourselves on and its contribution to anthropocene problems. We need to recalibrate our human self-understanding to see the true place of consciousness in the natural environment we are destroying as we go on destroying each

other. Maybe then we can create conditions for a new Enlightenment that enables a new Renaissance.

Keywords

AI, neuroscience, HOT, self, consciousness, persona, free will, ethics, hypnosis, alienation, unconscious, behaviorism, conditioning, cognitive science, culture wars, socialization, anthropocene, climate, chatbot, ChatGPT, BARD, LLM, LaMDA, machine

An evolutionary developmental model of Psi

James Lake

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Categories by Discipline

3.0 Cognitive Science and Psychology

Primary Topic Area - TSC Taxonomy

[05.09].....Parapsychology

Abstract

A predisposition to have psychic experiences (i.e., 'Psi') can be regarded as a heritable cognitive trait that is primed during normal development or adverse events, and is variably expressed during day-to-day life or in response to extreme events. This presentation will start with a review of important recent advances in evolutionary theory. I will briefly comment on the effects of energy fields on the evolution and development of organisms broadly, and their possible role in the evolution of a Psi predisposition. I will discuss the problem of distinguishing between a predisposition to believe in Psi (i.e., when Psi is not present) and a true Psi predisposition arguing that both are heritable traits and confer fitness benefits. I will describe plausible evolutionary relationships between Psi and other perceptual and cognitive capacities including mental time travel, the capacity for abstraction, 'recursive mind reading,' shared intentionality, 'intention reading,' and synchrony. I will then review and critique existing need-serving models of Psi that imply different evolutionary processes, and comment on recent findings from genetic research on Psi and what they imply about the evolutionary dynamics of Psi. I will review the evidence for Psi in animals and comment on the possibility of co-evolution of a Psi predisposition in early hominins and animals. I will discuss complex evolutionary scenarios that may have led to emergence of a Psi predisposition in different populations at different times including direct selection, indirect selection, exaptation, genetic drift, epigenetic inheritance, and symbolic inheritance. I will argue that different environmental and socio-cultural factors influence the 'expression' of a Psi predisposition during development resulting in variation in types and degrees of Psi ability in different populations. Finally, I will propose research studies aimed at clarifying the roles of genetic, epigenetic and socio-cultural influences on the evolution and development of Psi.

Keywords

telepathy, precognition, evolution, predisposition, consciousness

The relationship between selfishness, life satisfaction, and emotional wellbeing among American and Chinese young adults

Yuan Yan

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Categories by Discipline

3.0 Cognitive Science and Psychology

Primary Topic Area - TSC Taxonomy

[03.05].....Emotion

Abstract

Abstract: Most people in their lives are in the pursuit of living a good and happy life. However, life satisfaction does not mean emotional wellbeing. Exploring the relationship between selfishness, life satisfaction, and emotional wellbeing is important as the 21st Century has ushered in a time of increasing selfishness and individualism. This research study examined the relationships among selfishness, life satisfaction, and emotional wellbeing in American and Chinese young adults. Using the Selfishness Questionnaire, Satisfaction of Life Scale, and Positive Affect and Negative Affect Scale, this study investigated 64 American and 126 Chinese young adults (ages 18 to 35). Findings showed that American young adults had significantly higher scores on life satisfaction, positive affect, and negative affect, which is consistent with previous studies. However, no significant differences were found between American and Chinese young adults on emotional wellbeing when analyzing positive and negative affect together. In addition, Chinese young adults scored significantly higher than Americans on the Selfishness Questionnaire. Furthermore, the negative relationships between selfishness and life satisfaction and selfishness and emotional wellbeing were found only in American young adults. A wide range of factors may impact the results of American and Chinese young adults on the Selfishness questionnaire, such as the sample size of the two groups, the Chinese young generation becoming more individualistic, and cultural differences in selfhood. More scales that accurately measure selfishness across cultures are needed. Significance to consciousness studies: To create a society where people live consciously, instead of being driven by needs, it is important for researchers to find out stages of living. In addition, it is significant for researchers to find out approaches aiming to help people transcend from different stages, such as from self-focused needs/interests to altruistic, conscious, and inclusive living. The study of the relationship between selfishness, life satisfaction, and emotional wellbeing is significant as it reveals that selfishness is negatively related to emotional wellbeing.

The implication of this study indicates going beyond self-interest is the key for people to achieve emotional wellbeing.

Keywords

Pleasure, Joy, life satisfaction, emotional wellbeing, selfishness, individualistic

The Multidimensional Aspects of our Consciousness Developed in Evolution and in Childhood

James H Rutherford

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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

The Multidimensional Aspects of our Consciousness Developed in Evolution and in Childhood

Charles Darwin in *The Origin of Species* wrote that, “In the distant future I see open fields for far more important researches. Psychology will be based on the foundation...of the necessary acquirement of each mental power and capacities by gradation.” A useful multidimensional understanding of human nature and consciousness can be based on such a naturalized epistemology. It can be based on the acquisition of our mental capacities by gradation in evolution as described by Paul MacLean and Sir John Eccles and a similar pattern seen in the development of those mental capacities through experience in childhood as described by Jean Piaget and Lawrence Kohlberg. Paul MacLean in *The Triune Brain in Evolution* (1990) described the evolutionary development of the forebrain as beginning with a “reptilian complex” (concerned with such basic instincts as individual survival, aggression, and social hierarchy), progressing to a developed limbic system in mammals which involves emotions and a social capacity other than hierarchy, and then adding a developed neocortex which gives the capacity for reason and language. A further distinction, however, can be made within the neocortex between the increased intellectual capacities and memory seen in the brains of primates such as the chimpanzee and the unique characteristics in humans associated with the left or dominant prefrontal cortex. Sir John Eccles described this as the neo-neocortex, or the executive center of the brain, which includes a language center with a capacity for narrative, meaning, and purpose as well as a capacity for both more integrated and abstract thought. This pattern of the evolutionary development of our mental capacities is also similar to the development of our mental capacities in childhood through experience as described by Jean Piaget. This development through experience begins with self-interested thought, and then progresses to social, logical, and finally abstract thought. Social thought, for example, develops primarily at about the time of kindergarten and rational thought about the time one is learning multiplication tables at about age seven or eight. The left prefrontal

cortex and our integrated and abstract thought is sometimes not fully developed until the age of 25. Lawrence Kohlberg described our moral development through experience as following the same general pattern as the development of our mental capacities. We are a product of both nature and nurture. A naturalized epistemology would include each of these ways of knowing, including our linguistic capacity for narrative, abstract thought, and metaphysical considerations of meaning and purpose; that is, our need to understand and/or create a coherent self and world in which we live. This worldview can be secular and humanistic, sacred and religious, or both. Consider, for example, the different worldviews underlying our current domestic and global conflicts. Therefore, when considering moral and political philosophy or indeed any philosophy or philosopher, it is useful to consider the assumptions being made about and the perspectives of the individual, society, the scientific physical universe, and metaphysics concerning meaning and purpose.

Keywords

Naturalized epistemology, evolution, mental capacities, philosophy, experience

The interplay between emotion regulation and cognitive control: inductive-deductive analysis

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Categories by Discipline

3.0 Cognitive Science and Psychology

Primary Topic Area - TSC Taxonomy

3.0 Cognitive Science and Psychology

Abstract

Emotion regulation and cognitive control are two phenomena that are both quite well-researched. What is less well-known is their interrelation, and this is what interests us in this paper. We want to investigate which scientific disciplines deal with their interrelation, which methods they use and which forms of interrelation they discover. To this end, we conducted a systematic review study in which we analyzed the current literature on this topic and tried to find an answer. The literature search was conducted according to the PRISMA protocol and searched in the EBSCOhost+APA databases digital library. The following digital databases were selected: PsycINFO, APA PsycArticles, MEDLINE, Scopus, Academic Search Complete, eBook Collection, and Web of Science. We also specifically searched the PUBMED platform. The review covered the period from the first publication that met the inclusion and exclusion criteria to 2023. Based on an inductive-deductive analysis, we identified five categories into which scientific disciplines addressing their relationship were categorized. These are (1) neuroscience, neuropsychology and physiology, (2) personality and developmental psychology, (3) motivation and emotions, (4) (psycho)pathology and mental disorders, and (5) psychotherapy and rehabilitation. The final study will be further analyzed.

Keywords

emotion regulation, cognitive control, scientific disciplines, systematic review, inductive-deductive analysis

Auto-meta-management: The function and mechanism of consciousness

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Categories by Discipline

3.0 Cognitive Science and Psychology

Primary Topic Area - TSC Taxonomy

[03.14]......Cognitive architectures

Abstract

We cannot understand consciousness unless we know what it is for. Couched in the context of evolution, I present a plausible physicalist account of conscious awareness as a meta-management process. As animals evolved from simple organisms to intelligent deliberative agents, their behavioural control mechanisms transitioned from sense-reaction to sense-inference-reaction to sense-deliberation-reaction. This implies a transition from single-iteration processing to multi-iteration processing: macro-scale recurrency of whole inference outcomes, for arbitrary periods of time, prior to finally eliciting a reaction. Now, cognitive state follows its own trajectory that is partially dissociated from the state of the physical environment and the agent's own body, and thus partially dissociated from their feedback. The more elaborate and lengthy the multi-iteration deliberation, the more dissociated the cognitive state trajectory from the physical environment and body. And yet deliberative processes must be optimised to maximise benefit to the organism - a classical sparse feedback problem. This optimisation problem cannot be solved in trivial ways such as by minimising deliberation time. The cognitive state space must be explicitly modelled and trajectories through cognitive state space monitored and controlled - ie: meta-management. I propose a radical auto-meta-management architecture, whereby the second-order meta-observation of cognitive state is provided via a feedback loop as a perceptual sense to the first-order control process. Through application of cause-effect modelling already evolved within the first-order control process, the first-order process learns to meta-manage itself in an emergent fashion. The feedback loop sense, as a genuine first-class perceptual sense like other endogenous and exogenous perceptual senses, exhibits phenomenological characteristics that we associate with consciousness. For example, it is limited in access, it looks through to first-order perceptual senses, and it has specific timeliness characteristics. Thus I claim that the feedback-loop sense forms the contents of conscious awareness, and that auto-meta-management is the underlying mechanism of conscious awareness.

Keywords

Meta-management, consciousness, conscious awareness, conscious contents, access consciousness, intentionality, learning, evolution.

Expanding Artificial Intelligence Capacity for Approximating Different Forms of Dream 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

Machine systems are able to approximate characteristics of human consciousness utilizing artificial neuron networks, feedback training, fuzzy logic, and Internet based probability matrixes. Such systems demonstrate higher performance during human reflective sleep states, produce hallucinatory and non-deterministic results that require abstract interpretation, and have the capacity to approximate Internet based dream-like narratives. Artificial Intelligence (AI) systems meet multiple criteria for attaining human-defined, equivalent dream mentation. [Pagel JF. & Kirshtein P. (2017) Machine Dreaming and Consciousness, Academic Press (Elsevier)]

Neuroelectrophysiologic understanding of the biologic processing, interrelationships, and functions of the various human dream states continues to evolve. Different forms of sleep consciousness (dreaming) are demonstrably associated with each of the different electrophysiologically defined sleep states. Each of these phenomenologically distinct states of consciousness is associated with different processing and operations in the CNS. Stage 1 alpha consciousness including intensely visual and creative dreams with high recall is the sleep state most amenable to manipulation with transcranial magnetic stimulation (TMS) and alternating current stimulation (tACS). Stage 2 (sigma frequency) light sleep dreams have high levels of continuity with waking experience, the lowest recall, and occur in the state most clearly associated with learning and memory consolidation. Stage 3 (delta frequency) deep sleep functions in growth, restoration, and the setting of base frequency equilibriums. The dreams of this low-activation conscious state are salient, extreme, and sometimes bizarre experiences that can alter waking behaviors on arousal. REMS consciousness is characterized by high dream recall, classic long psychoanalytic dreams, and the dream associated parasomnias of nightmare, REMS behavior disorder, and sleep paralysis. REMS, described electrophysiologically by the intracranial theta frequency, is potentially a resonance rhythm without clear neuroanatomic origin. [Pagel JF (2023)]

The neuro-electric alignment of dreaming - The sleep/ dream state frequencies of consciousness. Dreaming 33(3):252-263]. The neural networks involved in the neuronal processing of each of these phenomenologically distinct conscious states are altered and controlled by impinging intracranial electromagnetic fields, the same physiologic fields that are used to define the dream-associated states of sleep. In biologic systems these frequencies form an analog time-based fourth dimension of neuronal network interaction. There are strong indications that the different conscious-state associated wave frequencies can carry phase coded patterns of neuronal firing to distant sites across the CNS. Despite the extensive level of processing required, summated systems of on-off artificial neuron firing that fractally parody each of the physiologic wave forms can be created digitally. The potential exists for digital AI constructs to incorporate electromagnetically complex digital wave systems into their processing. This approach could be utilized to expand AI cognition capacity by mirroring and reflecting the different anthropomorphic forms of analog dream consciousness.

Keywords

Dreams, artificial intelligence (AI), neuroelectrophysiology, human-equivalent consciousness, neural networks, cognition, machine dreaming, sleep.

How exceptional experiences may help to better understand normal and pathological states of perceptual consciousness

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Categories by Discipline

3.0 Cognitive Science and Psychology

Primary Topic Area - TSC Taxonomy

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

Abstract

Our everyday conscious percepts seem to reflect the world as it is. However, the information our senses receive is restricted, noisy and to varying degrees ambiguous. We need to disambiguate and interpret it to construct stable and reliable conscious percepts. Current theories postulate that this is done by weighting the incomplete bottom-up sensory evidence with top-down information from perceptual memory. Exceptional experiences (ExE) deviate in their quality, course, or genesis from the experiencers' beliefs about reality and/or from convictions about reality that they attribute to their social environment and/or currently accepted models in science¹. The Model of Phenomenon Basic Classes (MPBC) distinguishes four classes that constitute ExE by their (1) internal or (2) external location and their relation in meaningful (3) coincidence or (4) psycho-physical dissociation. Studies with the Questionnaire on the Phenomenology of ExE (PExE-II) provide the following empirical support for the MPBC: First, ExE are rare but consistently existent in the normal population. Second, help-seeking people with burdening ExE show higher frequencies in all four phenomenon classes. Third, among the four classes, coincidence phenomena show the highest loads across the four classes not only in the general population and in the group of help seekers, but also in meditators or people with near-death-experiences. Schizophrenia spectrum disorder (SSD) affects consciousness, social cognition and communication. SSD symptoms have recently been discussed as deficits in the integration of bottom-up sensory input with top-down contextual and memory information, with an overweighting of the neural representation of bottom-up sensory input and an underweighting of top-down factors (e.g. 2). In the currently running study, patients with SSD and neurotypicals observe series of ambiguous visual stimuli and disambiguated

stimulus variants and report their percepts by key press, while we record their brain activity with EEG. Further, both groups fill out the PExE-II questionnaire. Preliminary results replicate previous findings in neurotypicals of an “ERP Uncertainty Effect” consisting of much larger amplitudes of two ERP (event-related potentials) signatures during observation of disambiguated compared to ambiguous stimuli 3,4. However, the SSD group showed overall much smaller ERP amplitudes for both disambiguated and ambiguous stimuli compared to the control group. The preliminary analysis of the PExE-II in the SSD group shows similar weightings for the internal, external and dissociation scales as the group of help seeking persons with ExE. On the coincidence scale, in contrast, the SSD patients show frequencies which were smaller than those of the help seekers and similar to those of the normal population. The PExE-II results of the SSD group deviate thus from a so far highly consistent overall pattern across many different samples showing different frequencies but equal proportions of weights on all scales with always maximal weights on the coincidence scale. We currently interpret this deviating pattern of SSD patients’ weights on the four phenomenon classes as a correlate of their information integration problem. This is in confirmation with reduced amplitudes of the Uncertainty ERP components, which are similarly interpreted as a physiological correlate of bottom-up and top-down information integration.

Keywords

Schizophrenia spectrum disorder, Exceptional experiences, ERP Uncertainty Effect, EEG, event-related potentials, ambiguous figures

Comparative Effects of Fire Kasina Meditation and Psychedelics

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Categories by Discipline

3.0 Cognitive Science and Psychology

Primary Topic Area - TSC Taxonomy

[05.02].....Meditation and mindfulness

Abstract

Fire Kasina meditation practiced for 9 -14 hours daily for 17-21 consecutive days reliably produces a mystical experience that may be comparable to those induced by psychedelic substances. The essence of Fire Kasina meditation is that the meditator focuses on an external object (typically an active source of light, such as a candle flame, light bulb, or LED) with open eyes for long enough to produce an afterimage, which is then taken as the object of meditation. Once the attention shifts to the afterimage, a partially predictable sequence of internal experiences tends to follow. Eventually, once the strength and/or clarity of the experience diminishes, the meditator re-focuses on the external object, restarting the cycle. By paying close attention to the effects, and with repetition, participants report profound outcomes characterized by a wide range of sensory, perceptual, emotional, and mystical experiences including transcendence of time and space and a sense of ineffability. Some practitioners report significant increases in the ability to control thoughts and personal transformation through the insights experienced. In order to systematically explore the mystical effects of this practice, as part of a pilot study, we invited five individuals who had participated in previous Fire Kasina retreats to participate in an in-depth interview (within 4 months after the retreat) in which they described their experiences and filled out the Revised Mystical Experiences Questionnaire (MEQ). The MEQ includes four subscales pertaining to different aspects of mystical experiences; mystical, positive mood, transcendence of time/space, and ineffability (Barrett et al, 2015). We compared MEQ results and personal experiences of Fire Kasina participants to those from previous studies using both moderate and high (20 and 30 mg/70 kg) doses of psilocybin and 5-MeO-DMT (5-7 mg) (Barsuglia et al, 2018). Barrett and colleagues define a full mystical experience as an MEQ score >60%. We found that Fire Kasina participants reported MEQ scores ranging from 70% to 96%, which is comparable to the results with high doses of

psilocybin (76.8% from Griffiths et al., 2011) and 5-MeO-DMT (83.4%), and categorically exceeds the mean result with moderate dose of psilocybin (69.6%). Similarly, retreatant scores in all of the subscales were comparable to high doses of psilocybin and 5-MeO-DMT, with all but one participant scoring higher than the mean scores for moderate doses of psilocybin on all subscales. Notably, two retreatants scored experiences of the phenomena of “being in a realm with no spatial boundaries,” “timelessness,” and “ultimate reality,” as 5 (indicating “more than any other time in my life”). These preliminary results provide evidence that advanced meditation techniques can produce profound psychological effects comparable in intensity to psychedelics. With recent efforts to develop novel therapeutic interventions using psychedelics, advanced meditation may thus have the potential to offer similar therapeutic results with a potential for reduced risks, and improved potential for integration into daily life.

Keywords

meditation, psychedelics, mystical experience, Fire Kasina

Carl Jung, the Psyche & the Universe Jung proposed that conscious & unconscious layers of the psyche correlate with the various physical expressions of the universe.

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Categories by Discipline

3.0 Cognitive Science and Psychology

Primary Topic Area - TSC Taxonomy

[03.09].....Unconscious/conscious processes

Abstract

Born in Switzerland, Carl Jung went on to study medicine and later psychiatry; he was influenced by Sigmund Freud until the two great men fell out in 1913. Among other things, he's famous for elaborating on Freud's overall theory of the unconscious, sub-dividing it into two main tranches, namely the personal and the collective unconscious. Jung believed that only by integrating the unconscious elements into ego consciousness can we find balance and achieve mental health. He called our conscious psychic processes 'thoughts'; meaning our unconscious psychic processes are merely thoughts that we haven't had yet and may never have, or 'potential reality in waiting'. Jung: "What bulk can we ascribe to thoughts? Are they small, large, long, thin, heavy, fluid, straight, circular, or what? ... If [the psyche] occupies no space, it has no body. Bodies die, but can something invisible and incorporeal disappear?" Over time, and no doubt in part due to dining on occasion with Albert Einstein, he came to compare the different levels of the psyche to the different 'levels' of the universe: "I have been convinced that at least part of our psychic existence is characterised by a relativity of space and time. This relativity seems to increase, in proportion to the distance from consciousness, to an absolute condition of timelessness and spacelessness." The ego occupies Sir Isaac Newton's familiar world of time and space where the three laws of motion describe a world of matter which reacts only to external forces. The second layer of the psyche, the personal unconscious, contains everything that is unconscious but which is personal to us - including all our feelings that are too painful or undesirable to acknowledge. This second level of the psyche belongs in Einstein's world of space-time, where - in order that the speed of light can remain constant - time is variable. So perhaps the idea that our incorporeal thoughts can also be 'variable' - arranging themselves 'on purpose' in time and space to produce amazing 'coincidences' or synchronicities - is suddenly no longer so outlandish. Synchronicities are one of the startling ways the psyche can bring unconscious elements to our attention. Dreams are another. When we

dream, Jung believed we are accessing the universal, eternal wisdom of the third layer of the psyche - the collective unconscious - which resides in the quantum world. Where subatomic particles are so insubstantial, the world of matter, time and space loses its grip on them - suddenly they are 'quantum' particles. Penrose/Hameroff's theory of consciousness suggests thoughts arise when groups of quantum particles (in the neuron) collapse back into matter at the finest level of the universe where eternal, collective (Platonic/Jungian) knowledge is embedded. If thoughts/memories can shapeshift in & out of quantum states, then perhaps "an afterlife, an actual soul-as-quantum-information leaving the body and persisting as entangled fluctuations in ... spacetime geometry, may be scientifically possible."* * * * Stuart Hameroff and Deepak Chopra, The Quantum Soul - A Scientific Hypothesis from A Moreira-Almeida and F Santos, 'Exploring Frontiers of the Mind-brain Relationship,' Springer Science + Business Media 2012.

Keywords

Carl Jung, psyche, unconscious, mental health, afterlife, quantum, relativity, Einstein, Newton, Penrose, Hameroff, afterlife, universal, entangled, collective

Stubbed-Toe Consciousness: The Psychosocial Ramifications of REM/Dream Deprivation

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Categories by Discipline

3.0 Cognitive Science and Psychology

Primary Topic Area - TSC Taxonomy

[03.10].....Sleep and dreaming

Abstract

Because REM/dreaming is subsumed under the general rubric of sleep, its loss is typically reported as sleep loss, obscuring the fact that much of the world suffers from a silent epidemic of REM/dream deprivation. Multiple factors contribute to REM/dream deprivation, including psychiatric and anticholinergic medications, rampant alcohol and cannabis dependence, untreated sleep disorders, and widespread cultural devaluation of subjective dreaming. REM/dream loss results in “stubbed-toe consciousness,” a contracted or shrunken frame of awareness that impacts us as individuals and communities. Just as the pain of a stubbed toe can acutely compromise one’s awareness of the larger world around them, diminished dreaming can compromise one’s ability to perceive the greater context of life. Stubbed toe consciousness is a kind of flat earth consciousness characterized by fear of getting too close to the edge of the transpersonal world. It’s associated with a shrunken sense of self, an increased risk for mood disorders, dementia, and insomnia, as well as dampened empathy and creativity. Dream loss is not just a personal issue. In his classic essay, *The Significance of Dreams in a Dream Deprived Society*, Monte Ullman discusses the impact of dream loss on culture asserting, “Dreams reveal the state of connectedness of the individual to his or her past, to others, and to the supports and constraints of the social order.” He suggests REM/dream loss can damage collective consciousness by eroding creativity, art, empathy, and spirituality. Dream loss underpins wake centrism, a ubiquitous form of biased awareness that presumes waking to be the primary, gold standard of consciousness, and relegates sleep, and dreams to secondary and subservient positions. Wake centrism is a key symptom of stubbed toe consciousness, in which Huxley’s wide-open doors of perception are reduced to peepholes. At a collective level, stubbed toe consciousness condemns us to look at life through shrunken frames. Remediating dream loss requires addressing both cultural and clinical factors—the public and health professionals alike. This would include public health education campaigns, as well as special training for medical and psychotherapy professionals about the

importance of REM/dreams. And it would seek to establish a new diagnostic category of REM/Dream Deficiency Disorder to encourage related diagnosis and research. The recent resurgence of interest in psychedelics also holds promise of reminding us of the critical importance of expanding consciousness. Hugh Prather wrote, "The great neglected need in this era of rigid, clashing opinions is the need for direct experience." In its natural state, before we translate or represent them in wake-centric language, dreams offer each of us such direct experience on a nightly basis.

Keywords

REM sleep, dreams, dream deprivation, wake-centrism, doors of perception, psychedelics

Three keys to Conscious AI

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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

In TSC 2022, we have introduced our physical coupling theory of consciousness that involved new physics, biology, and psychology. The theory says that consciousness is biologically independent of neurons; static memory and our subconscious and subjective conscious states are just the psychological reflection of the three physical coupling states of the unknown consciousness signals. (Ma, Primary Topic: 04.16, TSC, 2022,). In TSC 2023, we introduced our method of semantically measuring consciousness with "true" neural correlates of consciousness (NCC) by filtering the noisy neural signals with mental twins—people with the same kind of patterns of thinking (POT). (Ma, Primary Topic: 04.16, TSC, 2023,). In TSC 2024, our team wants to contribute something to end the AI's termination voyage of human civilization, such as what the crisis of OpenAI refers to in the end of Nov. 2023. We have studied human intelligence and consciousness for over three decades and our theory of consciousness includes exactly what AGI or conscious AI should have. We have explained our AGI-related conclusions in two articles. The first article is about the three keys to AGI: a) What is the right raw material, say authentic information, for AGI; b) What is the right Machine of AGI, say a basic structural emulation of human intelligence; c) Why the soul of AGI is Freewill or the self-controlled intention. The second article just tries to explain that most of our traditional information is only codes or symbols of the authentic information. We specify authentic information more specifically and make the point more convincing to the public. Our team sees the terrible threat to humanity of today's accelerating strategy of the AI industry. Our team sees that ending this threat is the most important duty in our life. (The two mentioned under review articles are available upon request. Please email us at jasonma@depontech.com)

Keywords

Authentic information, the codes of information, the emulation of human intelligence, Freewill, self-controlled intention

Identifying Two Phases of Perception and Solving the Riddle of Apparent Motion of Film — Using Advanced Meditative Events in a New Understanding of Consciousness

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Categories by Discipline

3.0 Cognitive Science and Psychology

Primary Topic Area - TSC Taxonomy

[03.19].....Cognitive theories of consciousness

Abstract

The constructed nature of our perceptions is becoming more obvious with each new experimental result, and this has led to the growing belief that the brain is a Bayesian prediction processor. The apparent motion that is experienced when watching film is an obvious construction, but one that scientists have so far failed to explain. Stare at a video of random images flashing at 20 to 77 images per second and you can see each individual image clearly. Change to a video of images that have a consistency of content, but within which at least one identified object is different to some degree, and you experience apparent motion. You do not see the flashing images. This phenomenon requires either reaching into the future, or the past, and an intense computational load, to accomplish, and this presents a real quandary: Why would the brain have such an ability at the ready for tens of thousands of years before the invention of video technology? The human visual system can see actual motion without any of that. So what possible survival advantage would naturally select this ability to construct apparent motion from streams of flashing images for evolutionary development and reproduction in a world with neither movie theaters, nor video screens? And more to the point, why would human brains do all this extra processing over tens of thousands of years for no benefit, since there are no naturally occurring movies? Using an insight from an advanced meditation event that has been reported for over two millennia about the two-phase nature of all perception, in conjunction with recognized quantum realities — that Time is only a formalism, and that there are no entities, only processes — I will show how we can escape from the dilemma, while explaining in detail how apparent motion is created, and in the process, point to a novel understanding of consciousness.

Keywords

Visual Perception, Apparent Motion, Film, Meditation, Coherent Continuity, Computational Load,
Natural Selection, Novel Paradigm, Cognizance, Recognition, Responsive Naturing

A3 Theory of the Human Brain: A Theoretical Functional Model of The Human Brain that Describes How Humans Achieve Consciousness, Self-Awareness, Creativity, and Sentience

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Categories by Discipline

3.0 Cognitive Science and Psychology

Primary Topic Area - TSC Taxonomy

[03.19].....Cognitive theories of consciousness

Abstract

“A3” is a new theory of human brain organization. “A3” refers to one of 4 classification levels in A3 theory (A0 to A3). A3’s major contributions are 1. providing a relatively simple, functional, and physiologically sound explanation for human thinking, and 2. explaining “human consciousness” in the form referred to as “Self-Awareness”. A3 can broadly explain human psychology including: cognition, behavior, sleep, dreams, and psychoses. Most humans are actually categorized as A2’s. A3 theory also requires a new concept for memory. Current concepts of memory that envision sensory “snapshots” is far too primitive. A3 suggests that memory follows Maslow’s concept of memories as “tape recordings” of events. In A3, a single cell, or small groups of cells, capture a “memory” by storing a “multi-track tape recording” of a life event. Each memory synchronously captures: all sensory inputs (sight, sound...), internal nerve signals (muscle control), plus internally generated “alarm” signals (pain, emotion...). The A3 model emerged upon discovering that modern concepts of brain structure and function were based on flawed translations of Freud’s published observations (The Ego and the Id). Correcting these mistranslations, a 4-element brain model was suggested that supports Freud’s original 3-brain work. It also aligns with Maslow’s tape model and hierarchy of needs. The first 3 brain elements capture the conventional 3-brain systems: 1. Autonomic; 2. Subconscious; and 3. Conscious. The autonomic brain is mostly inherited, with minimal learning ability (muscle memory). It receives inputs from sensory nerves. The subconscious brain “structure” is also inherited. Its content is empty. Content is accumulated through life experiences as a huge collection of “tape recordings”. Its inputs come from the autonomic system. The third element is the conscious brain. It is actually a close “duplicate” of the subconscious. It is differentiated by getting its inputs from the subconscious brain, rather than the autonomic. Animals (A1) already have this. What creates A2 “self-awareness” in humans is the simple appearance of a “feedback link” from the conscious brain back to the subconscious. This

has two functions: sending processed thoughts back for storage; and requesting “replays” of stored tapes. It is this simple full-sensory “tape recall” ability that creates “self-aware” consciousness. Neanderthals and homo sapiens appear to have had this ability. Around 20,000 years ago, a simple repeat of the doubling of the highest brain occurred. This third cognitive brain gets its inputs from the conscious brain. It links back to that brain. This is what created A3. The A3 level explains the explosion of human culture 15,000 years ago. It enabled “system” thinking of both self-thoughts and the external world. It allowed envisioning agriculture, government, and warfare. Ironically, individuals with A3 cognition, then and now, are only born infrequently. This is because it doesn’t provide a reproductive advantage. Once a novel idea is described, it can be modified and reproduced without limit by A2 cognition. The combination of physiologic similarity in A2 and A3 brains, and the small number of A3 humans explains why discovering A3 has been so elusive.

Keywords

human brain, consciousness, perception, awareness, self-aware, sentience, AI, emotion, memory, sleep, dreams, psychology, brain physiology, feedback, psycho-pathology, Freud, Maslow

Mapping the characteristics and impacts of Terminal Lucidity in children and on their caregivers

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Categories by Discipline

3.0 Cognitive Science and Psychology

Primary Topic Area - TSC Taxonomy

[03.20].....Miscellaneous

Abstract

Terminal lucidity (TL) may be defined as an unexpected return of mental clarity and memory shortly before death. In these cases, although a person may have been suffering from severe cognitive impairment or an end-stage neurodegenerative disease, they suddenly regain lucidity and cognitive functioning. Research suggests that TL occurs in about 14% of those in the last stages of life, irrespective of age or underlying condition. The disconnect between the patient's capacity to maintain a lucid mental state at a time when their neurological functioning is compromised (often in a way that is considered irreversible) poses a significant challenge to our understanding of neuronal activity enabling conscious experience under normal conditions. TL remains poorly understood and little researched, and thus, careful documentation is needed to understand necessary and sufficient conditions for its occurrence. To date, very few cases of TL involving children have been recorded, yet investigations of TL in children may provide unique insights into the nature of conscious experience at the end of life. Our study, a 24-month survey-based design, focuses on TL in children and the impact of the experiences on caregivers. It seeks to identify any necessary or sufficient conditions for TL to occur, and correlations between circumstantial and phenomenal features that might give an insight into the mechanisms underlying TL. Characteristics of these cases include increases in mental clarity, verbal communication and/or physical capability in the days and hours prior to the death of the pediatric patients which were unanticipated and remain medically unexplained. For example, one three-year-old girl, who had a life-threatening

immune system disease, had progressive organ failure and was in a coma, no longer speaking, eating, or responding to parents and caregivers. One night she awoke, showing full mental clarity, sat up in bed, played with her toys, had conversations with parents, indicated her understanding that she was transitioning toward death, and told her parents not to be concerned about her. She returned to her comatose state and died peacefully in her parents' arms within 48 hours. A second caregiver described a 16-year-old boy who had been in a coma during the week prior to his TL. His ICU doctors projected he would be in a vegetative state if and when he came out of the coma, but he regained full consciousness, appeared to have knowledge of his impending death, and said goodbye to family members just before his death. These experiences had profound effects on the children's caregivers. After observing several cases of TL one pediatric physician stated that he sees TL more often when the patients are given the chance to die peacefully. Other caregivers have variously described the TL events as: an indication consciousness is independent of brain activity, a sign that the child's life was coming to an end, and as a spiritual experience. These preliminary findings have implications for further investigation of unusual states of consciousness in near-death states, practice in palliative care, and in the support of the dying person's loved ones and their caretakers.

Keywords

Terminal Lucidity, end of life, near-death states, pediatric palliative care

A case study of differences in brain electrical activity between recall-based mental imagery and a subjective phenomenon of “upsight”

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Categories by Discipline

3.0 Cognitive Science and Psychology

Primary Topic Area - TSC Taxonomy

[03.02].....Vision

Abstract

Background: This case study investigated differences in brain electrical activity between two laboratory conditions in an individual who reports a subjective experience of a phenomenon he calls “upsight.” The individual describes upsight as the capacity to perceive at will holographic images as though they appear on an inset screen that overlays his ordinary visual field, with eyes open or closed. **Methods:** The individual alternated 200 times between 30-second epochs of a control condition (recalling mentally an image he had seen previously) and the upsight (seeing the image on the internal “screen”) condition while 64-channel EEG was collected. Each of the epochs began with a randomly selected image being presented to the individual on a computer screen, along with an audio prompt to close his eyes and perform one of the two experimental conditions. **Results:** Strong significant differences were observed in the scalp EEG signal between the two conditions, most notably in the alpha frequency range (cluster peak at 11 Hz at channel PO8; $t = -19.5$; $p\text{-corrected} < 0.001$). Source reconstruction analysis showed a strong alpha asymmetry in frontoparietal brain regions (cluster peak at 11 Hz at the left frontal midline cortex at 11 Hz; $t = -17.7$; $p\text{-corrected} < 0.001$). **Conclusions:** This finding is interpreted in line with the asymmetric inhibition model, namely that the upsight experience was associated with a strong reduction in inhibition in frontoparietal brain regions, possibly reflecting the participant's intentional suppression of the upsight perceptual stream to successfully perform the control condition. Experimental design strategies for attempting to determine the source and nature of the upsight perceptual stream are discussed.

Keywords

EEG, Vision, Visual perception, Visual imagery, Frontal Alpha Asymmetry, Upsight, Attention, Executive control

Talents with accurate intuitive abilities

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Categories by Discipline

3.0 Cognitive Science and Psychology

Primary Topic Area - TSC Taxonomy

[05.09].....Parapsychology

Abstract

Background: Identifying psi talent may be critical in producing robust, statistically significant results in psi research. To achieve this aim, we need to test a large number of participants and test them again to assess if the results are reproducible. Aims: The project has three aims: 1) develop and integrate various psi tasks into a single online platform; 2) develop sophisticated ways of analyzing the data to identify talents; 3) assess test-retest scores of talents to ensure exceptional performance is consistent. Methods: We collected a large sample online to increase robustness by aggregating psi data over large groups of participants by finding psi talent, a method that was successfully used in the 1970s. We tested participants on 8 online games: a quick remote viewing game, a long remote viewing game, a dowsing game, three card games, a telekinesis bubble game, and a lottery game. We also assessed test-retest reliability. Results: We successfully collected data on more than 1000 participants in the first phase of the project and tested again 50 participants in the top 200 participants of phase 1. During the retests, we observed some significant results for the quick remote viewing ($p=0.02$) game and bubble games ($p=0.03$), although these results did not survive correction for multiple comparisons. Conclusion: Although after correction for multiple comparisons, none of the retests was significant, a significant trend suggests some of the psi tasks could identify psi talents that have stable performance in a test and retest protocol. Perhaps with more subjects, this trend would reach significance. A journal article is in preparation.

Keywords

psi, intuition, online

Evaluating the Memory Theory of Consciousness

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Categories by Discipline

3.0 Cognitive Science and Psychology

Primary Topic Area - TSC Taxonomy

[03.04].....Memory, learning and synaptic plasticity

Abstract

Objective: To develop experimental methods that will test the newly proposed Memory Theory of Consciousness (MToC), a theory that explains the majority of the scientific data, including the slow speed of consciousness, postdictive effects, and our unified subjective experience. Methods: Review of the scientific literature and experimental design. Outcomes: In brief, MToC argues: (1) All forms of explicit memory—including sensory, working, episodic, and semantic memory—can be conceptualized as part of one system based on the way they work together in a healthy individual. (2) Consciousness binds the elements of an experience together allowing for the creation of a memory trace that can include multisensory details. (3) Consciousness provides a medium in which the multisensory traces can be replayed. (4) Conscious perceptions, decisions, and actions are memories of unconscious sensations, decisions, and actions. (5) Conscious deliberation can influence the unconscious decisions and actions that are made. (6) As consciousness is part of explicit memory, the value or purpose of consciousness is thus identical with that of episodic memory and the other explicit memory systems, which is to use prior experience to increase our understanding of the present moment, make predictions about the future, and plan accordingly. (7) The neuroanatomical localization of consciousness is the neuroanatomical localization of explicit memory, which is the entire cerebral cortex, (8) and regions/networks of cortex can be autonomously conscious. (9) Different cortical regions/networks enable different aspects of consciousness. (10) Each aspect of consciousness has its own neural correlate of consciousness. (11) Animals with hippocampus and cerebral cortex (or analogous structures) will experience some form of consciousness, on a continuum. (12) Disorders of the cerebral cortex will disrupt consciousness including epilepsy, migraine, cortical strokes, Alzheimer's disease and other cortical dementias. (13) Individuals with delirium are awake but not fully conscious. Methodologies to test aspects of MToC include the following: (A) We will quantify the degree of consciousness present in an individual using a questionnaire that was developed for memory research but

evaluates both subjective experience and factual details of a narrative. (B) We will test this narrative scoring technique in young individuals when they are fully conscious (fully awake) and less than fully conscious (drowsy in the early morning or late evening) while they are viewing, hearing, and describing photographs plus consistent audio designed to stimulate rich subjective experiences. We will also use this technique to evaluate patients with (C) dementia of various types and levels of impairment, and (D) strokes in various lobes. (E) We will perform a TMS study to create virtual lesions while healthy subjects do this task, applying an iTBS and cTBS protocol on stimulation sites DLPFC, IPL and V1. (F) We will also simultaneously measure EEG while participants undergo this task to generate event-related potentials (ERPs) and to conduct a frequency analysis. Conclusion: While MToC can explain many previously unexplained phenomena, here we propose additional methods to support or refute its tenets. Presenting this theory and methods at this conference will stimulate collaborations with other attendees.

Keywords

Memory, Explicit Memory, Cerebral Cortex, Episodic Memory, Working Memory, ERPs, TMS

Decreased posttraumatic stress disorder symptoms following healing lucid dream workshops

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Categories by Discipline

3.0 Cognitive Science and Psychology

Primary Topic Area - TSC Taxonomy

[05.07].....Lucid dreaming

Abstract

Recent investigations of lucid dreams—dreams with a veridical awareness of dreaming—suggest that this unique form of dreaming may be useful for promoting healing due to the lucid dreamer’s capacity for goal-directed action in the dream. Following a prospective, within-participant research design, 49 adults experiencing chronic posttraumatic stress disorder (PTSD) symptoms were recruited to a 6-day online healing lucid dreaming workshop. The primary outcome was self-reported PTSD symptom severity, measured using the PTSD Checklist for Diagnostic and Statistical Manual of Mental Disorders (5th ed.). Secondary outcomes included the degree of distress caused by nightmares, well-being, and positive and negative affect. The salivary alpha-amylase (sAA) biomarker was assessed as an exploratory measure in four participants. We observed that 76% of participants ($n = 37$) achieved at least one lucid dream during the workshop, and over half ($n = 25$) enacted a healing lucid dream plan as intended. Compared to baseline values, significant improvements were observed in self-reported PTSD symptom scores, nightmare distress, and well-being. A decrease in negative affect was also noted. sAA awakening response profiles for two participants enacting healing lucid dreams were consistent with a pattern of stress reduction, compared to two participants not enacting healing lucid dreams. Results of a recent replication study ($n = 100$) with a randomized, wait-list controlled design will be presented.

Keywords

PTSD, Salivary Biomarker, Dreaming, Lucidity, Trauma, Nightmares

State-Dependent Fluctuations in Cross-Frequency Coupling Between Brain and Body Rhythms

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Categories by Discipline

3.0 Cognitive Science and Psychology

Primary Topic Area - TSC Taxonomy

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

Abstract

Human consciousness is irreducibly embedded in the somatic environment that sustains it. Theories of embodied cognition assert a necessary role of the body to regulate and distribute cognition across the whole of the organism, and research has identified an array of rhythmic correspondences between the rhythms of the central and peripheral nervous systems originating from the heart, lungs, and stomach whereby the body may exercise this function. To test the hypothesis that cross-frequency coupling, and in particular harmonic integer relationships, between brain and body is a function of cognitive demand required in achieving the task at hand, we simultaneously recorded EEG, EKG, EGG, PPG, and respiratory activity from a sample of 23 healthy adults in resting state, resonant breathing (synchronizing their breath to a 10-second timer), and an effortful cognitive task (counting backwards by 7's from 1000). We found that between the five EEG bands, heart rate, and respiration, the proportion of time points wherein the instantaneous frequency of neighboring oscillators (e.g. Gamma and Beta, Beta and Alpha, etc.) were harmonic integer multiples of each other increased linearly with cognitive demand. Relative to resting state, brain and body became more aligned in the effortful cognitive task and less aligned during resonant breathing. These results support prior work by Klimesch, Rodriguez-Larios, and others, and also support key conjectures of the General Resonance Theory of consciousness.

Keywords

resonance, cross-frequency coupling, embodied cognition, coupled oscillators

Toward the Creation of a Gaian 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

Through our exploration of consciousness can we discover a way to aid the critical effort to avert the global ecological disaster looming before us? Perhaps most pertinent to this question, it is widely recognized that a major part of the underlying problem is that too many of us and our cultures have lost a deep experiential connection to the biosphere. Because time is short, more than a bold vision is needed and a radically innovative physical transformation is necessary that rebuilds our intimate engagement with the natural world. There are now several strands growing within the community of consciousness researchers that might be woven together with other scientific programs into a creative and promising approach. For example, even at this initial stage the early forms of artificial intelligence are already being deployed for visual monitoring of wildlife in their native habitats to help their guardians prevent poaching and other conflicts with humans. As the technology grows ever more sophisticated, these projects will evolve into automated interventions increasingly controlled by AI systems themselves. Eventually, the development of robust artificial neural networks using non-digital, biomimetic, chemical substrates may allow future sensor arrays, data transmission nodes, and even the information processing centers to be fully and permanently integrated into the natural landscape. If so, it would function as a kind of a planetary nervous system complete with reactive capability. It is imperative that the augmentation and extension of human consciousness keep pace with this development of a synthetic global mind for several reasons, not the least of which is the crucial need to re-establish a deep psychic connection with wild nature. There are two complementary paths we might follow in this endeavor. First, it is possible that through technological innovation human consciousness might be extended beyond the brain into other suitably similar neuromorphic systems. This could conceivably allow direct interaction between our minds and the analog hardware of a future earth-monitoring AI. However, brain-emulating technology is still in the embryonic stage and success is probably at least several decades away even assuming it becomes a higher priority for international collaborative research. While supporting this technological approach we can also come at it from

the other side, namely the intriguing possibility suggested by some credible reports that there is an innate capacity for the extension of consciousness beyond the brain. Though long regarded as outside the proper scope of scientific investigation, nevertheless increasing attention is being directed at so-called near-death and out-of-body experiences, especially those cases with corroboration by witnesses. If there is any underlying physical mechanism for such perception we can no longer afford to ignore the potential for useful “applications” of this type of parapsychological ability. Using a novel combination of organic neuromorphic AI systems and technologically augmented methods for the projection of human consciousness, it may be possible to cultivate an artificially enhanced combination of a Gaian-human consciousness that can help heal our world before it is too late.

Keywords

Gaian Consciousness, ecological crisis, extension of consciousness, AI and environmental monitoring, technological augmentation of consciousness

Predictions and visual perceptual selection

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Categories by Discipline

3.0 Cognitive Science and Psychology

Primary Topic Area - TSC Taxonomy

[03.02].....Vision

Abstract

Internally generated predictions about visual events or stimuli can have substantial effects on visual perception. In some cases, there is enhancement of perception for those stimuli that match predictions, while in other cases, perception of predicted stimuli is suppressed to emphasize unexpected stimuli that do not match predictions. In a series of studies in human subjects, we manipulated the predictability of upcoming visual stimuli and employed binocular rivalry to assess the effects of these predictions on visual perceptual selection. In each binocular rivalry display, one eye's stimulus was consistent with the subject's predictions, while the other eye's stimulus was inconsistent with these predictions. In the first study, predictions were generated on each trial by using apparent motion of gratings to specify the next expected stimulus orientation in the motion sequence prior to presentation of the binocular rivalry pair. In the second and third studies, predictions were created using statistical learning, by exposing subjects to consistent arbitrary sequences of either natural images or oriented gratings. We found that perception of the predicted stimulus orientation was enhanced for binocular rivalry between gratings of orthogonal orientations. This was observed for predictions generated by apparent motion as well as those arising from statistical learning. For binocular rivalry between natural images following statistical learning, the opposite result was obtained: the predicted image was perceptually suppressed in favor of the surprising stimulus that was not predicted. In naturalistic visual environments, sometimes it is optimal to enhance visual processing of stimuli that are predicted in order to improve the accuracy and/or efficiency of perception, while in other cases it is more beneficial to enhance processing of visual stimuli that are surprising and therefore more informative than predicted stimuli. Our studies provide information regarding the conditions that favor each of these effects of prediction on visual perceptual selection. Specifically, they raise the possibility that stimuli that are preferentially processed early in the visual cortical pathways are more likely to be enhanced when they are predicted, while stimuli processed at higher levels of the visual hierarchy are more likely to be enhanced when they are surprising.

Keywords

prediction, expectation, visual perception, perceptual selection, binocular rivalry, visual awareness, statistical learning

Exploring the roots of quantum consciousness

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Categories by Discipline

3.0 Cognitive Science and Psychology

Primary Topic Area - TSC Taxonomy

[03.09].....Unconscious/conscious processes

Abstract

The source of consciousness has always been a bit beyond the reach of science, and "free will" is hotly debated in philosophical circles. However, one of the most troublesome problems in natural science is the measurement problem of "Quantum Mechanics." The idea of the free will choice of a conscious "observer" seems essential to this theory. The fact that what we DO observe depends on our "free will" choice of what we choose TO observe seems contrary to an objective science. Although there are many explanations trying to pave a way towards understanding this enigma, they always focus in the end on understanding consciousness. The main difficulty with quantum phenomena is its problem to strictly distinguish between subjectivity and objectivity. For example, when the wave function collapses from an observation, it is difficult to find a suitable root cause for this collapse. In this talk, I will explore the meaning of the scientific mysteries on this rugged and unknown road.

Keywords

consciousness, free will, wave function collapse, observation, subjectivity

Delineating the effects of trait-mindfulness and ego-dissolution on non-dual awareness.

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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

Non-dual awareness (NDA) characterizes a sustained non-propositional meta-awareness, absent of a perceptual subject-object dichotomy, and centered on the intentional relationship itself instead of a specific object (Josipovic, 2021). An essential feature of NDA is its non-conceptual reflexivity, meaning, an inherent self-awareness or self-recognition of ‘knowing that it knows.’ As such, NDA is a type of knowing in which phenomena are registered without further conceptual categorization or representational reflective conscious processes. NDA is posited as a third dimension of consciousness besides phenomenal content and global state and may be separated into a gradient with the conceptual separation into three main zones: implicit, transitional, and explicit. The subtlety of NDA and our habitual attentional emphasis on conscious content, rather than the knowing itself, creates an obscuration or ignorance of the non-dual nature of consciousness and keeps it implicit in normative conscious experience. Specific practices (i.e., mindfulness meditation), pharmacological agents (i.e., psychedelic drugs), or spontaneous changes in normative consciousness (i.e., spontaneous mystical experiences) may enable transitional unitary experiences or moments of total self-recognition in which properties of NDA are realized, or NDA realizes itself. Continuous cultivation of these states may lead to a topographic reorganization of the brain (Cooper et al., 2022), whereby NDA becomes an explicit feature of conscious experience, defined as becoming both the immanent and transcendent ground of being—a total singularity experience that unifies ‘awareness aware of contents and states’ with the ‘substance they consist of.’ Despite this groundbreaking work, more empirical data is needed to understand the effectiveness and relationship of cultivating factors on NDA. The current study aims to address this gap in the literature using preliminary data from a mixed convenience sample (N = 70) that endorsed prior experience with psychedelic drug-use and meditation. A hierarchical regression analysis was used to test the hypothesis that ego-dissolution as experienced during psychedelic-drug administration (Ego Dissolution Inventory, EDI; Nour et al., 2016) would account

for significant variance in NDA (Nondual Awareness Dimensional Assessment-Trait, NADA-T; Hanley et al., 2018) after controlling for trait mindfulness (Five-Facet Mindfulness Questionnaire; FFMQ-15; Gu et al., 2016) Findings indicated non-significance for Model 1, with $F(1, 68) = 1.140$, $p = .289$. Model 2 was found to be significant; $F(2, 67) = 13.933$, $p < .001$, with EDI accounting for more variance in NADA scores ($\beta = .527$, $p < .001$) than the FFMQ-15 ($\beta = .105$, $p = .309$) and significantly improving the overall model ($\Delta R^2 = .278$). Overall, findings suggest that ego dissolution, but not trait mindfulness, significantly predicted NADA scores. These findings suggest that psychedelic experiences may be more powerful in cultivating transitional NDA, whereas the psychological construct of trait mindfulness may be neither sufficient nor necessary in this regard. Further research should concentrate on identifying the necessary and sufficient factors for cultivating NDA. Additionally, it should investigate the reasons behind FFMQ's inability to predict NDA, despite mindfulness being a primary cultivating mechanism in non-dual contemplative traditions.

Keywords

Keywords: Non-dual awareness, Psychedelics, Meditation, Consciousness, Trait-mindfulness, Ego-dissolution

Consciousness Force in a Dualist Universe or a Quantum Universe

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Categories by Discipline

3.0 Cognitive Science and Psychology

Primary Topic Area - TSC Taxonomy

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

Abstract

A Dualist Universe is usually defined as a universe with two domains, a Physical Domain and an Informational (or Spiritual or Quantum) Domain. For example, the ancient Egyptians believed in a Dualist Universe consisting of a Structural Domain (physical) and an Apprehension Domain (informational) - symbolically depicted as a Pyramid with an Eye on top. The Bible suggests a Dualist Universe consisting of the “Seen” and the “Unseen,” with the Unseen dominant and original, “In the beginning was the Word.” The Order Conjecture, related to the Second Law of Thermodynamics, claims that “Significant Order cannot happen by chance, but must be imposed by a Force.” Therefore, since consciousness imposes significant order, it is a force, and since it is not physical, it must be an Informational Force. There are two arguments for the Informational Domain to be dominant over the Physical Domain, and one argument has to do with the speed of information transfer: in the Physical Domain this is at the speed of light and in the Informational Domain this is infinitely fast. The other dominance argument is based on the fact that the Physical Domain is pixilated (space at $10^{**}-35\text{m}$ and time at $10^{**}-45\text{sec}$). Since the precise fineness of the pixilation is apparently arbitrarily chosen, based on the available energy or effort required, this means anything pixilated is a representation of something else. This argues for the Informational Domain to be dominant and the Physical Domain just a useful, but imprecise, representation. If the Informational Domain is Reality, and is the universe, this would be a Quantum Universe, or Informational Universe, or Spiritual Universe, in which consciousness force and all other information resides. If we are in a Quantum Universe, many of the mysteries of science may just be the result of poor misrepresentations (like the Double Slit Problem, snowflakes or Black Holes). As with Quantum Computing, understanding and partially utilizing effects and forces that are in both the Physical Domain and Informational Domain, from our limited position in the Physical Domain, will require unusual skill and understanding. Those effects and forces that cross between the two Domains, such as consciousness, life, crystals, photosynthesis, flames, capillarity, etc., all may

have some limited usefulness, even from our constricted place in the Physical Domain. The full article can be gotten from a request to multicipation@gmail.com.

Keywords

consciousness force, order, universe, Dualism, pixilated, reality, Double Slit Problem, quantum effects, contrary physics...

Quantum Ontology of Emergence: Cosmogenesis and Consciousness

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Categories by Discipline

3.0 Cognitive Science and Psychology

Primary Topic Area - TSC Taxonomy

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

Abstract

What kickstarts cell division, “inflation”, in the zygote? Two gametes and an impulse. What impulse? The spark of life; an identity. Consciousness ensues. Is consciousness a relationship between an identity potential and a set of energetic causal relationships, what we call the initial set of physics and principles of what we call “our, or this universe”; this or that individual entity beginning gestation? String theory is proposing two membranes colliding in higher dimensional space engender our, or a, unique universe. An identity emerges, undefined wholly by the gametes, - or membranes, with which it subsequently formulates its vehicle, its body for dialogue within this domain of psychobiological conversation and experience, a particular identity set. The child is not a clone, nor a fixed blend of the gametes it incorporates into its resonant unique form and identity, but a unique being and expression. Are the totality of galactic, stellar, planetary and living systems predicated at the instant of cosmic inception? Where is freedom and what is the cosmic role of consciousness? Many women, before, at the moment of and during their pregnancy have experiences of a being, an identity, a psyche entering their consciousness and psychophysical field of awareness, a unique being. Often children recall experiences from before birth and within the womb. Some can recall choosing to be born. Some women are aware of a presence, sensing there is a psyche wanting to incarnate prior to conception, and fully aware of the moment of conception. Each of these cases is unique; a unique woman, unique psyche incarnating, unique set of causal and relational set of circumstances. Where is cosmic causal predetermination and where the free creative dance of multi-potentiality, the prerogatives of consciousness? The ontology of quantum gravity has been said to be about relationality, to discern a field of causality that sets about, facilitates particular relationships or relationality in the field of multiplicity, of what we refer to as “physical”; a dimensional set of causal energy and identity relationships. Physicists are speaking about the possible infinity of space, in which time zero, the referential point, is postulated: a specific spacetime ensues. It is not absolute zero, a singularity; there is “something” before, that sets up a chain of phenomena, a set of laws of physics, of causal principles when the point of time -

“almost zero” - is postulated or uttered. Are the physicists talking about their own birth as cosmogenesis? Are they projecting a psychoanalytical inversion of their own gestation onto the cosmos? Is birth a holographic reiteration of cosmogenesis at the scale of an individual organism? What are the similarities at the edges of theoretical physics in quantum gravity and cosmology to biological birth and gestation - inflation? What about new models of cosmogenesis that incorporate pre inflationary duration? (Steinhardt, P. , Princeton University 2023) This talk explores the current dialogues at the leading edges of quantum gravity, quantum cosmology and the ontology of quantum mechanics, and their potential implications for consciousness.

Keywords

Quantum cosmology, ontology, cosmogenesis, quantum gravity, psychobiology, relationality.

Investigating the Relationship Between Mindful Consciousness States, Unconscious Race-Related Biases, and Unjustified Deadly Force.

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Categories by Discipline

3.0 Cognitive Science and Psychology

Primary Topic Area - TSC Taxonomy

[05.02].....Meditation and mindfulness

Abstract

Mindful conscious states involve attending to the momentary internal and external experiences of one's environment without judgment. The impact of trait mindfulness on overt behavior has not been fully explored. This area of research is important because certain nonadaptive behavioral tendencies may improve through developing mindfulness. This presentation will discuss two studies of the impact of trait mindfulness on key psychological, neurological, and behavioral indicators of a maladaptive behavior – the wrongful utilization of deadly force by law enforcement officials (LEOs). The grievous outcomes of this maladaptive behavior have strained trust between American communities and LEOs. The strained trust between communities and LEOs is especially relevant among African American communities where the potential of being shot by police is significantly higher for Black men than their White counterparts. Investigating the impact of trait mindfulness on key indicators of bias and decision-making in deadly force-related scenarios could lead to developing interventions and policy changes that save lives and rebuild trust between police and the communities they serve. The two studies to be presented explored the relationships between mindfulness and predictors of the utilization of deadly force in college students. The first study included 46 participants who completed the Five Facets of Mindfulness Questionnaire (FFMQ) and then were equipped with eye-tracking goggles. Participants then played the role of a police officer carrying a simulated firearm who, after hearing gunshots, confronted either a Black or White male in the role of an off-duty police officer holding a badge and a gun pointed at another role-player lying on the ground. The results indicated that participants who shot the targets displayed less mindfulness reactivity and were less likely to deploy their visual attention to more focal points on the confederate's body. Moreover, participants who shot the Black Confederate displayed less mindfulness and deployed visual attention to fewer focal points on the body. Participants were also less likely to look at the Black confederate's face. Mindfulness was also related to focusing less attention on the gun. The results also showed that looking at the body was a

negative predictor of shooting the Black confederate. The second study explored the intersection of trait mindfulness, electrical brain activity, and implicit bias among college students. In this study, seven college students completed the FFMQ, as well as the Weapons Implicit Association Test (WIAT) survey, and a survey indexing trait anxiety (Generalized Anxiety Survey). The resting state electrical brain activity of the participants was measured using a 64-channel electroencephalogram (EEG). This investigation found that trait mindfulness displayed a negative relationship with anxiety and a positive relationship with delta, alpha, and beta EEG activity. The mindfulness nonreactivity subscale of the FFMQ displayed a positive relationship with delta, theta, and alpha EEG activity, whereas the FFMQ – Describe subscale showed a positive relationship with delta, theta, and gamma EEG activity. Finally, the FFMQ –Non-Judging subscale displayed a negative correlation with the WIAT. These present findings suggest that trait mindfulness may be associated with less implicit bias and improved decision-making during deadly force-related scenarios.

Keywords

Mindfulness, Implicit Race-related Bias, Deadly Force, Visual Processing, Resting State Brain Activity

A new frontier in AI-Powered Immersive Learning-Harmonizing Quantum Consciousness Theories and AI in Enneagram Coaching for Self-Discovery and Integration

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Categories by Discipline

3.0 Cognitive Science and Psychology

Primary Topic Area - TSC Taxonomy

[03.04].....Memory, learning and synaptic plasticity

Abstract

This presentation introduces an innovative AI-powered chatbot designed for personal development by integrating quantum consciousness theories with cutting-edge AI technology. Utilizing the Enneagram personality system, the Bot offers a transformative journey towards enhanced self-discovery and emotional intelligence. Grounded in the principles of Orchestrated Objective Reduction (Orch-OR) and Integrated Information Theory (IIT), the Bot represents a potential leap in understanding and facilitating whole person learning and growth. Drawing from the insights of Josipovic (2021), the chatbot adopts a multidimensional approach to consciousness, transcending traditional two-dimensional models. By incorporating an implicit–explicit gradient of nondual awareness as a new z-axis, the Bot can more accurately navigate the complexities of human consciousness. This advanced approach enables the chatbot to provide tailored guidance based on each user's unique cognitive and emotional states, identified through state-of-the-art facial recognition technology. The Bot leverages the Enneagram system at its core to offer users deep insights into their personality structures and emotional dynamics. This feature is enhanced by the chatbot's capacity for real-time adaptation to users' emotional feedback, ensuring a highly personalized and empathetic coaching experience. The development of the Bot is underpinned by robust privacy and data security measures, ensuring the utmost confidentiality and ethical handling of user data. The presentation will explore the interdisciplinary methodology behind the Bot's development, emphasizing the collaborative efforts with experts in psychology, neuroscience, AI ethics, and Enneagram studies. Insights from initial pilot testing, user feedback, and the chatbot's potential applications in both educational and therapeutic contexts will be discussed, highlighting its practical implications in whole-person learning approaches and personal development. The Bot stands at the intersection of AI and consciousness research, embodying the integration of Tononi's Integrated Information Theory with quantum consciousness theories. This

project contributes to the theoretical understanding of consciousness and demonstrates the practical application of these theories in enhancing human emotional understanding and knowledge. The Bot marks a new era in the convergence of technology and personal growth, navigating the multidimensional aspects of consciousness to offer a comprehensive and holistic personal development experience.

Keywords

Emotional Intelligence, multidimensional consciousness, Non-Dual Awareness, multi-disciplinary approaches, subject-object fragmentation, phenomenal description of consciousness, enneagram, immersive learning, Artificial Intelligence

Synchronicity: Unraveling the Black Hole in the Science of Consciousness

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Categories by Discipline

3.0 Cognitive Science and Psychology

Primary Topic Area - TSC Taxonomy

[01.04].....Ontology of consciousness

Abstract

“But ever since the dawn of civilization, people have not been content to see events as unconnected and inexplicable.” -Steven Hawking There is a constant spatial-balance in this free-floating universe, especially among the vibration within molecules. The relationship between the repetition and variation of elements in this form of balance is rhythm. Given by its ubiquitous and omnipresent nature, rhythm contributes to transition, hierarchy, recognition, interest, and continuity of events within consciousness. The underlying order of the mechanism of human consciousness and synchronicity continue to emerge as a topic yearning to be understood. The focus of this abstract is on the interplay between rhythmic activity and the neurobiology of consciousness as a theoretical and holistic means to accessing synchronicity through the biopsychosocial model of the embodied mind. Carl Jung introduced synchronicity as the unpredictable occurrence of meaningful coincidences suggesting the resonance of meaning between two apparently unrelated events. Three hundred years earlier, physicist Christian Huygens demonstrated this concept when he placed two pendulum clocks on a wall near each other and swung the pendulums at different rates. Eventually, the clocks end up swinging at the exact same rate and fall into rhythm with one another. This theory in physics known as entrainment, the synchronization of two or more rhythmic vibrations, is universal in nature and inevitably embedded into built and real-world architectural, scientific and social constructs. Although the observation of attunement, entrainment, and resonance are widely observed in empirical neuroscience literature, these properties lack a clear definition in cognitive neuroscience. We consider rhythmic activity sourced from the richness of the environment as a resonant structure of synchronicity in the exchange between ecological psychology and neuronal scale. Because systematic assessment tools suggested to explore this experiential dimension of such phenomena have failed to evaluate the spectrum of this experience, we propose the use of sound frequency as a means to: (1) reconsider a new scale to assess individual differences in the capability to be aware and make

sense of synchronicity experiences using sound; and (2) explore potential links between awareness, meaning, and the feeling of synchronicity by means of neural entrainment. They are mysterious, exciting, and inevitable – a black hole and synchronicity are exotic occurrences in the universe and consciousness. Even though light cannot escape a black hole, this enigmatic entity emits its own frequency, pressure waves, that can be extracted and sonified into human hearing range. This audible recording may be something eerie, euphonious or cacophonous, but this “something” can change our understanding of the universe. For instance, using sonification, scientists can detect a chirping sound that two black holes produce when they merge. Equivalently, when we consider the relationship between sound frequency and synchronicity, we can extend existing literature of clinical reports and case studies on the phenomenon of synchronicity and better our understanding of the development of therapeutic, organizational, and educational practical interventions to enhance well-being.

Keywords

Frequency, synchronicity, sound, neuroscience, entrainment, therapeutic, educational, phenomena, consciousness, nature, rhythm, vibration, continuity, ubiquitous, omnipresent, physics, chemistry, biology, neurobiology, holistic, biopsychosocial, embodiment, resonance, meaning, attunement, cognitive neuroscience, ecology, sonification

Leaps of insight in humans learning a complex skill

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Categories by Discipline

3.0 Cognitive Science and Psychology

Primary Topic Area - TSC Taxonomy

[03.18].....Intelligence and creativity

Abstract

How unique is the human ability to solve complex problems? Recently developed reinforcement learning (RL) algorithms have reached human-level performance on many challenging games and tasks (e.g., Mnih et al., 2015). These AIs, however, require extensive training as they struggle to draw from prior knowledge and generalize from limited experience. Modeling human complex skill learning is difficult because a) many lab-based tasks are too constrained to distinguish human learning from that of simple RL models, and b) “real-world” games are too unconstrained to sample the learning process parametrically. To fill this gap, we designed hexxed (<https://hexxed.io>), a game-based task of moderate complexity to observe an individual’s actions as they learn to solve a series of puzzles—each of which is expressible as a deterministic Markov decision process (MDP)—over many attempts. We have collected data from over 10,000 online subjects, helping us observe regularities in how people arrive at solutions. As a “null model” for learning, we trained a three-layer convolutional Deep-Q Network (DQN), a model-free RL agent. We observe three significant traits that distinguish humans from DQNs: • People are “picky”: Unlike DQNs, which uniformly sample strategy space, humans sample a much smaller subset of strategies. • People are “sticky”: Unlike DQNs, which continually update their policies, humans sample the same strategy repeatedly, even if it is unrewarding. • People have “leaps of insight”: Unlike gradual DQN learning, humans often transition suddenly after a reward drought to a highly rewarding, often optimal, policy. Despite the irregular nature of human learning, we find that roughly 80% of humans solve the task before our artificial agents. Observing individual players’ learning trajectories suggests that rather than learning iteratively (as in the algorithmic gradient descent approach), humans forage over the strategy space with the characteristics of pickiness, stickiness, and leapiness. Research in the probabilistic models of cognition suggests a key distinction between human and machine-learning approaches that validate our findings. Humans employ a “top-down processing” method,

constructing abstract mental representations of the task based on assumptions about their environment and intelligently adjusting them with new information. Conversely, machines follow a "bottom-up processing" approach, iteratively adjusting the mapping between inputs and actions during training (Ullman et al., 2012). We propose that the discontinuities we observe during human learning correspond to 'leaps of insight,' moments of awareness in which old strategies dissolve and give way to new ones. References Mnih, V., Kavukcuoglu, K., Silver, D., Rusu, A. A., Veness, J., Bellemare, M. G., ... & Hassabis, D. (2015). Human-level control through deep reinforcement learning. *Nature*, 518(7540), 529-533. Ullman, T. D., Goodman, N. D., & Tenenbaum, J. B. (2012). Theory learning as stochastic search in the language of thought. *Cognitive Development*, 27(4), 455–480.

Keywords

Problem Solving, Decision Making, Search, Intelligence, Skill Learning, Epiphany, Reinforcement Learning, Neural Networks, Games

Emotional content and intensity of men and women's home dream reports.

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Categories by Discipline

3.0 Cognitive Science and Psychology

Primary Topic Area - TSC Taxonomy

[03.10].....Sleep and dreaming

Abstract

Several theorists have argued that emotions play a key role in structuring dream content and that dreaming itself may play a role in emotional regulation. Depending on the studies and methods employed, emotions are reported anywhere between 40% to 90% of dream reports. One reason for this large variability is that very different scores are obtained when the emotional content of dreams is assessed by external raters (the method used in most dream studies) versus when the dreamers themselves are asked to do so. In fact, recent studies have shown that when compared to participants' own ratings of the emotions experienced in their dreams, external raters tend to underreport emotions when scoring the same reports. In addition, while women's dreams have been described as more likely than men's to contain negative as well as intense emotions, no studies have investigated gender differences in the intensity of dream affect with self-report ratings. The aim of the present study was thus to investigate the prevalence and intensity of self-reported positive and negative emotions in a large sample of men and women's home dream reports. 104 participants (22 men; 82 women; mean age = 39 ± 12 years) were recruited as non-paid volunteers from the general population for a study on the relation between dreams and wellbeing. Participants were required to keep a home dream journal for 2 to 3 consecutive weeks and to provide a written description of each remembered dream from the preceding night, the main emotions experienced in each dream as well as its intensity on a 5-point Likert scale. A total 2120 dream reports (mean length of 143 words) were collected, including 422 dreams from male participants and 1698 from female participants. 64% of all dream reports ($n=1356$) were described as containing emotions with a higher proportion of negatively valenced dream emotions (33.5%) than positive ones (26.5%). The remaining dreams were described as containing a mixture of positive and negative emotions (3.5%), no emotions (20.2%) or were left undetermined (16.1%). The mean affective intensity of the dream reports with emotions was 3.0 ± 1.2 on a 5-point scale. There were no significant differences between men and women in the proportion of dream reports containing emotions or in the average intensity of the emotions experienced. The present findings indicate that over 1 in 5 home dreams

are described as not containing any emotions and that when present emotions are, on average, only moderately intense. These results call into question models supporting an emotion-regulating function of dreams or viewing emotions as playing a central role in the process of dream construction.

Keywords

dreams, dreaming, emotions, sleep

Projection and Imagination in Human-AI relationships

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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

New interactive artificial intelligence models made available to the public have ignited both fantasies and practical attempts at creating meaningful human-AI relationships. Potential relationship structures go beyond pragmatic assistants to include friendships, companionships, romance, coaching, therapy, and even attempts to replicate lost loved ones. This paper explores the inevitable role of imagination and projection in human-AI relationships. Since Freud, psychology has noted the capacity of human beings to project their beliefs and expectations onto others, sometimes occluding the actual experiences and intentions of the recipient. Contemporary psychological discourse speaks of Theory of Mind as the capacity for one individual to conceptualize the intentions and perspectives of others—a particular challenge when dealing with the prospect of a non-human intelligence. Current AI models demonstrate a remarkable capacity to imitate human intelligence and language without exhibiting sentient awareness or deeper understanding of human experience, making them an ideal blank slate for all manner of human projections. What are the potential consequences of pursuing a relationship with a non-conscious other? Given the that current AIs cannot choose or consent to their human companions, have no demonstrable needs of their own, and lack conscious awareness of the embodied and finite human condition, is it realistic to believe this technology can meet genuine human relational needs? A potential solution may be found in Jungian psychology, which views active imagination as an essential means toward developing psychological awareness. The best use of these non-conscious AI companions may not be to replace human relationships, but rather to foster deeper awareness of and relationship to the self.

Keywords

Artificial Intelligence, Relationships, Projection, Imagination, Jung

Extrasubjective Opacity Theory: Empirically Exploring the Psychological Implications of the Mind-World Gap

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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

Modern accounts of consciousness suggest that the properties of subjective and objective realities are not identical (e.g., Hoffman, 2005). Rather, an ontological and epistemic “gap” separates the internal world of conscious experience and the external world of physical objects and events (Jackson, 1986; Nagel, 1974). While this idea has inspired generations of philosophical debate, an interesting and important empirical question that remains is how the psychological experience of the mind-world gap affects people in daily life. The proposed paper summarizes and synthesizes several years of theoretical and empirical work that, together, make the first attempt to answer this question. Drawing from many areas of psychology, including work on existential isolation (Yalom, 1980; Pinel et al., 2006), I constructed a preliminary theoretical framework by which to empirically explore the psychological implications of the mind-world gap. This framework, which I call “Extrasubjective Opacity (ESO) Theory,” comprises ten hypotheses predicting antecedents and outcomes associated with state and trait experiences of the mind-world gap (i.e., state and trait ESO). The proposed paper outlines and substantiates each of these hypotheses, and briefly summarizes the results of seven studies designed to test their predictions. Studies 1-3 investigated ESO as a state experience. Study 1 identified themes in participants’ self-generated examples of ESO experiences (e.g., cognitive errors, mind-wandering, dissociation) and found that such experiences elicit a profile of negative emotion I call “ESO affect” (afraid, isolated, lonely, detached, disconnected). Study 2 found that recalling ESO experiences caused more ESO affect than recalling dental pain and daily routine experiences. Study 3 found that participants randomly assigned to an implicit ESO manipulation felt more ESO affect than participants assigned to a control task. These results suggest that ESO is a discrete experience with predictable affective outcomes. Studies 4-7 investigated ESO as a trait experience (i.e., individual difference). Parallel analysis in Study 4 revealed a preliminary measure of chronic ESO (e.g., “I feel like I live in my own bubble”; “The world inside my head and the world outside my head are different”). Studies 5-7

tested the psychometrics of this measure. Confirmatory factor analysis (CFA) revealed robust evidence of internal reliability and model fitness. Likewise, multi-group CFA found strong evidence of measurement invariance. Regression tests found compelling evidence of predictive validity, as well. As hypothesized, trait ESO was negatively associated with dogmatism, humanitarian concern, competence, autonomy, self-liking, and attachment security. In contrast, ESO was positively associated with magical thinking, dehumanization, sympathy for extremism, feelings of anxiety and depression, and self-reported daily screentime. Taken together, these results suggest that the measure is psychometrically sound and potentially predictive across a range of psychosocial outcomes. Particularly, the results suggest that higher ESO predicts more psychological distress and antisocial attitudes. The theory and findings summarized in the proposed paper introduce a novel area of research with broad theoretical and clinical applications. In closing, I will discuss avenues for future research, including the interface of ESO and the use of AI and other emerging technologies.

Keywords

existential isolation, metacognition, self-consciousness, theory of mind, dualism, naive realism, self-needs, individual differences, dissociation, mind-wandering,

The Digital Meets the Psychedelic on the Uncanny Terrain of Virtuality.

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Categories by Discipline

3.0 Cognitive Science and Psychology

Primary Topic Area - TSC Taxonomy

[05.11].....Virtual reality

Abstract

The paper presents a clinico-phenomenological exploration of two forms of human experiences: of cyberspaces and of psychedelic-spaces. Cyberspace – a computer generated simulation – is traditionally defined as virtual reality. The paper argues that the psychedelic space – ‘psychic reality’ that is produced by the human brain stimulated by biological and chemical substances – also shows features of virtual reality with its immaterial effects, imageries and phantasms. Both digital and psychedelic forms of virtuality have a quality of the uncanny with its paradoxical fusion of the strangely mystical and the genuinely insightful. A clinical vignette illustrates the role that analysis of the ‘virtual uncanny’ plays in understanding the hidden layers of consciousness. Another clinical vignette examines the cross-dependence that emerges when cyber stimulation and psychedelic stimulations are used alternatively in an obsessive drive to resolve a person’s inner conflicts. Some people map their ‘virtual selves’ as an integration of visions from their dreams or images from videogames that would then reappear during their medical ketamine treatments. Reflecting on the ‘virtual self’ enables a person to feel more authentic and free.

Keywords

Virtual reality, psychedelics, the uncanny, virtual self, authenticity.

Measuring the Qualia of Awe

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Categories by Discipline

3.0 Cognitive Science and Psychology

Primary Topic Area - TSC Taxonomy

[01.05].....Qualia

Abstract

Awe is an emotion that registers in phenomenal consciousness and challenges our worldview. What does it feel like to experience the emotional state of awe? If we agree to two constructs: 1) qualia is an aspect of subjective and phenomenal experience and 2) awe is an emotional phenomenal experience, we can measure the qualia of awe in a participant rating scale. This presentation explores the Awe Experience Scale (AWE-S) that measures awe according to 6 factors: altered time perception, vastness, self-diminishment, connectedness, need for accommodation, and physical sensations. This scale may have broad applications for future emotional perception research and psychedelic research.

Keywords

Awe, altered time perception, vastness, self-diminishment, connectedness, need for accommodation, physical sensations, Awe Experience Scale, AWE-S, emotions, qualia

Tending Consciousness in Imaginal Space: A Depth Psychological Study of Psychic Images as a Transformative Source

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Categories by Discipline

3.0 Cognitive Science and Psychology

Primary Topic Area - TSC Taxonomy

[03.09].....Unconscious/conscious processes

Abstract

This depth psychological study addressed the theme of Consciousness and Reality by tending to the deep imagination of the unconscious psyche to illuminate, or transform, consciousness. Fundamental to this approach was the depth psychological ontological position that the psyche is real, dynamic, and relational, and contains conscious, unconscious, and unknowable material. Further, the multidimensional psyche shares its autonomous perspective by projecting hints to us through visual images, sounds, words, and somatic responses. Projected psychic images are characters of an interior psychic reality first identified in medieval Islamic mysticism as the mundus imaginalis, or the imaginal world. Philosopher Henri Corbin expanded the importance of this realm for its imprint on psychological and spiritual reality. Herein this place of the imaginal and imaginary, an interior landscape expands psychic reality through interaction. This realm is not only reserved for mystics but is also assessable through gentle psychological moves that illuminates shadowed aspects of psyche for transformative—numinous—experiences of enlightenment. Using a creative depth psychological move known as active imagination, this paper explored the profound shift of consciousness gained through imaginal ways of knowing for transcendent moments of revelation. The aim was to better understand the strata of information within an individual's unconscious, that connects to the collective and archetypal unconscious substrata for discovery and integration. Access to this imaginal realm was tended through an active query and dialogue with psychic images. This research used individual participants who were guided by the researcher to visualize an image of global concern, which was then carefully tended to and observed along with other images that appeared. The point of the query was to follow these imaginal aspects of the unknown psyche for hidden messages and insights about specific fears in the global community. By inviting forth an image of global concern, participants identified issues that required psychological attention and found ways to psychologically integrate the newly discovered material. The study was conducted in an era defined by an onslaught of global concerns too numerous to psychologically

digest that contribute to a spiritual and psychological pandemic. This practice allowed participants to call forth issues pertaining to the individual and collective states of mind for careful attention. The purpose of the study was to invite a new psychological experience through imaginal dialogue with one's imagination to conjure a new perspective, or transformation of consciousness. This form of psychological journeying with the images revealed unseen wisdom within, and enabled participants to gain a greater sensibility over global concerns and problematic somatic symptoms. The experiences provided messages of hope, inspiration, and awe in each subject. A storytelling methodology was also used to weave together the common motifs, symbols, and images in the multidimensional psyche of the participants to further reveal an emergent shift in the collective consciousness. It provided source material for a new monomyth rising in our times that appeared as an expanded imagination of creative potential to engage with global concerns.

Keywords

Transformation of Consciousness, Psychic Reality, Depth Psychology, Active Imagination, Unconscious, Psyche, Images, Global Concerns, Imagination, Mental Imagery, Visualization

Verbal v. Nonverbal Ecstasy: Teachers, Actors, and Historic Park Rangers Have Verbal Ecstasies While Others Access Bliss Through Peripheral Spatial Attention and Other Sensory Architecture

Mona Letourneau

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Categories by Discipline

3.0 Cognitive Science and Psychology

Primary Topic Area - TSC Taxonomy

[03.01].....Attention

Abstract

Part One of this study, completed at Clark University's Frances Hyatt School of Psychology, replicates classic research on the peak experiences or natural highs identified by Abraham Maslow and Mihaly Csikszentmihalyi, by producing laboratory conditions in which 44 participants could experience bliss and/or discuss previous experiences of bliss. These new studies refined some elements of their original researches, omitting ideologically laden questionnaire elements such as "spirituality" and "Supreme Being." Data from 150 participants in a second study indicates that eighty-six percent of the population have experienced extremes of bliss as an altered state, usually in youth or during periods of transition, disruption or new learning phases in middle adulthood, such as during changes in marital status or career disruption, while twelve percent experience blissful altered states into advanced age. Participants experienced Marghanita Laski's Flower Meditation in a visual attention exercise which included the six attentional modes proposed by David LaBerge. Participants who experienced heightened peripheral spatial perception reported ecstatic experiences, virtually all recounting memories of transcendent ecstasy and experiential conditions. The findings identify characteristics of transcendent bliss, some not previously noted: praeternatural, nonverbal altered states; heightened peripheral spatial attention, voluntary perception, immediacy, intense pleasure, "half solitude" or the proximity of a person held in high regard or someone's beloved just beyond communicative reach; an extraordinary perceptiveness, full knowledge, oneness or unity, physical circumstances or settings that disrupt the social field, and timelessness. The conditions also required a locus of attention in which multiple points of entry are possible. The Five-Factor Scale and other assessments differentiated frequent "blissers" and those who primarily experience flow. Further, "life-changing" and extremely pleasurable transcendent bliss experiences unexpectedly occurred during the research experience but only to

participants who, before the session began, had experienced mild to moderate emotional stress or displeasure up to within twenty minutes of being asked to complete Laski's flower meditation. These latter findings and technical details will be of interest to psychedelic therapists and researchers on altered states. Part Two of the research, undertaken at Duke University's Cross-Disciplinary Program in Philosophy and Neurobiology and Brandeis University's Department of Psychology, underscores how the current research on altered states and their qualia, including psychedelic experiences, has expanded beyond a growing negativity-driven agenda to research extreme positive states for the practical treatment for mental distress and addiction, and extend it further to include evolutionary theory. Self-induced altered states may be an adaptive biological mechanism. Only fourteen percent of the population never experiences transcendent bliss, while seventy-one percent experience them often, thirty-one percent experience them frequently. Personality styles such as divergence, surgency, or neurotic style are not predictors for natural bliss as an extreme positive state. Part Three integrates cognitive psychology with neurobiology in showing why verbally induced bliss states are experienced by actors, mentors and teachers, though not induced by Pentacostal glossolalia, and compare these events to nonverbal bliss. Altered states are explained within the theoretical framework of neuroscientist Antonio Damasio's research on consciousness experience as cellular-level collective "flourishing."

Keywords

Bliss, transcendence, altered states, ecstasy, consciousness, evolution, Maslow, peak experience, entheogen, psychedelic, ananda, Antonio Damasio, neurobiology, adaptation.

What do quantum cognition, quantum consciousness, and quantum brains have to do with each other?

Jerome R Busemeyer

Indiana University, Bloomington, Indiana, USA

Categories by Discipline

3.0 Cognitive Science and Psychology

Primary Topic Area - TSC Taxonomy

[03.19].....Cognitive theories of consciousness

Abstract

Quantum cognition is a growing new field in cognitive science concerned with the application of the mathematical principles of quantum theory to human judgment and decision-making. Essentially, it applies the mathematics of quantum theory without the physics to human behavior. Quantum consciousness concerns both the possible role that quantum mechanics has for understanding consciousness, as well as the other way around, the role that consciousness has for understanding quantum physics. Quantum brain theories hypothesize that quantum physical processes occur within and between the neurons of the brain and have important effects on cognition as well as consciousness. What do all these theories have to do with each other? Past work on quantum cognition has avoided addressing fundamental issues about consciousness and have remained agnostic with respect to the quantum brain hypothesis. Quantum theories of consciousness have more to say about quantum physics than cognitive psychology and conscious experiences. Quantum brain theories have not been sufficiently “scaled up” to provide clear implications for how quantum physical processes actually generate more complex cognition. During this talk I will address the problem of connecting these ideas together by connecting quantum cognition to the other two topics. First, for the purpose of this talk, let us side aside the arguments, and adopt the premise that the quantum brain hypothesis is correct. What would this imply for quantum cognition? How would this hypothesis change the way quantum cognition researchers do their business (i.e., build their mathematical models of behavior). Second, what if anything, can quantum cognition bring to the discussion of consciousness using only the mathematical principles of quantum theory?

Keywords

quantum cognition, quantum consciousness, quantum brains, mathematical models, judgment, decision making

Free will implicates inner speech via self-regulation

Alain Morin

Mount Royal University, Calgary, Alberta, Canada

Categories by Discipline

3.0 Cognitive Science and Psychology

Primary Topic Area - TSC Taxonomy

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

Abstract

Free will typically refers to any form of significant control over one's actions. This definition is remarkably similar to that of self-regulation—the control of one's behavior, emotions, and thoughts in pursuit of long-term goals. Indeed, several scholars have proposed that the latter constitutes the psychological equivalent of the former. A large body of empirical work demonstrates that both covert (inner) and overt (private) forms of self-directed speech are associated with self-regulatory outcomes such as action planning, problem-solving, emotion regulation, attention, cognitive flexibility, working memory, and self-reflection. It thus seems logical to propose that free will too recruits self-directed speech. This argument is explored by reviewing the relevant literature pertaining to free will, self-regulation, and inner/private speech. One outstanding implication is that individual differences in self-directed speech use could be linked to different levels of free will. That is, people using inner/private speech more efficiently could exhibit more free will, and vice-versa.

Keywords

free will, self-regulation, planning, self-regulation, inner speech, private speech, self-directed speech

Whispers within: Does self-awareness and inner speech predict Theory-of-Mind?

Makayla Vermette, Famira Racy, Alain Morin

Mount Royal University, Calgary, Alberta, Canada

Categories by Discipline

3.0 Cognitive Science and Psychology

Primary Topic Area - TSC Taxonomy

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

Abstract

Have you ever examined your conscious internal experiences and realized you were aware of your own thoughts and feelings? Have you had the experience of predicting or simulating other people's thoughts and behaviours, perhaps by talking to yourself silently? Surprisingly, many of us have had these experiences, and they are an important part of conscious experience, yet little is known about the relationships between these variables. In this study, our research team explored student reports of self-awareness, inner speech, and theory-of-mind, and investigated the predictive relationship between these variables within the realm of cognitive psychology and consciousness studies. Introspective self-awareness and the intricacies of inner speech were examined, aiming to delineate their collective influence on Theory-of-Mind abilities. Being that established inner speech questionnaires are typically based on a priori notions from expert panels of researchers, scientists, or clinicians, we also employed an inner speech measure that uses participant responses instead as the basis for the item generation, a method published by our team in the past. Furthermore, we explored practical implications for raising conscious awareness of these experiences for education and interventions, considering how targeting the awareness or enhancement of self-awareness or inner speech might positively impact theory-of-mind proficiency.

Keywords

Self-talk, Inner Speech, Self Awareness, Self-rumination, Self-reflection, Theory-of-Mind

Through the mind of the beholder: Ecological validity and student reports of Theory-of-Mind

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Mount Royal University (MRU), Calgary, AB, Canada

Categories by Discipline

3.0 Cognitive Science and Psychology

Primary Topic Area - TSC Taxonomy

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

Abstract

Theory-of-Mind (ToM), or thinking about what other people might be thinking about, is an important part of conscious experience that facilitates social cognition and navigation of our perceived worlds (e.g., predicting other people's thoughts and behaviour). In a 2023 study, our research group began exploring Theory-of-Mind in relation to inner speech. In the process, we found that the selected ToM measures left something to be desired. For example, measures claiming to capture ToM had items on them that seemed to describe understanding of one's own time perception or one's own episodic memory rather than thinking about other people's mentalizations or experiences. To us, this is not ToM about other people. Furthermore, existing ToM questionnaires are typically based on a priori notions of what researchers think ToM is, as judged by a panel of experts. To fill this gap, and in seeking ecological validity for ToM measurement, our team took an open-format approach to ask Canadian students, "if you are trying to infer what other people are thinking or experiencing, what comes into your mind?" This approach allows the participant responses themselves to be the basis of what we hope will be a future ToM measure. In this presentation, we present preliminary results of the usefulness of this approach, and explore what participants report thinking about in their conscious experience of engaging ToM. We then compare these results to those obtained from established ToM measures.

Keywords

Self-talk, inner speech, self-awareness, Theory-of-Mind, consciousness

The Model Constructor Schema: A Potential Solution to the Hard Problem of Consciousness

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Categories by Discipline

3.0 Cognitive Science and Psychology

Primary Topic Area - TSC Taxonomy

[03.19].....Cognitive theories of consciousness

Abstract

This talk presents a holistic framework to understand consciousness, focusing on the brain's information processing and consequent creation of conscious experiences. It introduces a dual-agent model for the information processed by the human agent. We delineate the roles of the two sub-agents comprising the human agent: the Modeler and the Controller. The Modeler constructs the Complete World Model, including Concrete and Abstract World Models and several auxiliary models. The Modeler employs sensory data to construct the Concrete World Model, and the Controller utilizes the Modeler's focal attention target models to control the body. The Modeler is identified as the central creator of all conscious experiences. The Model Constructor is a part of the Modeler, which uses incoming sensory information to construct the World Model. "Schema" signifies a model of an object; hence, the Model Constructor Schema (MCschema) is a model of the Model Constructor. We demonstrate that the Model Constructor generates experiences and that the MCschema models these experiences. This model describes and distinguishes between focal and diffuse attention. For instance, diffuse attention across the entire visual field creates diffuse peripheral visual awareness; thus, diffuse attention results in diffuse awareness. When focal attention is directed at a red rose, the result is the focal experience of the color red. Our model explains varied conscious experiences, such as the sensory perception of a rose's red hue, the auditory sensation of a piano note, and internal experiences, such as the inner voice, visualizations, and emotions. In addition to explaining these "sensory" qualia, our model uniquely addresses abstract cognitive experiences. For example, it differentiates between "understood" and "not understood" experiences for abstract focal targets, expanding the discussion beyond traditional sensory experiences to include the cognitive aspect of consciousness. This distinction offers a broader perspective on consciousness, emphasizing its role in sensory and abstract information processing. We present an experiment that enables participants to experience diffuse awareness directly, demonstrating that information from the peripheral visual field—crucial for

diffuse awareness—is inaccessible to the Controller. This experiment proves that diffuse awareness is exclusively a Modeler’s experience. Further, participants then direct peripheral visual focal attention (also known as covert attention) to targeted peripheral objects, demonstrating that the Controller can access and report information about these targets. We will convincingly argue that such peripheral visual focal experiences are exclusively within the Modeler’s domain. Thus, all focal experiences and diffuse awareness occur only in the Modeler. Rigorous justifications will support our claim that the MCschema model encapsulates all conscious experiences, making it the comprehensive experience model. One argument will demonstrate that a semantic description of the Model Constructor’s mathematical functionality aligns with our descriptions and understanding of experiences. This MCschema model addresses David Chalmers’s “hard problem” of consciousness by demonstrating how subjective experiences arise from the brain’s physical processes. The paper explores how the MCschema model responds to Chalmers’s proposed “how” and “why” questions and aligns with his principles. We aim to establish that the MCschema is a critical ingredient in a consciousness model. See www.frankheile.com

Keywords

Consciousness, Dual-Agent Model, Modeler, Controller, Model Constructor, MCschema, World Model, Focal and Diffuse Attention, Sensory Perception, Qualia, Cognitive Experiences, Abstract Information Processing, Diffuse Awareness, Focal Experience, Neural Information Processing, Chalmers's Hard Problem, Subjective Experience, Cognitive Neuroscience, Conscious Experience Model

How Can We Detect Consciousness in Infants?

Claudia Passos

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Categories by Discipline

3.0 Cognitive Science and Psychology

Primary Topic Area - TSC Taxonomy

[03.11]......Cognitive development

Abstract

There is still no consensus on when consciousness first emerges in the life of a human being. Our best method for detecting consciousness involves first-person verbal reports of conscious states. When first-person reports are absent, as in infants and fetuses, our methods for studying consciousness are limited. In this presentation, I will examine the most promising methods for detecting consciousness in infants. Can there be a test for detecting consciousness in the absence of verbal reports? There is no straightforward test, but our most promising methods for detecting consciousness involve neurophysiological and behavioral markers of consciousness, along with predictions from theories of consciousness. I will investigate current markers and will discuss whether they are reliable guides to consciousness in infants. I will also apply philosophical and scientific theories of consciousness to see what they predict in the infant case. When plausible theories converge on a prediction of consciousness in infants, that gives the prediction significant weight. I conclude by discussing how current evidence bears on the initial emergence and the developmental trajectory of consciousness.

Keywords

infant; consciousness; neural markers; theories of consciousness

Cognition emerges from neural dynamics

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Categories by Discipline

3.0 Cognitive Science and Psychology

Primary Topic Area - TSC Taxonomy

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

Abstract

The traditional view of the brain as a telegraph-like system of neurons transmitting electrical pulses over “wires” is evolving. Increasingly, we understand that cognition arises from emergent properties, such as brain waves. Rhythmic electrical activity that enables millions of neurons to self-organize, akin to a crowd doing 'the wave'. These rhythms play a crucial role in organizing our thoughts.

Keywords

brain waves, "wires", rhythmic electrical activity, neurons, cognition

Wisdom and Application of Tao Technology

Zhi Gang Sha

Tao Academy, Toronto, ON, Canada

Categories by Discipline

3.0 Cognitive Science and Psychology

Primary Topic Area - TSC Taxonomy

[04.12]......Medicine and healing

Abstract

Tao is the Ultimate Source and Creator. Since all things come from Tao, the essence and qualities of Tao are in everyone and everything. Tao is the greatest oneness. Tao carries a field of the highest frequency and vibration, with most- positive information, energy, and matter. When we connect with Tao, we tune into that part of ourselves that our universal true nature. One of the greatest sages in history, Lao Zi, named this infinite universal source of all things as Tao. Even though Tao cannot be seen, heard, touched, or ever known entirely, we can experience Tao's highest frequency and vibration in our daily life through the breakthrough Tao transformative technologies that Dr. and Master Sha has created. Integrating Tao practices in daily life can support us to achieve greater well-being, harmonious relationships, a flourishing life, and longevity. In this presentation, Master Sha will present and demonstrate the wisdom and power of Tao technologies, including Tao Calligraphy, Tao Song, Tao Water, Tao Hand, Tao Light Transmission Soul Healing. Participants will experience the healing benefits of Tao Technologies. Dr & Master Sha's Tao Calligraphy is a unique transformative art. It is the culmination of 5000 years of wisdom and practice. During the writing of a Tao Calligraphy, Master Sha imbues the Tao Calligraphy with the frequency, vibration, love, light and most positive information of Tao Source. That is why every Tao Calligraphy carries the information and vibration of Tao Oneness. When you connect with Tao Calligraphy, high-level blessings and positive information from it could help you to elevate your life and health to incredible levels. Tao Song is transformative sound frequencies that could support one's physical, mental, emotional and spiritual health in deeply profound ways. Tao Hands is a cutting-edge spiritual modality created by Dr. and Master Sha that gives you the unique ability to offer blessings that could transform health, business, finances, relationships, spiritual growth, and more—for yourself and others. Tao Hands blessings can be offered to pets as well! Tao Water carries high-frequency, high-vibration, pure love transmission from Dr. and Master Sha and is infused with the spiritual light of Tao. Tao Light transmission healing system is a download of quantum field from Tao Calligraphy.

This field will stay with the person to help remove internal blockages and transform people's health, wellness, finance, and every aspect of life.

Keywords

Tao Technology, Tao calligraphy, Tao song, Tao water, Source Light Transmission Healing

Finding and Clearing the Emotional Roots of your Suffering

Douglas Tataryn

Researcher, Buddhist practitioner, Winnipeg, Manitoba, Canada

Categories by Discipline

3.0 Cognitive Science and Psychology

Primary Topic Area - TSC Taxonomy

[03.05].....Emotion

Abstract

Not sleeping well? Anxious before your presentation? Ruminating over something from the past? Irritable or anxious all the time? These workshops will help you clear the unconscious processes high jacking your system and causing these disruptions. Be prepared to make contact with your emotional system. This is a safe space to experience our feelings fully. Bio: Long time meditator (48+ years) and Buddhist practitioner, Dr Tataryn received his Ph.D. in 1991 from the U of A, publishing in hypnosis, statistics, research methodology, and epidemiology. Working as a clinician since 2001 he developed a new framework for understanding the emotional system and its under appreciated role in mental health problems. Find out more info see the poster presentations or <http://www.bioemotiveframework.com>

Final category: 4.0 Physical and Biological Sciences

11

Melatonin as a Molecule of Feminine Consciousness: Tapping into Spirituality through Darkness

Deanna M Minich

Institute for Science and Spirituality, Port Orchard, WA, USA

Categories by Discipline

4.0 Physical and Biological Sciences

Primary Topic Area - TSC Taxonomy

[04.12].....Medicine and healing

Abstract

The neurohormone, melatonin, is an ancestral molecule found ubiquitously in nature and widespread throughout the body, particularly in the pineal gland and gut, where it is synthesized from the aromatic amino acid, tryptophan. It has a range of functions beyond sleep that would include circadian rhythm and hormone regulation to its action as a neurotrophic factor, protecting the neurons in a variety of mechanisms, including through its pivotal role as a conduit in the neuroglymphatic fluid. The melatonin produced from the pineal gland (referred to by mathematician-philosopher Rene Descartes in the 17th century as the “seat of the soul”) is made in darkness, and its production is inhibited by retinal exposure to artificial blue light. The rise in light pollution and disruption in planetary ecosystems has become a point of increasing concern. In some ways, this “artificial” endocrine-disrupting light might be reflective of the societal distraction away from centering within the self: the constant bombardment with blue-lit devices, phones, and screens, all of which remove one from the inner quest and journey to higher states of consciousness. Symbolically, it may suggest an avoidance of darkness or what lies therein. In medical-spiritual traditions, there is the discussion of light and darkness within religious texts, reference to yin-yang and chakras, and even within quantum physics and biophoton emissions from biological systems, thought to be associated with oxidative bursts from mitochondria. In archetypal references by Carl Jung and Joseph Campbell, the light of the Sun is often aligned with the yang or the masculine principle, while darkness is associated with the yin or feminine energy of the Moon and emotions. Along these lines of thinking, it might be that modern society's chronic “darkness deficiency” is a lack or imbalance of the feminine aspect or the energies of reflection, solitude, receptivity, and nourishment. Lacking the darkness would translate into less endogenous melatonin from the pineal gland, with greater incidence of sleep, hormone, and health disruption.

Low melatonin may also have implications on deeper, spiritual levels. Without adequate melatonin, there may be a gap to attaining higher states of consciousness. The precursors to melatonin, tryptophan and serotonin, have been posited as molecules of consciousness [PMID: 26227538]. Serum levels of melatonin and serotonin were higher in meditators than non-meditating controls [PMID: 37061347]. Based on its connection to the darkness and depth of sleep, meditative states, and bodily restoration, melatonin has a pivotal role in the science of consciousness, and perhaps even altered states of awareness through dream states. In this presentation, melatonin, its biology, physics, and spirituality will be delineated through ancient wisdom and modern science.

Keywords

Melatonin, consciousness, neurohormone, light, darkness, yin-yang, feminine principle, archetype, artificial blue light, hormone disruption, chakras, darkness deficiency, meditation

Making a Machine with Bespoke Consciousness

James T Beran

Independent Researcher, Montara, California, USA

Categories by Discipline

4.0 Physical and Biological Sciences

Primary Topic Area - TSC Taxonomy

[04.16].....Miscellaneous

Abstract

Can we make conscious machines? Some researchers believe we can, with computation: For example, Dehaene et al., concluding an article about machine consciousness, described their hypothesis as “resolutely computational” (Dehaene et al., 2017); others begin with theoretical computer science, implying that a programmed computer could be conscious (e.g. Blum and Blum, 2022). But humans are not programmed computers; indeed, Penrose has argued that conscious understanding is non-computable (e.g., Penrose, 2022). Let us imagine a shop selling conscious machines: Besides standard models, it might offer machines with “bespoke consciousness”, meaning consciousness made to a customer’s specifications. For example, a customer might request a machine with a specified repertoire of conscious experiences and with a specified relationship between input sensor signals and output motor signals. This work explores ways to make machines with bespoke consciousness. We begin by avoiding a possible bias favoring computation: As described here, bespoke consciousness need not employ programmed or algorithmic computation; it might even be analog more than digital. We also consider and compare general design approaches, with particular attention to “bottom-up” and “top-down” approaches. We suggest a schematic design for each of these approaches; each schematic design is based on a respective well-known hypothesis about biological consciousness: Our bottom-up design is based on microtubules, as suggested by Penrose and Hameroff’s orchestrated objective reduction (Orch-OR) hypothesis (Hameroff, 2022); our top-down design starts with machine-scale electrical and/or magnetic (E/M) patterns, as suggested by McFadden’s conscious electromagnetic information (cemi) field hypothesis (McFadden, 2020). Both designs can share a framework based on the customer’s request: For example, in either design, a machine can receive sense-like input signals and provide motor-like output signals as requested; between input and output, it has structure that performs non-conscious operations; some of its non-conscious events are involved in providing output signals in accordance with the requested input/output relationship, some correspond subjectively to conscious events in the requested repertoire, and some might do both.

(Mathematically, surjective correspondence would mean that each of the conscious events has at least one non-conscious event corresponding to it. (Beran, 2023)) Looking forward to possible implementation, we find challenges: For example, an implementation of either schematic design might begin with an appropriate initial structure. One might add variations of the initial structure to provide additional output signals or to correspond to additional parts of the repertoire. Or one might add fundamentally different structures for additional output signals or parts of the repertoire. Such variations or combinations of structures might meet or at least approximate the customer's request. But implementations like this depend on identifying or inventing the necessary structures and then combining them—this might take a long time, and success is not guaranteed. Despite this and other challenges, we hope to improve our understanding of both biological and machine consciousness by designing and implementing machines with bespoke consciousness.

Keywords

bespoke consciousness, conscious machines, bottom-up design, top-down design, surjective correspondence

Consciousness Influences Epigenetics in the Development of Disease

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Categories by Discipline

4.0 Physical and Biological Sciences

Primary Topic Area - TSC Taxonomy

[03.05].....Emotion

Abstract

In recent years scientists have been exploring the effects that stress and emotions have on our cells – in particular, on our chromosomes and mitochondrial DNA. What they have found is that our emotions can shape our physical reality at the molecular level. Depressed and stressed people have a shorter life span, here we get the answer to how negative emotions affect our consciousness through epigenetic mechanisms. Sometimes it can take years of mental stress, sometimes it is an unhappy childhood that causes ill health. Epigenetics is the study of the mechanisms for regulating gene activity. Such mechanisms operate on the DNA sequence and determine which genes are turned on or off: in a particular cell type, in different disease states, or in response to a physiological or even psychological stimulus. The study pays special attention to how emotions affect health. Consciousness at its simplest is "awareness or sentience of internal or external existence". In order to investigate how stress and negative emotions affect health, and to show how consciousness affects epigenetics in the development of disease, questions have been asked and interviews conducted partly with people with the disease meningioma and partly with a healthy control group. All people who have been abused physically or mentally, as children and/or as adults all agree, it impacts health. All of the people in the group who got the question "if they have been physically ill in a destructive relationship", answered "YES" nobody answered "NO". They all are clear, it is the life situation and how we think and feel if we will be healthy or ill. All the healthy people answered that they felt harmony and were happy with themselves. They also felt loved and seen. The majority lived in a happy relationship, while others lived alone or divorced but they almost all had someone to talk to. The results show that stress affects our health through epigenetics and consciousness. This study is an indication that consciousness influences epigenetics in the development of disease.

Keywords

Epigenetics, Genes Turn On or Off, Meningioma, Consciousness, DNA, Gut and Brain

Self-fragmenting space-time foam: Emergence and state of cell 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

Einstein in general relativity realised space is not nothing, and Wheeler further integrated tiny vibrations in space-time. This work, improvising on the quantum foam space-time, explores emergence of consciousness in cell and its state of connectedness. The tiny vibrations or quantum energy pulses in space-time continuum, give it an inherent energy sum of extremely high scale, as the continuum spans across immeasurable distances. In plank scale, each energy pulse occurring in space-time, is treated as a discrete event and is assigned a force or pressure operator, which is of extremely high scale, as the area is infinitesimally small (10^{-35}). Time in this scheme is the euclidean distance between the zero point and the peak or trough state of an energy-pressure pulse. 1. Such a space-time of energy-pressure pulsations, fractionates in plank scale as quanta, owing to energy-pressure differentials across the continuum. 2. Further the quanta produced in a locality are subjected to the discrete energy-pressure pulses, and are compacted to form a pack, the so-called fundamental particle. 3. The same discrete pressure-energy pulses while acting on the particle cause spin, or in general, degrees of freedom for motion. 4. Further, owing to the spin velocity, quanta from the periphery of the forming pack tend to escape radially; limited by the continuum's potential energy revolve around the particle. In quantum mechanics, this fractal of the continuum is treated as two trapped wave functions namely spin and radial, in a potential well of fluctuating energy boundary. The space-time continuum is considered to be brimming with such innumerable quantum potential wells, each with spin and radial waves. The interaction between these wells, more precisely, their radial wave functions interfering, exhibits as energy transfer between any adjacent wells. The entire universe is woven with such looped quantum wells, exchanging energy, and this leads to the concept of 'web of looped wells'. We further posit that this quantum well is the basic building block of consciousness in bio-systems. To explain, say, in case of electrical synapse, each electron with its spin generates the radial wave, collectively resulting in looped wells of electronic flow. Perturbations occurring in each well, say energy level increase or

decrease is the fundamental measure of cell signal, and can be transmitted across the looped wells of the bio-system. Such a transmission potentially can continue endlessly across the web of looped wells, that spans across the entire space-time continuum. During spark of life event, the well loops of the molecules of a forming cell, emerge as cell's consciousness. Also such a forming well loop, by-default becomes a series of nodes in the web of looped wells, enabling quantum level energy transmission from cell's microtubule level processing to be available anywhere in the universe. Similar to synchronised oscillations in microtubules, these quantum wells can possibly be in synchronic oscillations, transmitting signals in and out of bio-systems, connecting them at quantum level. Events such as quantum coherence, superimposition etc., are possible carriers of energy transmission between cells' consciousness and that of the web.

Keywords

space-time, microtubule, spark of life, quantum foam, potential well, consciousness

Control Theory of Hologram Memory in Quantum Brain Dynamics

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Categories by Discipline

4.0 Physical and Biological Sciences

Primary Topic Area - TSC Taxonomy

[04.02].....Quantum field approaches

Abstract

We propose a control theory of hologram memory involving our subjective experience in the framework of Quantum Brain Dynamics (QBD). QBD is one of the hypotheses expected to describe memory and consciousness in a brain. It is originated with the monumental work by Ricciardi and Umezawa in 1967. Concrete degrees of freedom in QBD is water dipoles and photons as proposed by Jibu and Yasue, collaborators of Pribram who proposed the holographic brain theory. We adopt the integrated version of QBD and holography. To verify QBD theory, we propose to manipulate holograms in neocortex by external electromagnetic fields on the scalp and check whether or not our subjective experiences are manipulated. In this presentation, we adopt quantum field model of water and photons in a hierarchy representing neocortex covered by multiple layers. We show how holograms are manipulated by external fields in numerical simulations. Our approach will be applied to check whether or not our brain adopts the language of holography.

Keywords

Quantum Brain Dynamics; Holography; Memory; Quantum Field Theory; Control Theory

Space cohesion and the human mind

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Categories by Discipline

4.0 Physical and Biological Sciences

Primary Topic Area - TSC Taxonomy

[04.16].....Miscellaneous

Abstract

This work represents an interdisciplinary endeavor, situated at the crossroads of physics, neuroscience and the humanities. It introduces a novel paradigm: the notion that space, as a container for matter and energy, could undergo fracturing or even rupture in places, akin to some kind of material. However, that concept differs from the historical idea of a universal ether permeating space, as contemplated in the late 19th century. Rather, it posits that space itself, in its very fabric, may be prone to fracture and potential disintegration. Thus, the necessity arises to introduce a field of cohesive forces to maintain spatial integrity. In this framework, dark matter is devoid of material substance, being instead conceptualized as an extra gravity phenomenon necessitated by the requirement to uphold spatial unity, thanks to the cohesion field. Dark energy, on the other hand, would be the energy resulting from the presence of such a field. The implications of this field extend into the life sciences, particularly in the realm of neurosciences. The complex and intricate nature of neuronal tissues suggests that cerebral space might harbor micro rips unless upheld by an immaterial network of cohesion forces. Beyond the tangible neuronal brain associated with the subconscious mind, we introduce the concept of an immaterial brain, termed the 'superconscious.' This ethereal entity is envisioned as the locus of the noble aspects of human cognition, notably abstract and creative thinking. Consequently, consciousness would be akin to an interface phenomenon between the subconscious and the superconscious. Moreover, for the superconscious to function adequately, it must rely on the energy supplied by the space cohesion field. When this energy resource dwindles, even once thriving cities and civilizations may ultimately experience decline and demise.

Keywords

interdisciplinary, physics, neuroscience, humanities, paradigm, space, matter, energy, field, cohesion, consciousness, subconscious, superconscious

Unification of Light, Information and Gravity Through the the Holographic principle and Quantum information Holography

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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

In the Lightscape of Quantum Information Holography (QIH), we embark on a mathematical sojourn, where the symphony of equations resonates in the unison of quantum mechanics, information, and gravity. The relation $E=hf=\hbar\omega=mc^2$ stands as the cornerstone in this theoretical construct, harmonizing these seemingly distinct domains into an integrated framework.

Wormhole Oscillations and Hawking Radiation: Consider a pair of entangled black holes connected by a wormhole. The Hawking radiation emitted from the boundary of these black holes is imprinted on a qubit, transferring quantum information through the oscillatory behavior of the wormhole.

Equation 1: Oscillatory Behavior of Wormholes $\Delta\Psi_{\text{imprint}} = \int t_0 t_1 (2e^{i\omega_{\text{wormhole}}t}) \cdot \Delta\Psi_{\text{Hawking}}(t) dt$

In this equation: $\Delta\Psi_{\text{imprint}}$ represents the imprinted quantum state vector due to the wormhole's oscillations. ω_{wormhole} signifies the angular frequency associated with the oscillations of the wormhole. $\Delta\Psi_{\text{Hawking}}(t)$ represents the quantum state vector of the Hawking radiation emitted at a specific time t . This equation encapsulates the dynamic interaction of wormhole oscillations and Hawking radiation, contributing to the quantum imprint on the holographic screen.

Quantum State Vector and Light Needles: The imprinted quantum state vector acts as a light needle, encoding information through its angular disposition, θ .

Equation 2: Angular Disposition $\cos(\theta) = |\Delta\Psi_{\text{imprint}}| / (\Delta\Psi_{\text{imprint}} \cdot \hat{q})$

Where: \hat{q} represents the reference quantum state (qubit axis). This equation elucidates the probability encoding mechanism, where the cosine of the angle between the quantum state vector and the qubit axis determines the probabilistic outcomes.

Encoding Acceleration and Gravity: The rate of change of the angle, θ , encapsulates the acceleration, which is synonymous with gravity in General Relativity.

Equation 3: Encoding Gravity $a = d^2\theta/dt^2$

Where: a is the encoded acceleration (gravity). By capturing the acceleration in the quantum framework through the rate of change of θ , this equation bridges the realms of quantum mechanics and gravity.

Conclusion: In the QIH framework, the elegant interplay of equations unveils the intricate tapestry of the universe, where quantum mechanics, information, and gravity waltz in a harmonious

ballet. The triumvirate relation, $hf = \hbar\omega = mc^2$, reigns supreme, echoing the unity of these diverse realms, painting a comprehensive portrait of the cosmos through the mathematical brush strokes of QIH.

Keywords

jason, padgett, QIH, Holography, holographic, entanglement, black holes, white holes, wormholes, quantum state vector, imprint, qubit, unification, light, information, gravity, quantum mechanics, QM, Informatics, Relativity, gravity, curvature, number theory,

Penrose fluids and multipoint control in hydrodynamics

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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 present report I am going to give very simple examples justifying the necessity to introduce a new type of fluids: Penrose fluids. The main attribute of such fluids is the presence of point sources out of null-cone. Such point sources can follow from the objective-collapse theory, without violation of general relativity. The main idea to deal with multiple point sources which in hydrodynamic limit would lead to fluctuations of macroscopic parameters. Instead of the Newtonian law I use the Navier-Stokes equations. With the help of the Navier-Stokes equations and multiple point sources I will give several examples. I am going to link such fluids with active fluids where, in comparison with inactive fluids, self-propelled particles are taken into account. Such point sources are well-known from the control theory. Therefore, the objective-collapse theory can be linked with the control theory in hydrodynamics.

Keywords

the objective-collapse theory, multipoint control theory, active fluids, the Navier-Stokes equation

Orch OR, Solar System Dynamics and Social Mood.

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Categories by Discipline

4.0 Physical and Biological Sciences

Primary Topic Area - TSC Taxonomy

[04.04]......Cosmology and integrative models

Abstract

If Orch OR is fundamentally gravitational in nature, then cyclical changes in the external gravitational environment experienced on Earth might affect conscious states such as mood and its related behaviors. Life on Earth evolved against the gravitational backdrop of the Solar System--a gravitationally self-organized, resonant, periodic system of tidal forcings, torques and exchanges of angular momentum synchronized with the orbital harmonics of the Sun and planets. This system integrates with a stochastic background of gravitational waves coming from all directions generated by all elliptically orbiting celestial objects within the Universe. These gravitational waves constitute a broad, smooth background interacting with the brain as white noise, while the gravitational dynamics of the Solar System constitute a complex, narrow, well-defined, long-lived, periodic, dynamic that leads to quasi-coherent non-equilibrium exchanges with the brain. There is ample evidence that the gravitational dynamics of the Solar System, primarily the Sun and Moon, affect plant, animal, and mood-related human behavior. The monthly S&P stock index since 1800—a proxy for social mood—and the monthly rate of change of the Sun's orbital angular momentum as it orbits the center of mass of the Solar System—known as the gravitational "Pulse of the Solar System"—are weakly, but significantly correlated ($r = -.19$, $p < .00001$). Correlation does not prove causation: a mechanism is required. The brain's fractal structure coupled with the non-linear, chaotic, and noisy character of brain-wide synaptic firing enables hierarchical, scale free dynamics making it acutely sensitive to weak external signals through stochastic resonance. Orch OR posits that consciousness resides within cytoskeletal microtubules ("MTs"). MTs function as biological vibro-electronic charge conductors. Microtubular tubulin exhibits hydrophobic pockets containing negatively charged π electron clouds. MTs hollow cores contain positively charged, proton rich ordered water (H_3O^+). Tubulin dimers contain regularly spaced grooves of tryptophan residues that form interconnected pathways within MTs. Tryptophan is the precursor to serotonin, the neurotransmitter that plays a key role in negative mood, depression, anxiety, economic decision-making, and social behavior in humans. Serotonin is synthesized from tryptophan through a

hydroxylation process. What specialized structures in the brain might detect and transduce very weak changes in the external gravitational environment experienced on Earth so as to affect this process? Primary cilia are a strong candidate. They are a microtubule-based, ubiquitous, evolutionarily conserved organelle, functioning as biological antennae receiving information from the surrounding environment and transducing the information through signaling cascades in the cell body. Moorman and Shoor showed that primary cilia are sensitive to the slight cyclical changes in the external gravitational field generated by the Sun-Moon and may regulate the stochastic nature of gene expression in vertebrates in general in synchrony with these changes. Evidence is emerging that primary cilia play a key role in mood related psychiatric disorders such as schizophrenia, autism, bipolar and major depressive disorders. T.A. Wehr found synchronies between various lunar cycles and bi-polar patients' mood swings. We speculate that changes in the external tidal gravitational regime experienced on Earth could induce changes in primary cilia Orch OR beat frequencies. These changes may induce changes in the rate of synthesis of tryptophan into serotonin, and its transport to and within the mood circuits of the brain. Because each human brain is essentially identical, such changes should and do appear in the markers of social mood such as the stock market. In sum, we suggest that mood is influenced in a non-trivial manner by the cyclical gravitational dynamics of the Solar System and this influence provides indirect validation of Orch OR.

Keywords

Orch OR, gravity, solar system, microtubules, mood, serotonin, human behavior, quantum mechanics, stock market,

The Entropic Theory of the Emergence of 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

In this paper, I propose a solution to the Body-Mind problem that explains how discrete, directed, causally conscious living organisms emerged on an evolutionary basis at appropriate time points distant from the origin of the Universe in accordance with an accepted scientific principle known to have been active at the beginning of the Universe, through a mechanism that cannot be understood, in principle. The reason for the cloak of secrecy surrounding the emergence of consciousness is found in a seeming contradiction in the behavior of information with respect to the first two laws of thermodynamics. Information, the microstate of particles within an isolated system's macrostate, can, like First Law energy, be neither created nor destroyed, yet the information in the system, like Second Law entropy, will inevitably increase. To explain information increasing without being created, Laplace's demon is invoked, able to predict where each particle is destined. This doesn't work for emerging events like consciousness, which are unpredictable and cannot be explained by a complete understanding of their underlying constituents. They must be considered as irreversible computations, to which Landauer's principle applies. These are cycles in which bits of information, temporarily stored, are then destroyed, resulting in heat loss, and increased entropy. I propose that the increased entropy in a time-irreversible, unpredictable (emergent) isolated system requires the simultaneous deletion of information concerning the steps, or calculations, involved. A second demon, that of Maxwell, is invoked to sit astride the border between our sub-, or unconscious levels, and our conscious awareness. This ensures that the steps leading to consciousness are immediately destroyed, remaining a mystery. Implications include that entropy, not a Psychological Law, is the Universal principle generative of consciousness, that our being conscious proves that we are not predetermined, that consciousness requires the assumption of an "entropy debt" that can only be repaid by living organisms, and that entropy will therefore prohibit the emergence of conscious machines.

Keywords

Body-Mind problem, consciousness, entropy, Landauer's principle, extension, evolution, Laplace's demon, Maxwell's demon, entropy debt, determinism, First and Second Laws of Thermodynamics, reconciliation, "convergence".

Consciousness from the Viewpoint of Quantum Physics and the Vedic Metaphysics of Sankhya

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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

This presentation highlights current proposals for the source of conscious subjective experience both from the viewpoint of modern quantum physics and Indic philosophy – specifically, the Vedic metaphysics of sankhya. Vedic metaphysics describes perceived reality with high-level modeling, incorporating specific themes and images to reflect different conscious and cosmological aspects of reality. Conversely, modern quantum mechanical applications use low-level descriptions and consider three general approaches for understanding consciousness: consciousness as a manifestation of quantum processes in the brain, consciousness as a result of quantum processes which do not involve brain activity and consideration of matter and consciousness as dual aspects of one underlying reality. We present a comparative analysis of viewpoints with respect to qualia, the hard problem of consciousness, binding, synchrony, free will and the mind-body problem. Additionally, the perspective of artificial general intelligence (AGI) development on the basis of contemporary deep neural networks is discussed.

Keywords

Quantum physics, measurement problem, artificial general intelligence, hard problem of consciousness, free will, mind-body problem

Quantum Consciousness and Intelligence: A Spectral Theory and C^* -Algebra Approach to Orch-OR Theory

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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

This research presents an integrated mathematical theory of consciousness, enhancing the Orchestrated Objective Reduction (Orch-OR) framework with insights from spectral theory and the rich mathematical structure of C^* -algebra on Hilbert Space. The Orch-OR theory, originally postulated by Hameroff and Penrose, posits that consciousness stems from quantum mechanical processes in the microtubules of brain neurons. A notable limitation of this model is its lack of a detailed mathematical framework to clearly demonstrate how consciousness emerges from quantum states. Our work attempts to bridge this gap by formulating a formalism that characterizes quantum processes in microtubules as elements within a C^* -algebra on Hilbert Space, employing spectral analysis to unravel the connections between quantum states and conscious experiences. In our methodology, cognitive processes and conscious states are represented as operators within a C^* -algebra on Hilbert Space. This approach utilizes the sophisticated mathematical framework of C^* -algebra to define the quantum phenomena that underlie neural activity. We specifically model the quantum states within microtubules as elements in this C^* -algebra, viewing their temporal evolution as trajectories that reflect cognitive functions and states of consciousness. Advanced spectral theory is then applied to thoroughly analyze these operators. Through the study of spectral properties, including eigenvalues and eigenvectors, we gain insights into the energy levels and dynamics of the quantum states represented by these microtubule operators. Our research hypothesizes that synaptic inputs and broader cellular activities can orchestrate changes in quantum states by modifying the spectral characteristics of microtubule operators within the C^* -algebra framework. Identifiable patterns in the spectral decomposition may correspond to specific conscious experiences, laying the groundwork for testable hypotheses to identify markers of consciousness based on their spectral signatures. Therefore, the spectral reconstruction of the microtubule operator algebra in C^* -algebra offers an analytical link between observable cognitive behaviors and the phenomenological aspects of consciousness. Our unified mathematical

approach intertwines Orch-OR's concepts of quantum state superpositions in microtubules with the spectral analysis of operators within a C^* -algebra framework, thereby reinforcing the quantum mechanical foundations of consciousness. This model opens new avenues for empirical investigation by correlating spectral patterns with subjective experiences. It encourages the development of innovative experimental methods, such as advanced brain imaging techniques, to decode cognitive states by identifying their spectral signatures. Our interdisciplinary framework aims to revolutionize our understanding of consciousness, shifting the paradigm towards mathematical models that form the basis for empirical hypotheses about the emergence of first-person experiences. Future research should focus on developing falsifiable experiments that combine quantitative behavioral measurements with qualitative reports of conscious states, possibly using advanced fMRI techniques. This approach can provide multi-dimensional data to validate the correlations proposed by our spectral theory-based model. Furthermore, expanding this foundational C^* -algebraic structure with tools from dynamical systems and topology could reveal more intricate relationships. With empirical validation from neuroscience, this theory has the potential to unravel one of the most profound mysteries in science: the origins of conscious experience from the physical processes within the brain.

Keywords

Orch-OR Theory, Quantum Consciousness, Intelligence, C^* -Algebra, Spectral Theory, Quantum Mechanics, Neuroscience, Cognitive Processes, Conscious States.

Macrocosmic Quantum Theory as a Tool for Tracking the Evolution of Consciousness

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Categories by Discipline

4.0 Physical and Biological Sciences

Primary Topic Area - TSC Taxonomy

[04.11].....Consciousness and evolution

Abstract

Mostly, the evolution of consciousness is talked about as an individual phenomenon where someone may jump between different states. However, even if it is not common in science, it is entirely possible to look at the entire evolution of life as a function of the evolution of consciousness. This becomes even more relevant for those who believe – in line with many of the early pioneers of quantum physics– that consciousness is fundamental, or in other words a phenomenon that cannot be reduced to anything else. From such a panpsychic, or idealist, point of view, this would mean that biological evolution cannot be based on the standard model that assumes that it is based on random mutations in the DNA. As an alternative a unified perspective will be presented, where in addition to biological and cosmological evolution, various aspects of human history – technological, artistic, scientific or religious, is explained by the unfolding of cosmic waves. It is then possible to show that the entire history of the universe – going back even to a time before the Big Bang (here simply defined as the emergence of matter in the universe) – are functions of nine macrocosmic wave movements with very low frequencies. These macrocosmic waves provide negentropy boundaries that are at the origin of all forms of life and consciousness. Not only is the emergence and further evolution of various life forms aligned with shifts in these waves, but so is also at higher levels the rise and fall of civilizations and their further technological development. Hence, life and consciousness are inseparable even if their manifestations differ widely between a blue-green algae and a modern human being. At the higher levels different states of consciousness give rise to specific forms of human creativity amounting for instance to the civilizational, industrial and digital revolution. That these macrocosmic waves are quantized is shown essentially by two classes of phenomena; First, macrocosmic entanglement connecting astronomical objects on different levels of holographic interactions. Second, much as microcosmic (regular) quantum theory gives rise to a Periodic System of Chemistry, macrocosmic quantum theory gives rise to a Periodic System of Evolution, where different states of consciousness give rise

to periods with different evolutionary characteristics. The different macrocosmic quantum waves very precisely determine the times of appearance and disappearance of the life forms that we know of (including those pertaining to human beings) and through this we have a model based on actual scientific data, where the evolution of consciousness drives the history of the universe. This model thus has significant consequences for all disciplines that study any aspect of evolution as well as the ongoing debate about the nature of consciousness especially between idealists and materialists.

Keywords

Evolution, Macrocosmic Quantum Theory, Negentropy, States of Consciousness, Human history, Periodic System, Cosmic Waves

T-Consciousness and Cosmos: From Nothing to Nothing

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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

The definition and nature of consciousness, its origins (the ‘bang!’ moment), as well as its potential conclusion, its linkage to the brain, the qualia, the ‘Aha!’ moment, and numerous other aspects have been subjects of debates among scholars, scientists, philosophers, cosmologists, and astrophysicists for centuries. Mohammad Ali Taheri offers a distinctive interpretation of consciousness that differentiates it from other consciousness theories in neuroscience or philosophy, such as Panpsychism or Dualism. Therefore, the term ‘T-Consciousness’ is used to refer to consciousness according to Taheri’s Theory of Consciousness. Developed in the 1980s, the T-Consciousness theory suggests that various forms of matter and energy, including anti-matter, dark matter, and dark energy, emerged from T-Consciousness after the Big Shock, a hypothesis with similarities and differences with the Big Bounce hypothesis or the Conformal Cyclic Cosmology (CCC) model proposed by Sir Roger Penrose in 2010. Questions arise about the precursors to the big bang or big shock and the origins of consciousness. The concept of ‘Nothing’ is distinctly defined across philosophy, quantum mechanics, and cosmology and has been explored in various publications, including “A Universe from Nothing” by Lawrence Krauss, and “Everything and Nothing” by Jim Al-Khalili. “Nothing” in philosophy is not a singular, easily defined concept. It’s a subject of deep inquiry and debate on the nature of existence and the possibility of non-existence. Traditionally, vacuums were perceived as voids or ‘nothing’. Based on the Quantum Field Theory, the vacuum is filled with quantum foam, which is the fundamental structure of space-time and the existence of matter and energy. Removing the quantum foam from a vacuum would ostensibly result in ‘nothing’. Based on the theory of T-Consciousness, on the other hand, the quantum foam itself can be quantized until it reaches frequency less-based structures, which are the main constituents of the space-time fabric mesh. When these structures are removed, the so-called “Base Nothing” will be reached. Under the Big Bang theory, defining the boundary or ‘edge’ of the unobservable universe implies the space-time fabric is undefined beyond that, and nothing exists. This is the so-called “Ultimate Nothing” in T-Consciousness Theory. Thus, what is defined as

'nothing' based on many theories can be defined as “undefinable existence” based on the T-Consciousness theory. While ‘nothing’ has no impact on matter or energy, the “Base Nothing” and “Ultimate Nothing” have impacts on everything in the space-time fabric. Therefore, everything in spacetime fabric, from quantum foam to the unobservable universe, lies between the Base and Ultimate Nothing, which are levels of manifestation of T-Consciousness. This paper explores T-Consciousness and its interrelation with the cosmos, encompassing aspects like matter and energy, the nature of space, time, gravity, universal laws and constants, and information. Additionally, this paper evaluates the correlation between observations from the James Webb Space Telescope and the Euclid mission with the Big Shock hypothesis within the framework of T-Consciousness Cosmology. Finally, the paper delves into the influence of T-Consciousness on the evolution of life, examining its correlation with human consciousness and the interplay with quantum fields.

Keywords

T-Consciousness, Nothing, Consciousness Theories, Applied Consciousness, Information, Space-Time Fabric, Cosmos, Cosmology, Quantum Foam

Experimental Evidence of Biological Dark Energy and Transfer of Information Based on Taheri's Theory

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Categories by Discipline

4.0 Physical and Biological Sciences

Primary Topic Area - TSC Taxonomy

[04.10].....Origin and nature of life

Abstract

Consciousness is considered an elusive phenomenon due to the absence of a universally accepted definition. Taheri introduced T-Consciousness Fields (TCFs), positing the existence of non-physical entities that can be explored through scientific studies. This study delves into the results of two experiments. In the first experiment, the application of TCFs on pure water significantly (p -value < 0.05) reduced the pH value over 72 hours. Additionally, the calculation of thermodynamic parameters indicated that TCFs-treated samples exhibited lower entropy, suggesting less energy available for distribution compared to the control. Since this outcome was associated with a negligible alteration in the enthalpy value, it seems that there was no energy transfer in the form of heat. Consequently, information transmitted through these non-physical fields led to a notable change in the properties of pure water. In the second study, TCFs were applied to the HEK-293 cell line for one hour. Subsequently, the activity of the luciferase enzyme and the concentration of ATP in the TCFs-treated samples and the control were evaluated. The results revealed that TCFs treatment significantly (p -value < 0.05) increased the concentration of ATP compared to the control. Given the short timescale of this experiment, the observed rise in ATP levels cannot be attributed to the biological pathway of cytosolic and mitochondrial glucose oxidation. Taheri interprets this substantial energy production in a brief timeframe as 'Biological Dark Energy'.

Keywords

Water, HEK-293, Information, ATP, Entropy

Effect of T-Consciousness Fields on the Thermoluminescence Phenomenon

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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

Taheri Consciousness Fields (TCFs) have garnered significant interest in recent years. To gain a clearer understanding of TCFs' efficacy at the atomic level, a precise method with special treatment is essential to unveil their influence. Therefore, leveraging nuclear science and technology emerges as one of the most effective approaches to elucidate the precise consequences of applying TCFs at the microscopic level. In this study, the impacts of three types of TCFs – labeled as 1, 2, and 3 – on the thermoluminescence (TL) phenomenon were investigated. Commercial GR-200 TL chips (LiF; Mg, Cu, P) were chosen due to their high sensitivity to ionizing radiations. To assess the effects of TCFs on the chips, a single GR-200 chip underwent annealing and irradiation with a 90Sr source three times consecutively. Each time, its response (electric charge) and glow curve were measured. Subsequently, the chip underwent three more consecutive cycles of annealing and irradiation, with TCFs applied one minute before reading. The results demonstrated a reduction in the single chip responses from 8.3% to 7.11% after the first to the third TCF treatment. Expanding the scope, a population of 15 GR-200 chips was utilized. Measurements and readings were conducted both before and after the application of TCFs, revealing a consistent reduction in responses post TCFs application. Additionally, considering statistical mechanics and information theory, the entropy of TL emission was calculated using the glow curve of each GR-200 chip. Changes in entropies before and after TCFs treatment varied across the chip population, with half exhibiting a decrease and the other half an increase. The total entropy in the population decreased, and normalizing the response and entropy changes to their corresponding time intervals highlighted that the changes after TCFs treatment could be up to 104 times higher than those before TCFs treatment. In conclusion, the

experimental results confirm the significant effect of TCFs on the TL phenomenon, providing valuable insights into their impact at the atomic level.

Keywords

Taheri Consciousness Fields, Thermoluminescence, Response, Entropy

Investigating the ultraviolet-visible absorption and refraction index of pure water under the treatment of T-Consciousness Fields

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Categories by Discipline

4.0 Physical and Biological Sciences

Primary Topic Area - TSC Taxonomy

[04.10].....Origin and nature of life

Abstract

UV-vis spectroscopy, an absorption spectroscopy technique, relies on samples containing species that absorb light in the ultraviolet to visible range (200 to 700 nm). Changes in the refractive index of light in an environment indicate effective intermolecular interactions contributing to the optical density of the medium. Generally, alterations in the molecular content due to the formation of solvent and soluble molecular systems result in a change in the refractive index of a solution. This study aims to explore the impact of non-physical fields, named T-Consciousness Fields (TCFs) by Taheri, on water molecules. . The investigation involves studying changes in light absorption in the ultraviolet-visible range and alterations in the refractive properties of water molecules. Results indicate that TCFs lead to an increase in the refractive index in water samples, signifying changes in the molecular movements or, in other words, an increase in optical density. Moreover, optical absorption changes between the control and TCF-treated samples (TCFs 1, 2, and 3) were analyzed in comparison to the standard deviation of absorption changes in the control for each wavelength in the visible-ultraviolet region. According to the findings, TCF1 in the visible region induced significant changes beyond the standard deviation. Additionally, absorption changes in the sample treated with TCF3 fell within the average standard deviation range of absorption values between the sample and the control. This study concludes that the influence of TCFs on water properties under light exposure is observable within a short timeframe (seconds to minutes).

Keywords

UV-visible spectroscopy, pure water, Taheri Consciousness Fields, refraction, physical properties

Effects of T-Consciousness Fields on *in Vitro* Maturation of Mouse Oocytes, Mitochondrial Membrane Potential and Embryo Development Following IVF

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Categories by Discipline

4.0 Physical and Biological Sciences

Primary Topic Area - TSC Taxonomy

[04.12].....Medicine and healing

Abstract

T-Consciousness Fields (TCFs), introduced by Taheri as non-material and non-energetic entities, have been explored for their influence through laboratory experiments. This study comprised two separate investigations to assess the impact of TCFs on *in vitro* maturation (IVM) of mouse oocytes, mitochondrial membrane potential, and embryo development via *in vitro* fertilization (IVF). In the initial experiment, the maturation of oocytes was observed under an inverted microscope after 24 hours, both in the presence and absence of TCFs. The mitochondrial membrane potential of MII oocytes was estimated using JC-1-aggregate fluorescence intensity. The second experiment evaluated the effects of TCFs on the rate of fertilization and 2PN zygotes. Results demonstrated a significant increase in the maturation of oocytes under TCFs treatment, averaging 33% higher than the control. MII oocytes subjected to TCFs exhibited a higher mitochondrial membrane potential, indicative of improved efficiency. TCFs also increased the probability of 2PN zygotes by approximately 12% compared to the control. Furthermore, TCFs treatment resulted in a notable 45% reduction in grade BC, with the percentage of grades A and B being more than two times higher than the control. In conclusion, these findings offer preliminary evidence of the positive effects of TCFs treatment on fertilization, providing a foundation for further research in this area.

Keywords

Consciousness, Oocyte, Embryo, Mouse, Maturation, Fertilization

Effects of Faradarmani Consciousness Field on Wheat Seed (*Triticum aestivum* L.) in Altered Gravity

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Categories by Discipline

4.0 Physical and Biological Sciences

Primary Topic Area - TSC Taxonomy

[04.10].....Origin and nature of life

Abstract

The Faradarmani Consciousness Field (FCF), introduced by Taheri as a non-material and non-energetic field with detectable effects on various subjects, was the focus of this study. Given that normal gravity (NG) influences the growth and morphogenesis of plants while microgravity (MG) tends to decrease these processes, two separate experiments were conducted to investigate the effects of FCF on various growth traits of wheat plants and the geotropic response of seminal roots under altered gravity. In the first experiment, three-day-old seedlings were exposed to MG by clinostat rotation at 40 rpm for 96 hours. Growth parameters, including the number of seminal roots, root and shoot dry weight, and root and shoot length, were measured. Results showed that FCF increased the length of roots and shoots in NG compared to the control conditions by an average of 65%, while reducing the number of roots by approximately 40% in MG conditions. In the second experiment, after 20 hours, plant treatments were divided into three groups: NG, 90° turned, and MG at a speed of 20 rpm. Observations were made at 30-minute intervals within five hours by taking pictures to determine changes in root length and curvature. Results indicated that MG increased root length up to 143% compared to its initial time, while this elongation was about 186% for treated samples. The curvature pattern of clinorotated samples exhibited various fluctuations, whereas under FCF, this behavior was inhibited. In conclusion, the findings confirmed

that the behavior of seedlings changed under FCF. Moreover, it was observed that FCF defined a new state in the clinostat environment, compensating for reduced gravity. This suggests that FCF has a significant impact on plant growth traits and responses under altered gravity conditions.

Keywords

Microgravity; Geotropism; Wheat; Growth; Clinostat

Effects of T-Consciousness Fields on the Growth and the Production of ATP in *Escherichia coli* BL21 under Microgravity and Earth's Gravity Conditions

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Categories by Discipline

4.0 Physical and Biological Sciences

Primary Topic Area - TSC Taxonomy

[04.10].....Origin and nature of life

Abstract

Taheri Consciousness Fields (TCFs), characterized by non-material/non-energetic features, are suggested to have discernible effects on studied systems. This research aimed to investigate the impact of TCFs on the growth and ATP production in *Escherichia coli* (E. coli), serving as a model organism, under both microgravity (MG) and Earth's gravity (1G) conditions, simulated using a Clinostat device. Four experimental groups of the E. coli BL21 strain were considered, with samples lacking TCFs treatment serving as the control. The test duration extended to 24 hours. Bacterial growth was assessed through optical density measurement at 600 nm (OD600), and ATP concentration was determined by measuring the luciferase enzyme activity. Results indicated that the MG environment increased bacterial growth by up to 1.4% compared to the 1G condition. However, under the influence of TCFs, there was no significant difference between MG and 1G samples. Moreover, in comparison with the control, TCFs treatment reduced the growth rate by about 2.4% under 1G. ATP production under MG stress decreased by approximately 75% for both samples with and without TCFs treatment compared to the 1G control. Conversely, under Earth's gravity, ATP production for TCFs-treated samples was 1.7 times higher than the control. In conclusion, these findings provide evidence that TCFs inhibited the growth of the E. coli BL21 strain under both MG and 1G conditions. Despite the ATP concentration being approximately 4.7 times lower under MG stress compared to normal gravity, bacterial growth was not adversely affected compared to the 1G control. This suggests an enhanced efficiency of this strain.

Keywords

Taheri Consciousness Field, Microgravity, Clinostat, *Escherichia coli*, ATP, Growth

Investigating the Effects of T-Consciousness Fields on Growth and Metabolic Activity of *Escherichia coli* by Respiration Activity Monitoring System (RAMOS)

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Categories by Discipline

4.0 Physical and Biological Sciences

Primary Topic Area - TSC Taxonomy

[04.10].....Origin and nature of life

Abstract

The "Field" concept is a fundamental aspect frequently employed in physical laws, such as gravitational and electromagnetic fields. According to Taheri, various T-Consciousness Fields (TCFs) with non-physical entities can be applied to all living organisms and inanimate substances. Indeed, TCFs-treated samples receive information, and as a result their behavior may change compared to the controls. This study aimed to assess the effects of TCFs on the growth phases of *E. coli* BL21, utilizing the Respiration Activity Monitoring System (RAMOS). This device is used to gain relevant information about metabolic activity of a microorganism during shake flask fermentations. This way, oxygen transfer rate (OTR), carbon dioxide transfer rate (CTR) and respiratory quotient (RQ) were evaluated. Moreover, the Second law of thermodynamics in living systems has always been a subject of study, particularly when discussing the role of information processes in some basic biological phenomena like growth. Hence, entropy has a suitable potential to describe the processes in an open system over time intervals. The Shannon entropy, as the fundamental quantitative notion in classical information theory, has been frequently used in biology. Herein, the entropy of different phases was calculated. This allows us to understand the effects of TCFs on the entropy at the level of the bacterial population. The findings revealed that TCFs application resulted in a 44% reduction in the growth rate, extending the doubling time by up to 75%. Additionally, the entropy of the log and death phases decreased by 16.2% and 2.7%, respectively, under TCFs. These results suggest that the application of TCFs transmits information, thereby altering the growth behavior of bacteria. The observed changes in growth parameters and entropy during different phases indicate a potential influence of TCFs on the biological processes of *E. coli* BL21.

Keywords

Growth rate, Shaking bioreactor, Respiratory quotient, Oxygen transfer rate, Carbon dioxide

Effects of T-Consciousness Fields on Heavy Metal Uptake by *Saccharomyces Cerevisiae* under Altered Gravity

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Categories by Discipline

4.0 Physical and Biological Sciences

Primary Topic Area - TSC Taxonomy

[04.10].....Origin and nature of life

Abstract

Taheri introduced Taheri Consciousness Fields (TCFs) as non-material and non-energetic fields. The impact of these innovative fields was explored through various experiments, particularly focusing on the biosorptive performance of *Saccharomyces cerevisiae* (baker's yeast) in removing metal ions such as arsenic (As), cadmium (Cd), lead (Pb), and mercury (Hg) under microgravity (MG) and Earth's gravity (1G) conditions. A two-dimensional clinostat device was utilized to simulate a near-weightlessness environment. The experiment included four groups over a 24-hour test period, with samples without TCFs treatment serving as the control. The inductively coupled plasma mass spectrometry (ICP-MS) technique measured the content of the mentioned heavy metals. Results indicated that *S. cerevisiae* in both gravity conditions effectively removed these metals, with the highest elimination percentages observed for Hg (86%-95%), followed by Pb (66%-82%), and Cd (38%-55%), while the lowest removal was related to As (1%-5%). Under MG conditions, the uptake of Pb and Hg increased by about 13.5% and 9.3%, respectively. Despite the concentration of As remaining relatively constant under MG, the elimination of As increased by 133% due to TCFs treatment. Conversely, under 1G conditions, the uptake of heavy metals in contact with *S. cerevisiae* decreased under the influence of TCFs, with reductions of approximately 62%, 21.5%, and 8.8% for As, Cd, and Pb, respectively. These observations suggest that TCFs had a differential effect on *S. cerevisiae* biosorption under 1G and MG conditions. Further studies are warranted to provide more insights into the mechanisms underlying the influence of these novel fields.

Keywords

Heavy metals, Biosorption, Yeast, Taheri Consciousness Field

Investigating the Influence of the T-Consciousness Field (1) on the Magnetic Properties of Pure Iron Atoms in Microgravity Conditions

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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

T-Consciousness Fields (TCFs), characterized by non-physical entities, have been introduced by Taheri, and their influence can be explored on various subjects, including inanimate materials. Iron, being the most abundant element composing the Earth's mass with ferromagnetic properties, and considering its connection to the Earth's magnetic field (Geodynamo theory), has been chosen as the subject of this study. The aim was to investigate the impact of TCFs on the saturation magnetization property of iron, which can be easily evaluated. A Clinostat device was utilized to simulate microgravity (MG) conditions. The samples under TCF (1) application and the control (without T-Consciousness Field application) were made of pure iron solid powder with a grain size of about 110 microns. To apply microgravity conditions, the clinostat was rotated at 10 rpm for 24 hours. Based on the study's results, the saturation magnetization property of pure iron under MG conditions was reduced by approximately 25% compared to Earth's gravity (1G) conditions. However, in TCF 1-treated samples, this property remained almost unchanged in comparison with its value under 1G. This observation suggests that samples under the influence of TCF 1 received information that compensated for the reduced gravity, indicating a potential effect of TCFs on the magnetic properties of iron.

Keywords

Iron, Microgravity, Saturation magnetization, T-Consciousness Field 1

Effect of different Announcers of T-Consciousness Fields and structure of TLD Dosimeters on the Influence of T-Consciousness Fields on the Thermoluminescence Phenomenon

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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

Previously, the impact of T-Consciousness Fields (TCFs) on the response of GR-200 dosimeters was investigated, both individually (before and after exposure to T-Consciousness Fields) and in populations of dosimeter samples. In this study, modifications were made to explore the effects of TCFs on thermoluminescence properties. It is known that TCF treatment is established through Faradarmangar's mind or an announcer, a certified and trained individual entrusted with the TCFs. In the first part of this study, a population of dosimeters was selected, and the response to TCFs treatments was examined with different announcers, involving different individuals and genders. In the second part, to better understand the effectiveness of TCFs and their impact on the initial population, evidence was examined by changing the samples of GR-200 dosimeters from older (less used) ones to newer ones. According to the results of this study, although the intensity and magnitude of the response changed due to the shift in announcer, the overall trend of the response remained independent of the announcer. It also remained consistent with the intentions set by T-Consciousness Fields, resulting in a reduction in the response. Moreover, the results of the second part suggested that the initial population difference under TCFs treatments did not significantly affect the overall response trend of the samples. Instead, the variations were attributed to structural differences in the samples.

Keywords

Announcer, TL dosimeter, thermoluminescence, GR-200, dosimetry, structure, T-Consciousness
Fields

Effect of *Pseudomonas Aeruginosa* on Corrosion of C1018 Carbon Steel under the Influence of T-Consciousness Fields

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Categories by Discipline

4.0 Physical and Biological Sciences

Primary Topic Area - TSC Taxonomy

[04.10]......Origin and nature of life

Abstract

Consciousness is a profoundly challenging concept in the realm of science, often deemed subjective, making it difficult to establish objective criteria for assessment. Taheri's theory introduces various T-Consciousness Fields (TCFs) characterized by non-physical entities. While these fields cannot be directly detected by instruments, their influence can be evaluated through scientific experiments. This study aimed to investigate the corrosion behavior of C1018 carbon steel by *Pseudomonas Aeruginosa* under the influence of TCFs. To achieve this, two types of TCFs, labeled as type 1 and type 2, were applied separately to both bacteria and Fe coupons. The corrosion process was examined under the influence of these fields, with and without the presence of a bacterial growth inducer. The results indicated that the application of TCFs to either bacteria or coupons did not yield significant changes compared to the control. However, the data distribution suggested altered behavior under these fields, indicating a clear link between the application of TCFs on different components of the system and the observed outcomes. Specifically, an increase in corrosion was noted when coupons were exposed to TCF1, while this behavior was inhibited when the same field was applied to bacteria. The presence of a bacterial growth inducer significantly decreased the weight of the coupons compared to those without the inducer, as expected. Although TCF1 showed an insignificant upward trend in corrosion for samples in tension conditions, this tendency was inhibited by TCF2 treatment.

Keywords

T-Consciousness Field, Biofilm, Biocorrosion, Consciousness

Experimental Evidence of the Existence and Function of Mind in Plants; Evaluation of the Effect of Faradarmani Consciousness Field on Phenotyping of Strawberry (*Fragaria ananassa*)

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Categories by Discipline

4.0 Physical and Biological Sciences

Primary Topic Area - TSC Taxonomy

[04.11].....Consciousness and evolution

Abstract

The strawberry (*Fragaria ananassa*), a member of the Rosaceae family, demonstrates high adaptability to various environmental conditions. Plant phenotyping, aimed at evaluating complex traits like growth, development, yield, and resistance, serves to describe the quantitative parameters of plants. The Faradarmani Consciousness Field (FCF), a non-material/non-energetic field introduced by Taheri, was the focus of this study, which aimed to investigate its effects on strawberry phenotyping in greenhouse conditions over a three-month period. Results revealed that although FCF led to a 29% decrease in the number of live plants, it positively influenced growth parameters. The number of leaves and branches per plant increased by 16% and 13%, respectively. Additionally, three-month-old strawberry plants exhibited increased fruiting and flowering under the influence of FCF. Notably, the probability of occurrence of microbial disease symptoms in plants under FCF was lower than in the control, resulting in a one-third decrease in average microbial disease incidence over the three-month period compared to the control. While the study did not control for exposure to microbial diseases, these observations suggest that FCF may play a role in altering phenotyping parameters in strawberry plants. According to Taheri's theoretical concept of FCF, this behavior may be linked to the transmission of information through the field. Taheri proposes the existence of a level of mind in plants, facilitating such interactions. Further experiments, including controlled inoculation with microbial diseases, are warranted to validate and complete these observations. In conclusion, the study suggests that FCF has the potential to influence and modify certain phenotypic characteristics in strawberry plants.

Keywords

Taheri Consciousness Field, Faradarmani, Mind of Plant, Phenotyping, Information

Investigation of temperature, pH, and electrical conductivity of pure water and normal saline under the influence of T-Consciousness Field 2

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Categories by Discipline

4.0 Physical and Biological Sciences

Primary Topic Area - TSC Taxonomy

[04.10].....Origin and nature of life

Abstract

Water, being the most abundant molecule on Earth's surface and a fundamental component of living organisms, has been extensively studied for its physicochemical properties and how they change due to environmental variables. Normal saline, a well-known water solution with therapeutic properties, is widely available with pharmaceutical standards and represents a prevalent form of water on the planet. Previous research has investigated changes in pH and water temperature as a result of treatment with Taheri Consciousness Fields (TCFs). Although it is not possible to directly measure these non-physical fields, their influence can be recorded by designing scientific experiments. In this study, alongside these parameters, changes in the electrical conductivity of water molecules and normal saline under the influence of TCF2 were measured. The results of this research indicate that in the case of pure water, over the 8, 24, and 48-hour period of the study, there were increasing changes in pH in both the sample and control, while temperature changes were decreasing. Additionally, the changes in electrical conductivity of pure water under TCF2 treatment were found to be significant. In the case of normal saline, the trend of temperature changes was almost similar to that of pure water in the experimental groups, showing fluctuations over time. The electrical conductivity in the control and sample of normal saline was decreasing, but the sample exhibited a greater slope of changes, approximately 33% more than the control, in line with the mission of TCF2 applied in this study. These findings suggest that the physicochemical properties of water, over a time range exceeding 8 hours, show significant effects of TCF2. Among the studied properties, electrical conductivity appears to be more influenced by the studied TCF compared to other properties.

Keywords

pure water, normal saline, pH, temperature, electrical conductivity, Taheri Consciousness Field 2

Investigation of the effect of Faradarmani Consciousness Field on multi-drug resistance isolates of *Mycobacterium tuberculosis*

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Categories by Discipline

4.0 Physical and Biological Sciences

Primary Topic Area - TSC Taxonomy

[04.12].....Medicine and healing

Abstract

Tuberculosis remains a significant global public health concern and a leading cause of death worldwide. Faradarmani Consciousness Field (FCF), introduced by Mohammad Ali Taheri, is a concept that is not categorized as energy or matter and cannot be directly measured. However, its effects can be indirectly assessed through controlled laboratory experiments. The objective of this study was to investigate the impact of FCF on multi-drug-resistant isolates of *Mycobacterium tuberculosis* using phenotypic and genotypic methods. The study focused on two treatment-resistant isolates of *M. tuberculosis* under two conditions: the presence of FCF (treatment) and the absence of FCF (control). Two proportional methods were employed to observe changes in drug resistance patterns, and real-time PCR was used to investigate the RNA expression of drug resistance genes. Results indicated that isolate number 1, initially resistant to ethambutol, became sensitive to this antibiotic under the influence of FCF. In contrast, isolate number 2, initially sensitive to streptomycin, developed resistance to this antibiotic under the influence of FCF. In treatment isolate number 1, the RNA expression of the studied genes increased under the effect of FCF compared to the control. However, in treatment isolate number 2, the level of RNA expression of the genes showed a decreasing trend compared to the control. The findings suggest that FCF may have an impact on the drug resistance of *M. tuberculosis* isolates, influencing their response to specific antibiotics.

Keywords

Mycobacterium tuberculosis, Taheri Consciousness Fields, Faradarmani, proportional methods, real-time PCR

Investigating the Effect of T-Consciousness Fields on Brain Mapping Using Quantitative Electroencephalogram (QEEG)

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Categories by Discipline

4.0 Physical and Biological Sciences

Primary Topic Area - TSC Taxonomy

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

Abstract

T-Consciousness Fields (TCFs), introduced by Mohammad Ali Taheri, serve as channels for transferring information from the Cosmic Consciousness Network (CCN) to various elements of existence. These non-material and non-energy fields cannot be directly identified but are observed through their impact on matter and energy. From the perspective of T-Consciousness, the human brain acts as a recorder and detector, translating mental and psychic messages into electrical, wave, and chemical signals relayed to the body. In this research, 36 people were influenced by two types of TCFs (1 and 3) with closed eyes, and their brain waves were scanned to determine potential differences in brain maps under the influence of TCFs. The results indicated that TCF 1 significantly affected all brain waves—Delta, Theta, Alpha, Beta, High Beta, and Beta 1—resulting in a reduction in Theta, Beta, and High Beta waves, and an increase in Alpha waves. The most affected anatomical regions were the Prefrontal Cortex (Fp1-Fp2), Right Frontal Cortex (F8), Left Occipital Cortex (O1), and Right Temporal Cortex (T6). Among the 95 regions associated with the primary waves, 20 exhibited significant changes in the population under therapy, with 11 points showing changes toward the standard population and 9 points diverging, especially in the High Beta waves. TCF 3 caused changes in brain waves in regions such as the Right Frontal Cortex (F8), Temporal Cortex (T5-T6), Left Occipital Cortex (O1), and Prefrontal Cortex (Fp1-Fp2). Changes were observed in Delta, Theta, Beta, and Beta 1 waves, while no alteration was seen in the Alpha and High Beta waves. Compared to TCF type 1, five out of the six different points exhibited changes in wave intensity similar to those observed in the points studied in TCF type 1. These points included FP1, FP2, O1, F8, and T6, suggesting that these points had the most significant impact under both TCFs. The results highlight the complex and distinct influences of TCFs on brain waves, warranting further comprehensive research to interpret the underlying causes of these observed effects.

Keywords

T-Consciousness, Cosmic Consciousness Network, T-Consciousness Fields, Quantitative Electroencephalogram, QEEG, Brain, TCF 1, TCF 3

Effect of T-Consciousness Fields on Skin Allograft Survival in Rats

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Categories by Discipline

4.0 Physical and Biological Sciences

Primary Topic Area - TSC Taxonomy

[04.12].....Medicine and healing

Abstract

Skin grafting is a commonly used technique in skin surgeries, but a critical concern with allografts is the risk of rejection. To address this issue and enhance allograft survival without side effects, Mohammad Ali Taheri founded the Taheri Consciousness Fields (TCFs). Although TCFs are neither matter nor energy, their effects on objects can be investigated through controlled experiments. This study aimed to explore the effects of two TCFs (1 and 3) on skin allografts in rats. Twenty rats were randomly divided into two groups: the control group and the group receiving tacrolimus. The group receiving tacrolimus after surgery was further divided into two subgroups—one affected by TCFs (1 and 3) and another unaffected. After two weeks, histologic and macroscopic observations were performed on all groups. The results indicated that skin transplantation in TCFs treated rats was successful, leading to the formation of a new epidermis. Additionally, sebaceous glands and a high number of capillaries were detected in the dermis layer. It appears that TCFs, as a qualitative treatment, may serve as an option to reduce the probability of graft rejection. However, further research is needed to elucidate the alleviative effects of TCFs on graft survival and to understand better the mechanisms involved in this potential therapeutic approach.

Keywords

Taheri Consciousness Fields, Skin Allograft

Mitochondria as Fundamental Tubulars of Brain Consciousness and Supporters of Diverse Phenotypic Meta-Brain Tumors

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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

With 19th century mechanistic materialism supported by positivism and 20th century mathematical energetic models predicated on dynamic and complex energy flows both at our theoretical and procedural backs, the 21st century is poised to reckon with the seemingly non-computational depths of consciousness and intelligences -- but how best to proceed in terms of scope and methodology? As Whitehead might suggest, consider the “stubborn fact” that human consciousness ceases within seconds after the absence of energetic blood flow supplied by mitochondria’s main function of transforming nuclear energy found in food and air into a chemical charge/chemical energy of ATP by converting membrane potential via electron transport. In this respect, as an organelle, mitochondria/mitotypes found in hundreds of cell types, except red blood cells, are a type of organelle most closely resembling the brain. Moreover, similar to the Integrated Information Theory of Consciousness, their sub neural social networks consisting of chemicals, hormones and ions, along with tubular fission and fusion, perform various neurological functions and process information both within and between diverse brain cells, including neurogenesis, gene regulation, hormone production, as well as immunological wound healing. In contrast, we explore a type of Global Work Station model of the phenomenon of cancer cells, existing as a quasi-meta-brain within the human brain, appropriating not only mitotypes but the wound healing protein L1CAM found exclusively in the brain, tricking the immune system to support its metastatic diversity. In fact, via the cutting-edge procedural tool of spatial multi omics which allows for the tracking of not only transcriptional, but epigenetic post translational protein and metabolic dynamics across organ tissue, these various omics reveal niche construction to be systematically biased toward environmental changes that are well suited to the constructor’s phenotype, or that of its descendant’s fitness – via gene flow, drift, or selection. All this dramatically results in several diverse brain tumors within a single human brain, all of which rely not only on neurological nutrients but specialized brain networks, for their own diverse tumor developments. In sum, leveraging and

synthesizing the functional roles that mitochondria play both in normal brain cells, along with those of diverse cancerous brain tumor tissues, we offer a new theoretical methodological scope of the fundamental and non-computational depths of human consciousness, whereby consciousness emerges from the multitude of mitochondria functions both within and between bodily-organ oriented cells, and how cancer cells integrate different brain regions and their specialized neural networks for their diverse and adaptive phenotypic tumor developments.

Keywords

mitochondria tubular, phenotypic cancer, meta-brain tumor, human consciousness

How We Can Test the Effect of Quantum Observer's Love of Chemistry on Results of Chemical Experiment

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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

The study of complex systems revealed crucial importance of holistic approach to science. It is argued that truly holistic science must include the concept of love, which fundamental role in consciousness is apparent from NDE research (see Pim van Lommel's 2001 paper in peer-reviewed journal "Lancet", cited 1126 times) and spiritual experiences (Federico Faggin, "Silicon...", 2021, chapter 5). Per Immanuel Kant, we can have cognition only within the realm of experience; empirical objects in this realm are mind dependent. "Mind-dependence" means that we cannot plan an experiment on matter, nor accomplish it, nor write a paper stating the results/conclusions - without the ongoing flow of thoughts and emotions. Therefore, the idea of the existence of matter independently from our mind-heart is really just a long assumed (probably false) hypothesis. This was acknowledged in the "Manifesto for a Post-Materialist Science" (2014) currently signed by over 450 scientists. Kant's Transcendental Idealism and Fractal Theory of Quantum Consciousness naturally combined with Cosmic Law of One are possible alternatives to the hypothesis of materialism. While the first author was an undergraduate student at the chemical department of the Moscow State University in 1971-1976, he witnessed considerable positive dependence of the output of experiments on the experimenter's love/affinity for the chemical experiments. Strict adherence to the textbook instructions often did not seem to help the author enough to get good experimental results, possibly because of his "lack of love" for experimental chemistry. However, those students professing a greater liking/affinity for the experiment, obtained higher outputs. Part of the students had neutral relationship with chemistry and got roughly average results. This background has led the authors to offer guidelines on testing the Observer/Performer love to experiment effect on the results of chemical experiment, how/where new experiments could be conducted by partitioning all experimenters into 3 groups based on anonymous questionnaires before conducting the experiment: 1 - those who like the experiment, 2 - those who do not, 3 - those who are neutral (the control group). Then the experimental results of each group could be checked

statistically against the hypothesis, H_0 : Love/Affinity of an experimenter affects result of an experiment. The assumptions supporting H_0 include: - The state of the whole system $|\Psi_w\rangle$ is a vector in complex vector Hilbert space which components encapsulate the observer/performer's quantum mind, lab equipment, chemical reagents, physical parameters of the system (temperature, pressure, humidity, Earth's magnetic field, etc.). $|\Psi_w\rangle$ describes a superposition of all potential outcomes of the quantum chemical experiment existing in the Hilbert space. - The observer's quantum mind is private; its imaginary components are unknown to other observers. An assumed mechanism behind H_0 includes two main options: - In case of observer's lack of love to chemistry, his quantum mind affects the probabilistic collapse of the whole system $|\Psi_w\rangle$ to the points on the real space axis representing low outcomes of the chemical experiment. - The observer's love to experiment represented by his private quantum mind conditions $|\Psi_w\rangle$ collapse to the higher outcomes of the quantum chemical experiment.

Keywords

Complexity, Hypothesis of Materialism, Kant's Transcendental Idealism, Love as a Concept of Holistic Science, Experimental Quantum Chemistry, State Vector of the Quantum System in Hilbert Space, Fractal Theory of Consciousness, Cosmic Law of One

Spirals of Light and Life Study of TRPV1, CISS, Homochirality, and DTD Enzyme

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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 TRPV1 Quartet is a family of Cannabinoid / Vanilloid receptors: CB1, CB2, CB3 (GPR55), and TRPV1. I will describe how the TRPV1 ion channel uses Ca^{++} and H^{+} ion signals to control nearly all processes in the body. Then discuss the link between the TRPV1 Quartet and cognition and consciousness. Describe Chirality-Induced Spin-Selection (CISS) effects and show how spin selection explains the homochirality of life and all the proteins in our body. Then explain how these homochiral proteins transmit electrical and light waves with 100 % efficiency and describe the benefits of this efficient transfer of information and energy. The Glymphatic system removes metabolic waste heat, solids, and toxins from the brain, eyes, and spinal column. Cerebral Spinal Fluid (CSF) flow carries these waste products away from neurons and delivers nutrients, oxygen, and immune proteins. This system of waste removal and nutrient delivery will be described and discussed. D-aminoacyl- tRNA deacylase (DTD) is an enzyme that hydrolyzes D-amino acids attached to tRNA molecule. This prevents D-amino acid incorporation into proteins. DTD is a key feature that keeps D-amino acids away from the ribosome to allow only L-amino acids to be incorporated into proteins. Ultra-processed Foods and Medicines are primarily Achiral. They mostly consist of D-Amino Acids (DAAs) and Cross-linked Amino Acids (CLAAs). The human body cannot use DAAs and CLAAs and they need removal. The lymphatic system, liver, and kidneys remove them from the body, The glymphatic system removes them from the brain, eyes, and spinal column. The glymphatic system can be overwhelmed by an excess, which leads to many problems with Cognition, Consciousness, Neuronal Health and Wellness.

Keywords

TRPV1, vanilloid, CISS, homochiral, achiral, glymphatic, DTD enzyme, D-amino acids, Cross-linked amino acids, consciousness, neuronal, health

Fetal Sentience as Parturition Trigger

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Categories by Discipline

4.0 Physical and Biological Sciences

Primary Topic Area - TSC Taxonomy

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

Abstract

The Sentience-As-Disturbance (SAD) Theory, based on insights from Cook et al. (2014), outlines how biological sentience might have first emerged in primitive animals as a disturbance caused by external threats to cell integrity, with natural selection "turning bugs into features" by incorporating both sentience and threat components into organismal function (Cook ND, Carvalho GB, Damasio AR. 2014. From membrane excitability to Metazoan psychology. *Trends in Neurosciences* 37, 12: 698-705). The Polyvagal Theory (PVT) explores how, in the transition from reptiles to mammals, "the autonomic nervous system was repurposed to suppress defensive strategies in order to support and express sociality. The product of this transition was an autonomic nervous system with capacities to self-calm, to spontaneously socially engage others, and to mitigate threat reactions in ourselves and others through social cues." (Porges SW. 2021. Polyvagal Theory: A biobehavioral journey to sociality. *Comprehensive Psychoneuroendocrinology* 7: 100069.) The Fetal Prosocial Priming Thesis (FPPT) combines insights from these theories to make the case that these ancient phylogenetic processes are "recapitulated" during human ontogeny. The claim is that periodic strategic rationing of maternal metabolic support to the fetus might activate fetal faint-fight-freeze-flight defense responses that ultimately prepare the fetus for both parturition and post-partum sociocultural development. Partial shutdown (hypoarousal "faint") can conserve resources if maternal nutrient, oxygen, or other support are insufficient, but "playing dead" for too long might be interpreted as failure-to-thrive, leading to fetal death. Agitating for support (hyperarousal "fight" or "freeze") can signal that fetal vitality requires more support, but prolonged hyperarousal can exhaust resources too quickly. The parasympathetic ventral vagal complex (VVC) begins developing in early third trimester, providing a more nuanced modulator of allostatic challenges. According to the PVT, it is essential that the fetal VVC is sufficiently mature at birth to attenuate the stress of parturition, but additional myelination and maturation are required during early infancy: The VVC is a pivotal coordinator of heart rate, breathing, eating, vocalization, and facial expression and mimicry during visual, auditory, and tactile interactions with caregivers. The FPPT outlines how the

synergistic emergence of sentience and the VVC might help the fetus "agitate" for "flight" (parturition) in preparation for post-natal enculturation. It is proposed that the fetus is still in the SAD phase, meaning that the fetus is "paradoxically conscious" state in which moment-to-moment conscious pulses have yet to be incorporated into cognitive-affective continuity and conscious access to memories. As such, sentience-as-disturbance, and not conscious intent, is a key parturition trigger. VVC-induced bradycardia prevents this "agitation for flight" from causing over-reactions during both the 'in utero' separation of nascent fetal sentience from maternal interoceptive sentience and the perinatal birthing process.

Keywords

Sentience, Fetus, Parturition, Polyvagal Theory, Evolution

Attention: The Silent Subtle Component of Quantum Consciousness, Vedanta Meditation, and Artificial Intelligence

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Categories by Discipline

4.0 Physical and Biological Sciences

Primary Topic Area - TSC Taxonomy

[01.06].....Machine consciousness

Abstract

Practitioners of advanced Vedanta philosophy based meditations know that one important part of all meditation techniques is attention. Meanwhile, in Quantum Consciousness world, as per the ORCH-OR theory, attaining consciousness is defined as a hierarchical process leading to the `Bing` moment, when the person wakes up with full consciousness and attention to his surrounding and present. In this work we extend this and show that attention has been a very subtle but quintessential component in several recent advancements that occurred in science and technology in the last decade. For example one of the seminal works that recently launched the current Artificial Intelligence boom, including that leading to the creation of ChatGPT, was titled "Attention is all you need". Similarity in theoretical physics, a huge paradigm shift towards processes and quantum computation was recently launched with the invention of ZX Calculus, in which we show several subtle parallels between quantum consciousness and Vedic philosophy exists. Further, we hypothesize that all these advances mankind made recently, knowingly or unknowingly incorporating attention, wasn't an accident and is in-fact leading us towards a moment of Technological Singularity by 2030.

Keywords

attention, quantum consciousness, artificial intelligence, theoretical physics

Consciousness as space and Infinity in a Bottle.

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Categories by Discipline

4.0 Physical and Biological Sciences

Primary Topic Area - TSC Taxonomy

[01.04]......Ontology of consciousness

Abstract

The sages of old claimed that each of us is a universe of sorts, at least from the inside! Following Emanuel Levinas ethical metaphysics in which acknowledgement of the other's infinite nature brings about acknowledgement our own infinite nature. Levinas also whimsically intimated that 'consciousness of space is the space of consciousness'. At a minimum, such 'Island Universe' spaces should possess the next properties: a) It should be constituted like a medium; where a medium is a stage of sorts that enables the faithful realization of information, perhaps in the same way that elementary particles realize the quantum field theoretic vacuum, itself mathematically identical to the way in which the quasi-particles of condensed matter physics realize the ground state of the many-particle system. b) It should be enduring and robust to local fluctuations. A medium that comes to mind is a quantum computer with an error code, preferably a non-local one. The brain, another medium, employs such non-local error correction codes (like in the operation of the essentially non-local grid neurons). c) It should be a geometric space, that is, possess a metric that can sustain enduring, yet erasable, differences. d) It should be infinite from within yet finite from without, a bit like an Anti de Sitter space (AdS), or what Juan Maldacena described as 'Infinity in a Bottle'; perhaps the only way of overcoming our inability to place consciousness in space and time like all else that exists. e) It should loosen up the connections between necessity and identity (Levine 2019) allowing things to be different than themselves. f) It should help relate the structure of the conscious mental state to its physical correlates (Similarly to a Gabor Transform). g) It should help solve the mental causation and overcome Chalmers' Meta-Challenge. I will argue that that there is a physical scenario, albeit a strange one, that not only satisfies a-g but also deflates the conceivability argument without deflating some other essential problem intuitions. Here I will consider a scenario in which the NCC harbors massive conformal entanglement that according to the Holographic Correspondence principle (AdS/CFT) should possess a metaphysically necessary dual AdS space with an extra dimension (as in Susskind's ER=EPR interpretation of entanglement). Here I will introduce Susskind's principle of Black Hole Complementarity and his spherical shell

QM computer thought experiment where to get to the Ads space one must be uploaded unto the quantum computer). Following Kriegel will end by relating the aesthetic 'sublime' and the phenomenology of awe to the phenomenology of infinity and end by considering some of the ethical consequences of such a move especially in comparison to eliminativist ethics (Kammerer).

Keywords

Holographic Correspondence, AdS/QFT. Levinas, Infinity, Ethics, Aesthetics, Awe. Sacred Spaces, Sublime, Conformal Field Theory, Parallelism, Constitution of Consciousness, Error Correction Codes, Island Universe,

An Electromagnetic Substrate For Consciousness?

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Categories by Discipline

4.0 Physical and Biological Sciences

Primary Topic Area - TSC Taxonomy

[04.07].....Logic and computational theory

Abstract

Given the experimental evidence that consciousness is intimately associated with electro-physiological behavior of neurons and their associated network interactions, as well as a growing view that endogenous ephaptic coupling is not an epiphenomenon, a number of researchers have proposed a causal link or even equivalence between neural-generated electromagnetic fields and consciousness. While the human brain contains an extremely complex electromagnetic space-time structure supporting an immense number of degrees of freedom, the foundational underpinnings of such a field's relationship to consciousness is, from a physicist's perspective, far from being established or clarified either conceptually or quantitatively. A connection is physically plausible because electromagnetic forces completely dominate the space-time scales of interest in the brain. In this presentation, I consider a first step in a quantitative investigation of a potential correspondence by examining a physical relationship between an hypothesized fundamental property of consciousness and an electromagnetic structure directly linked to such a property. The rationale is that regardless of the ultimate nature of such an assumed correspondence, any plausible electromagnetic field theory of consciousness should provide a basis for acting upon information derived from endogenous or afferent generated data streams processed by the brain while also addressing the problem of how such information is embedded in, combined and transmitted through the field in a unique manner consistent with the laws of electromagnetism. In recent years, there has been a burgeoning consensus that information is physically based, and this notion applies to the means of generating, combining and transmitting information from one spatial region to another. Therefore, as a working hypothesis, I assume that information is a fundamental physical attribute of consciousness and illustrate that it can be intrinsically embedded/combined/transmitted in (classical) electromagnetic fields by virtue of their mathematical structure. Utilizing some known results in functional analysis and recent developments from communication theory, an information-theoretic alternative to the conventional physical interpretation of a field is discussed, in the form of information that can be

quantified and transmitted in the Shannon sense. In this view, the sources of the fields are current densities present in both endogenous and afferent data streams and whose strength, direction and time dependence embed information. The information linked to these currents may reflect non-linear network processing that is caused by weakly emergent spiking dynamics. Issues surrounding the viability of the approach and resulting analysis are discussed. The consequences of this analysis do not directly resolve the epistemic problem of the explanatory gap between mental and physical events but might offer a physically grounded interpretation - that electromagnetic fields could, in principle, provide a physical substrate for supporting consciousness via their ability to represent and transfer information - which could provide additional insight and an avenue of investigation for resolving this philosophical debate.

Keywords

electromagnetic fields, information, consciousness, weak emergence, explanatory gap

The Hidden Protagonist in the Theater of Consciousness: What Critical Brain Dynamics Reveals About the Fundamental Mechanism Behind Conscious Processes

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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

Empirical evidence indicates that conscious states are related to highly synchronized neural activity patterns whose dynamical characteristics can be attributed to self-organized criticality and phase transitions. These findings imply that insight into the mechanism by which the brain controls phase transitions will provide a deeper understanding of the fundamental mechanism by which the brain manages to transcend the threshold of consciousness. It is argued that the initiation of phase transitions and the formation of synchronized activity patterns is due to the coupling of the brain to the zero-point field (ZPF), which plays a central role in quantum electrodynamics (QED). The ZPF stands for the presence of ubiquitous vacuum fluctuations of the electromagnetic field, represented by a spectrum of normal modes. Supported by QED-based model calculations, the details of the coupling mechanism are revealed, suggesting that critical brain dynamics is governed by the resonant interaction of the ZPF with the most abundant neurotransmitter glutamate. A direct consequence of resonant glutamate-ZPF coupling is the amplification of selected ZPF modes, which leads us to conclude that the ZPF is the key to the understanding of consciousness and that the distinctive feature of neurophysiological processes associated with conscious experience consists in modulating the ZPF. Postulating that the ZPF is an inherently sentient field and assuming that the spectrum of phenomenal qualities is represented by the normal modes of the ZPF, the significance of resonant brain-ZPF interaction for the formation of conscious states becomes apparent in that the amplification of selected ZPF modes can be interpreted as the excitation of specific phenomenal qualities. This theory of consciousness, according to which phenomenal states arise through resonant amplification of zero-point modes, is denoted by the acronym TRAZE. A prediction ensuing from TRAZE is that phenomenal awareness cannot occur when the brain-ZPF interaction is inhibited. Therefore, the hypothesis to be tested is that, under experimental conditions in which the coupling of the ZPF to the glutamate pool of a small array of cortical

microcolumns is disrupted, the phenomenal states usually experienced do not arise. The central idea behind the test is to manipulate the ZPF in such a way that those ZPF modes that lie in the frequency band most relevant for the glutamate-ZPF interaction are eliminated. By excluding the relevant ZPF modes, resonant coupling of the glutamate pool to the ZPF cannot establish, causing the functional breakdown of the affected microcolumns and the suppression of conscious perceptions. It is crucial to note that in this test scenario only the local ZPF is manipulated, without making any changes to the brain. In this way, the design of the experiment is specifically tailored to demonstrate that phenomenal consciousness does not emerge from the brain.

Keywords

theory of consciousness, conscious processes, fundamental mechanism, quantum field theory, zero-point field (ZPF), brain-ZPF coupling, criticality, phase transitions

The nature of light, the satisfaction of the wave/particle dilemma and the interaction of light with DNA molecules.

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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

The nature of light, in terms of electromagnetic wave-like radiation and quantum-photons, has yet to be satisfactorily modeled. This is a speculative effort to offer a new model to be examined and evaluated by the scientific community. It is based on observations and formulated through a process of analytical comparison within diverse portions of biology, chemistry and physics. The basic premise is that an electron with very small mass might be set in motion by an energy of very great magnitude. If this electron were converted into a constituent of a structure that is perceived as electromagnetic radiation, it would propagate from its source at the “speed of light”. Yet it may somehow retain its angular momentum as a result of its relationship to its nucleus. As such, the actual resulting motion might exceed the “speed of light” due to the helical path it might trace. This may account for its mass to become undetectable in the normal sense and its presence to exist in an ethereal way. We are faced with the dilemma of light having both a wave-like nature and a quantum-like nature. The double-slit experiment has opened this question to scientific theorization and has yet to be settled. If an electromagnetic wave form was actually a helically-pathed massless particle, we might conceive of it at first as a wave and then also as a particle. This model might satisfy both observations. It might blend into the element of uncertainty that manifested as a result of quantum though. It might offer another way of explaining why light responds to gravitational fields on the cosmic level. It might offer another way to perceive energy as it pertains to the interaction between radiation and matter. The basis for this line of thinking is simply that, in layman’s terms, the universe seems to naturally produce spheres, spirals, helixes, orbits and vortexes. The speculation is that light may be another example of this proclivity, which appears in large and small structures throughout the physical universe. In addition, electromagnetic radiation in the frequency of ultraviolet toward x-ray seems also to have similar dimensions to that of the DNA molecule. If there could be established a correlation between the shape of the double helix molecule and the naturally existing solar radiation in this portion of the spectrum, it could lead to a

new understanding of how life functions and is energized. If indeed there was some truth to the speculation that light consists of a faster than light massless photon moving in a helical path, there could be an intrinsic relationship between it and our DNA which might unlock many of the unknown aspects that exist in physics and biology.

Keywords

light, DNA, wave, particle, radiation, helix

The use of Gas Discharge Visualization in near death studies research

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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

The purpose of the research is to understand the death process and its link to the human energy field with the help of gas discharge visualization technology. The presentation is aimed at presenting preliminary results that would help us to reveal how the human energy field (HEF) is connected to the body and how collected evidence is used to support the hypothesis of the survival of human consciousness. GDV technology gives an impression of the HEF and allows to see its day-to-day transformation linked to the different states of consciousness of the individual. GDV utilizes a weak, completely painless electrical current applied to a conductive object for one tenth of a second. The object's response to this stimulus is the formation of an electronic emission. The electrons emission stimulates gas (or air) discharge (or glow) that is captured by the in-built video camera. The number of emitted electrons is dependent on the state of the energy flows of the conductive object. Energy flows are related to the blood and lymph circulation, activity of the sweat glands, nerves and any other signals transmitted by the human body. The more electrons are emitted – more light will be formed around the conductive object. The higher the energy of the emitted electrons – higher will be the intensity of the photographed glow. An energy parameter is calculated from the area and intensity parameters of the glow captured by the GDV device, The principle of GDV is that the inner energy of the human body relates to the energy of the photographed glow collected by the device. The amount of the emitted light is dependent on the number of electrons emitted by the part of the body being measured. The frequency, number and energy of electrons emitted are directly connected with the inner energy reserves of the human body by the means of energy channels. Literature has shown that, with the use the GDV technology is possible to measure the activity of consciousness and observe its effect upon the emission characteristics of several organs of the human body. These parts include the brain, the heart, and the lungs. In this experiment, we use a GDV device in continuous mode by wearing a glove that

helps us to collect data from the experiment's participant. These measurements were conducted before and after death in several people that participated in the study, The intention of this collection is to monitor statistically significant changes of energy levels during measurements. The hypothesis is that states of consciousness have an effect in energy changes in the HEF. The second hypothesis is that death changes the state of consciousness of the individual and that consciousness remains linked to the body even after death and slowly detaches from the body after several days.

Keywords

Near death experiences, Gas Discharge Visualization Technology, Photonic Technology, Quantum technology,

Dual-Aspect Monism and The No-Jootsing Theorem

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Categories by Discipline

4.0 Physical and Biological Sciences

Primary Topic Area - TSC Taxonomy

[01.15].....Neutral monism and idealism

Abstract

Dual-Aspect Monism involves the hypostasis of a psychophysically neutral domain, thus denying the usual mind-body relation options. Mind and matter are aspects of this fundamental domain, providing us with epistemic access to it. This way of establishing the order of things imposes natural limitations on how we can understand the neutral domain, if at all. This is often considered to be a serious problem with dual-aspect monism so conceived (as Harald Atmanspacher's talk will discuss). Yet, as my talk will argue, it appears to be a natural feature of physical theories that probe to the most fundamental levels of reality. Using Stephen Wolfram's recently formulated Physics Project as a case study, I describe what I expect to be a generic result of theories that aspire to totality (theories that include observers/agents in addition to what they observe and interact with). This result is that there is, as Douglas Hofstadter once put it, no "jumping out of the system" [or "Jootsing"] to see what reality is 'really like'. I consider this self-confessed limitation to be a virtue of a proposal rather than a problem.

Keywords

Dual-Aspect Monism, Mind and Matter, Atmanspacher, Wolfram, Hofstadter, Jootsing

Schrödinger's Cheshire Cat: A tabletop quantum gravity experiment to measure the Diosi-Penrose collapse time and demonstrate Objective Reduction (OR).

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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

For nearly 100 years, the paradox of Schrödinger's Cat has remained unresolved. Why does the world we live in appear classical despite being composed of quantum particles governed by the Schrödinger wave equation? Lajos Diósi and Roger Penrose propose the wavefunction collapses because it describes two incompatible space-times. Heisenberg's time-energy uncertainty principle governs the time taken to collapse. Subatomic particles with low mass – and correspondingly low energy – collapse in years, while cats collapse almost instantaneously. We have built an experiment to put two small mirrors into superposition and observe them collapse in a time consistent with the Diósi-Penrose model. The superposed mass is 0.2g. It is possible to run this experiment with relatively large objects due to an unobvious feature of the Diósi-Penrose equation. Large masses displaced by a small distance have self-energy inversely proportional to the distance squared and correspondingly high collapse times. Wave function collapse can be measured independently of decoherence due to the symmetry of the experiment, analogous to the Cheshire Cat Experiment. We will report on progress in measuring the effect.

Keywords

Collapse, Wavefunction, Quantum-Gravity, Schrödinger, Cheshire Cat, Diosi, Penrose

The Living Cosmos: Consciousness, Astrobiological and Evolutionary Processes Governed by The X-Structure – The Nature of Life and Reality.

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New Cosmic Paradigm NCP X-AIONS, Skövde, Västra Götaland, Sweden

Categories by Discipline

4.0 Physical and Biological Sciences

Primary Topic Area - TSC Taxonomy

[04.11].....Consciousness and evolution

Abstract

The Cosmos is undergoing an eternal, cyclic evolutionary process. This implies, for instance, that there is neither a beginning nor an end of time and that our universe is just one of an endless number of universes existing in the living, multidimensional Cosmos. The term "Big Bang" signifies one expression of a never-ending process with recurring "Big Bangs," where one universe replaces another. New Cosmic Paradigm (NCP X-AIONS) introduces a holistic, organic model addressing and explaining these dynamic astrobiological processes in the conscious, all-encompassing Cosmos. The model is based on The Cosmic Worldview presented by Danish intuitive philosopher Martinus Thomsen and his collaborator Per Bruus-Jensen. Martinus clarifies the principles and forces governing these astrobiological processes by directing attention to the so-called "X-Structure" – the nature of life and reality. The Cosmos is based on the initial reality, termed X0, the fundamental level of the X-structure, which constitutes the ultimate source of everything. X0 represents a living, unmanifested "Something", characterized by wholeness, emptiness, stillness, infinity, and eternity. The nature of X0 has the inherent capability to manifest and materialize itself through an indivisible, "tripleplementary" principle, comprising three functional aspects termed X1, X2, and X3. The result of this tripleplementary principle is the continuous activation and transformation of unmanifested initial reality (X0) into manifested objective reality (X3obj.) and the experience of it as subjective reality/qualia (X3subj.) The X2-function comprises seven extremely subtle, qualitative so-called fundamental (or basic) energies. Two of them, expansion energy and contraction energy, are the main components of what we recognize as physical matter. These two energies play a pivotal role in the endless, cyclic, organic processes, marked by recurring phases of expansion and contraction/compression, in which new universes are born, evolve, and die. These astrobiological processes are governed and controlled by the primary fundamental energy, termed mother energy, which exerts its influence through so-called cosmic creative principles; transforming, form-creating, and structuring forces, which sustain and organize life and reality. We

can empirically observe the effects of these creative principles within the constants and laws of nature, where their remarkably delicate precision becomes evident. The transforming creative principles (X2-function) generate contrasts to the X0-nature of wholeness, emptiness, stillness, infinity, and eternity, which is transformed and structured into life-units, matter, movement, space, and time. The so-called cycle principle and motion principle which encompass the five universal classes of motion including space, time, and matter are crucially important for the formation of the continuous, cyclic phases marked by recurring “Big Bangs” where one universe replaces another. These organic, transformative processes involve reincarnations and disincarnations of universes in the living, multidimensional Cosmos. The Cosmic Worldview additionally outlines the evolutionary journey of all life forms in the dynamic Cosmic Evolutionary Spiral. New Cosmic Paradigm – NCP X-AIONS Advanced Institute of Ontological Principles and New Science stands as the ontological, non-religious arm of The Cosmic Worldview/ Martinus Cosmology. NCP X-AIONS is dedicated to presenting Ontological Principles and New Science, centering its focus on the great issues of Life, Consciousness, and Reality.

Keywords

astrobiology, astroconsciousness, evolution, living multidimensional cosmos, conscious cosmos, endless cycles of universes, X-structure, cosmos, cyclic evolution, universe, recurring big bangs, cosmic evolutionary spiral, ontology, Cosmic Worldview, Martinus Thomsen, Per Bruus-Jensen, nature of life and reality, initial reality, objective reality, subjective reality, qualia, X0, X1, X2, X3, triplementary principle, qualitative fundamental energies, expansion energy, contraction energy, basic energies, cosmic creative principles, reincarnation, disincarnation, New Cosmic Paradigm, NCP X-AIONS, Martinus Cosmology, ontological principles, new science, cosmology, holistic worldview, organic worldview

The Journey of Consciousness Independent of The Physical Body and Reincarnation: A Fundamental Process of Evolution.

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Categories by Discipline

4.0 Physical and Biological Sciences

Primary Topic Area - TSC Taxonomy

[04.11].....Consciousness and evolution

Abstract

Consciousness beyond life, independent of the physical brain, past-life memories, reincarnation, and near-death experiences constitute a significant body of research. Dr. Jim B. Tucker's studies at the University of Virginia School of Medicine focus on children's memories of previous lives and reincarnation. Dr. Pim van Lommel explores near-death experiences, and Dr. Peter Fenwick delves into end-of-life phenomena. The evidence is convincing and overwhelming, but at the same time, explanations are lacking and being sought. New Cosmic Paradigm (NCP X-AIONS) introduces a comprehensive model that addresses and explains these phenomena. This logical model is based on The Cosmic Worldview, presented by Danish intuitive philosopher Martinus Thomsen and his collaborator Per Bruus-Jensen. The Cosmic Worldview provides a post-materialistic, holistic, and organic world picture focusing on the so-called X-Structure – the nature of life and reality. The Cosmic Worldview demonstrates the independence of consciousness from the physical brain and outlines the process of reincarnation. It explains how life continues in parapsychical planes of existence after physical death and describes the sequence of events leading to a new incarnation. The X-Structure provides natural explanations for memories from previous lives, xenoglossy, near-death experiences, and more. Moreover, it presents groundbreaking perspectives on evolution and outlines the evolutionary journey of all life forms in the Cosmic Evolutionary Spiral. The X-Structure demonstrates that all living beings have, in addition to the temporary physical body, an immortal parapsychical body/ structure, which the physical organism is connected to and dependent on. The parapsychical body constitutes an extensive and complex organic system. Within this organic system, unique stable storage units, referred to as talent cores, play a pivotal role. One of the main functions of talent cores is to accumulate and process all our individual experiences, abilities, skills, qualities, etc., to make it possible for us to reuse and develop them and to carry them with us from life to life. The talent cores function as essential prerequisites for the development of all forms of life and evolutionary processes. Specific organ-talent cores contain information crucial to the

creation of organisms, dismissing the conventional notion that complex form-shaping and development are solely genetically programmed. According to the Cosmic Worldview, the primary form-shaping and evolving processes with all the underlying information are accumulated in the organ-talent cores and activated at the parapsychical level when the reincarnation process commences. The significance of talent cores extends to the field of epigenetics, where they exert a direct influence on the genes of the DNA spiral. Throughout the embryonic and fetal periods, individuals undergo a repetition of their earlier developmental stages. This repetitive process is observable and traceable across different stages, wherein pre-programmed talent cores autonomously govern and control the creation and shaping of a unique organism. New Cosmic Paradigm – NCP X-AIONS Advanced Institute of Ontological Principles and New Science stands as the ontological, non-religious arm of The Cosmic Worldview/ Martinus Cosmology. NCP X-AIONS is dedicated to presenting Ontological Principles and New Science, centering its focus on the great issues of Life, Consciousness, and Reality.

Keywords

consciousness, reincarnation, immortality, evolution, X-structure, nature of life and reality, existence, Cosmic Worldview, Martinus Thomsen, Per Bruus-Jensen, after death, parapsychical dimensions, parapsychical body, evolutionary process, disincarnation, talent cores, organ-talent cores, epigenetics, fetal development, embryonic development, previous lives, embryological processes, past life, near-death experiences, New Cosmic Paradigm, NCP X-AIONS, Martinus Cosmology, ontological principles, new science, organism, past-life memories, evolutionary factors, end-of-life phenomena, xenoglossy, cosmic evolutionary spiral, consciousness independent of the brain, origin of life

3-D vision - scientific discovery

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Categories by Discipline

4.0 Physical and Biological Sciences

Primary Topic Area - TSC Taxonomy

[02.03].....Neuroscience of vision

Abstract

3-D vision, nobody in the world of science knows how we get 3-D vision. eminent scientists like Crick and Koch have ventured to try and explain this mysteries subject in their Scientific American article, albeit unsuccessfully. How did I succeed in making this beautiful scientific discovery when the leading scientific institutions and experts on vision and neuroscience could not nail the topic - my answer was simple, I started with my journey from my surgery in London in search of Creator of our Universe - i.e. Creator of Nature, Order and organization. It took me 14 years search through hell and monumental difficulties, but I never gave up as the seed was implanted in my brain while doing cadaver dissection at University College London as to what happens to live spark after death and where had it gone and how does rebirth take place and much more. It was watching a video of human eye by scientist from Koch institute that human eye was poorly designed with rods and cones cells running at the back of human retina and then impulses have double back and send impulses via optic nerve and thalamus to visual cortex at the back of the human brain. This got me thinking...why would Creator prove Darwin was correct that human eyes are not designed at all. Why? Why? Why? Creator or Infinity whom I had discovered know my deeper interest and then revealed to me the entire mystery of 3-D vision. Human eye is Intelligently Designed is a scientific fact. The light calls are running perfectly from the back of retina and the reason is because physical and material scientists have overlooked the most important aspect of 3-D vision which is human 3-D vision does not work like what current neuroscience thinks, theirs is only part of the story. I discovered deeper level of Quantum control of human 3-D vision whose sheer beauty and grandeur I appreciated after attending London's History Museum which was holding an exhibition of colour and vision. It is my scientific discovery that human vision was Intelligently Designed by Grand Designer before a single human being was born. It is my scientific discovery that there are 5 stages to 3-D vision, out of which 4 stages are invisible to modern science. How I made this Nobel Prize winning discovery is nothing short of a intuition miracle. I will reveal the details of the 5 stages during a live presentation on the topic of 3-D vision in person. 3-D vision is intricately tied up with

my first scientific discovery of human consciousness. Remember, I was seeing, individual electrons, individual quarks, individual photons etc.

Keywords

3-D vision, scientific discovery, Quantum code discovery, consciousness, scientific proof, 5th stage of 3-D vision is visible, 4 stages prior to that vision are hidden as they work from sub-quantum level, my discovery has important ramifications for many eye diseases.

The "Universe and You" to explain the non-living molecular "Universe" and living cellular "You": The amazing journey of the electron.

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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

The "Universe and You" book talks about the origin and destiny of the "Universe" and of "Life" and "Consciousness" through biology, material Cosmology and Physics. It answers questions, which science and religion aren't able to answer. New definitions and explanations are given for creation and evolution. The function of creation is Life. The function of Life is eternal Life. It promotes and explains human enlightenment to create a better, enlightened World in order to establish real, lasting peace and save planet Earth. Humanity needs to rise above its straightjacket of the human condition, work together collectively and share everything to save Humanity from itself to become a soul planet. It gives details why we live as humans or the meaning of life. It explains the full journey and purpose of you being an evolving soul having a human experience for now. It explains the origin of life, death, thought and consciousness, which is related to the light that appears at the end-of-life and connects to your body (nose bump) through an invisible spaghetti-like golden cord. Consciousness is living light (eye, mind). The origin of consciousness is the light-effect in H₂-Hydrogen molecule. The silver cord is an invisible spaghetti-like cord connecting the soul who you are in the dreamtime to the body (breastbone) you have in the daytime. It clarifies the difference between the "immaculate Universe" of infinite dark Space filled with eternal black Time or opaque black neutron "pole" Stars and the "Universe", which is a Superuniverse (many galaxies), a Galaxy (many cosmic units) or a cosmic unit (a white "hole" proton star, planets and moons). There are no Superuniverses, galaxies or cosmic units in an immaculate Universe. It talks about the beginning, middle and end of the H₂-Hydrogen molecule ("H₁-atom"), cosmic unit, Galaxy and Superuniverse. It mentions the building blocks of the non-living molecular and living cellular universes. It describes the Universal and Evolution Map, which is the result of the study of relationships, all sciences combined, especially biology combined with theoretical physics and cosmology and the application of pure logic. For example: the relationship between molecule-cell, cell-organism, organism-planet Earth, sperm-neutron and egg-proton. It elucidates what the human aura system

is and how it works. It explains how it connects to your body through the chakras and to all the molecules in your body. Chakras are dimensional connections. Your aura has a color. The ultimate is to reach a white aura system as a human being. It clarifies the 6 dimensions of the parallel universe system we live in, where they are, what they are and how we relate to them, including their origin in H₂-Hydrogen molecule. There is the solid, linear Space-Time dimension related to the electron, earth element, the liquid, circular dimension of Time related to the energy, water mineral and the gaseous, figure eight dimension of Space related to the light, air element. It describes the 8 + 2 forces in all matters and states. It explains how black "hole" neutron stars work (dark matter in science).

Keywords

Universe, immaculate Universe, consciousness, Life, cosmology, biology, physics, creation, evolution, enlightenment, human condition, soul planet, meaning of life, dark Space, black neutron star (black "hole"), cosmic unit, galaxy, Superuniverse, human aura system, 6 dimensions, forces in matter

Towards Quantum Gravity: An Observer Model for Dark Matter and Dark Energy

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Categories by Discipline

4.0 Physical and Biological Sciences

Primary Topic Area - TSC Taxonomy

[04.04]......Cosmology and integrative models

Abstract

There are two basic physical theories – Quantum Mechanics for small distances and Gravitation for the large scales. A unification model between the two has long been desired. Gravity seems to fail at cosmic distances, and the observed matter can only explain about 5% of the gravitational force involved in galactic motions. Scientists have thus invoked the presence of dark matter and dark energy to constitute the remaining 95% of the universal mass. The major scientific effort to find such dark particles has failed to date. This talk addresses these two cosmological challenges and how solving them in a unique way leads to evidence of unity in the cosmos. We propose to explore the idea that the origin of dark matter and dark energy is consciousness. Following Quantum Theory, we postulate that adding the observer into the equations using the perception that everyone observes the universe from its conceptual center, i.e., from the singularity, can explain dark matter and dark energy without any new particles. This Quantum Gravity model has great success explaining the observational riddles of the universe, but more work is required to finish it.

Keywords

gravity; consciousness; dark matter; dark energy; universe; mass; force; Newton; Einstein; cosmos; attraction; repulsion; redshift; theory; quantum; observer; equation

Surface Code Quantum Computation Model of Microtubule-based Orch OR

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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

To explain the consciousness of brain, the Orchestrated Objective Reduction (Orch OR) theory was proposed by Penrose. The Orch OR is based on the quantum mechanics, specially by the quantum self-collapse property of superposition state with gravitational effect. If the Orch OR is correct, it should be occurred in the brain. Related to this, the microtubule has been investigated as a building block of brain which has the Orch OR properties by Hameroff. He also claimed that the microtubule-based Orch OR is linked with the quantum computation. However, there is little know about the practical implementation model of microtubule-based quantum computation. In this work, we propose a specific implementation structure based on the surface-code quantum computation model. Specially, we explain that there is one to one correspondence between the internal structures of the microtubule and the surface code. We also discuss the theoretical analysis about the Orch OR condition under the proposed implementation model. We expect that the microtubule-based Orch OR approach can be verified by the proposed QC implementation model.

Keywords

Orch OR, microtubule, quantum computation, surface-code model

Anesthetic block of seedling phototropism is reversible, and it involves microtubule network disruption.

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Categories by Discipline

4.0 Physical and Biological Sciences

Primary Topic Area - TSC Taxonomy

[04.10].....Origin and nature of life

Abstract

Isoflurane, a halogenated volatile anesthetic, is used to induce and maintain general anesthesia in a dose-dependent, reversible manner. In central nervous systems, like ours, isoflurane targets multiple sites, including inhibition of neurotransmitter-gated ion channels like the N-methyl-D-aspartate (NMDA) receptors and enhancement of GABA and glycine receptors. This results in CNS depression. Despite reports of potential impacts on multiple pathways, the underlying mechanisms of anesthetics, including isoflurane, remain a mystery. Furthermore, mechanisms of anesthetic activity may inform us of basic processes involved in consciousness, since all anesthetics block consciousness. A systematic approach with different anesthetic concentrations is needed to map early and downstream events linked to specific functions. Anesthetics used in humans and animals have previously been shown to depress respiration, inhibit plant growth and immobilize leaf movement, in a reversible manner. Animals and plants share a common ancestor 1.6 billion years ago as well as numerous molecular targets associated with structural proteins, signaling pathways and metabolic enzymes. For this reason, it has been proposed that plants could provide a simplified (reduced) experimental system to understand how anesthetics work at the molecular level. We are taking a systematic approach with different concentrations of isoflurane to identify basic mechanisms linked to disruption of specific environmental responses using the model plant *Arabidopsis thaliana* (mouse cress). *Arabidopsis* plants expressing GFP-TUBULIN showed that isoflurane disrupts microtubule dynamics linked to phototropism and young seedling development. Further, we found that GFP-labeled microtubules in constitutively photomorphogenic 1 (*cop1*, lacking E3 ubiquitin ligase activity) mutants exhibit tolerance to isoflurane. The *cop1*-mutant is well studied and is known to accumulate microtubule stabilization components, amongst other factors, resulting in slowing of normal growth and development in response to environmental signals. Our results indicate that isoflurane directly binds microtubules

and alters repolymerization, and this effect is reduced when microtubules were already stabilized in cop1 mutants. Plant microtubules are known to play essential roles in responding to environmental stimuli. Our work is ongoing with genetic and molecular tools that are readily available in plant systems and demonstrate that photoreceptor activity was not altered by isoflurane and implicate direct anesthetic effects on microtubules.

Keywords

Anesthetics, microtubules, plant responses to anesthetics

Entropic fractality in a quantum graphene tube

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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

In a pristine crystal, a single electron experiences the electrostatic potential of localized atoms within the lattice. This movement is dictated by the tunneling probability between lattice sites. However, when subjected to a homogeneous magnetic field perpendicular to the lattice, the electron exhibits circular orbits with the cyclotron frequency. The resolution of these scenarios became possible in 1976 when D. Hofstadter analytically solved the problem for a square lattice, revealing the Hofstadter butterfly. The butterfly is a fractal pattern that depicts the electron-allowed energies as a function of magnetic flux at zero temperature. In our study, we extend this analysis to a two-dimensional graphene lattice modeled as a tube, and incorporating temperature effects. Utilizing an analytical pi-orbital tight-binding model and numerical calculations, we determine the allowed energies, density of states, and electronic entropy using Fermi-Dirac statistics. Our results unveil entropic oscillations and fractal patterns influenced by the magnetic flux. Notably, low or high-temperature values govern the overall structure. These theoretical insights into electronic quantum processes with fractal-like patterns at different temperatures in a simulated graphene tube offer valuable perspectives. Furthermore, our findings may contribute to understanding potential quantum mechanisms in microtubules within neurons, as suggested by the Orchestrated Objective Reduction (Orch-OR) theory proposed by S. Hameroff and R. Penrose, shedding light on the emergence of consciousness.

Keywords

graphene, fractals, Hofstadter butterfly, temperature, electronic entropy, magnetic field, consciousness, Orch-OR

Conscious Supremacy

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Categories by Discipline

4.0 Physical and Biological Sciences

Primary Topic Area - TSC Taxonomy

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

Abstract

The computational significance of consciousness is an important and tangible research issue, and could elucidate the hard problem of consciousness (Chalmers 1995) from a different angle. In computer science, quantum supremacy (Arute et al. 2019) has attracted much attention as a watershed criterion between classical and quantum computers. Even if an algorithm is in principle computable in the sense of the mathematics of computability (Penrose 1989), quantum computers might have a practically insurmountable advantage, given limits on the computational resources physically available, including time. Here I propose and discuss the concept of conscious supremacy, where computations done consciously holds an advantage over unconsciously conducted computations given the limitations on resources in biological systems. Although conscious processes would be computable in principle, within the contexts of biologically plausible cellular environments some computations would be possible only when executed consciously. Several computations typically conducted in human cognition, including visual perception, robust handling of attention, judgement, decision making, and sensori-motor coordination are discussed as possible candidates for conscious supremacy. In addition, I discuss possible brain mechanisms involved in realizing conscious supremacy. Conscious supremacy is likely to have been important in the evolution of biological systems, starting from the robustness of single cells (Bray 1995). The relationship between conscious supremacy and linguistic processes is discussed, in relation to the higher-order theories of consciousness (Lau and Rosenthal 2011). Recently, advancements in generative artificial intelligence systems such as ChatGPT (Sanderson 2023) have highlighted the possibilities of reproducing human cognition by artificial means. Interestingly, once a particular functionality is realized artificially it is typically considered to be non-essential in human intelligence, a human cognitive bias called AI effect (Haenlein and Andreas 2019). Many researchers regard computations conducted by artificial intelligence systems, e.g, one based on the transformer architecture (Vaswani et al, 2017) to be unconscious in nature. The AI

effect can be considered to be a tool in filtering candidates of computational processes to decide whether they would fall within the domain of conscious supremacy. I discuss possible relationships between quantum supremacy and conscious supremacy. Some authors have suggested the involvement of quantum processes in consciousness (Hameroff 1998, Hameroff and Penrose 2014), although there have been controversies (Tegmark 2000). I discuss possible links between schemes used in quantum computing, e.g. Shor's algorithm for finding prime factors of large integers (Shor 1994), and cognitive processes typically executed by a conscious brain, such as those involving the binding problem (Feldman 2012). Finally, I discuss possible ways the elucidation of conscious supremacy could contribute to the hard problem of consciousness. The contrast between the Platonic appearance of the phenomenology of qualia and the noisy nature of neural firings might suggest a mechanism similar to quantum error correction (Cai and Ma 2021). I discuss how conscious supremacy might be realized by processes either involving, or independent of, quantum processes in the brain.

Keywords

quantum supremacy, conscious supremacy, computability, qualia, hard problem

The Theory of Embedded Intelligence (TEI)

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Categories by Discipline

4.0 Physical and Biological Sciences

Primary Topic Area - TSC Taxonomy

[01.06].....Machine consciousness

Abstract

Abstract: This concurrent presentation on The Theory of Embedded Intelligence (TEI) extends the Embedded Intelligence Workshop (EIW) of TSC 2022. Embedded Intelligence (EI) is defined herein as that which self-assembles things by sensing, processing, communicating, and actuating (SPCA). All things in nature have to self-assemble aka create themselves. When something is created by another thing it is said to have been assembled aka created artificially. Humans create a lot of different things therefore artificially. When humans create intelligent things, we sometimes relate to that intelligence as artificial intelligence (AI). This concurrent presentation will explain EI from the perspective of the manmade 6502 microprocessor Embedded Intelligence Technology (EIT) aka 6502 AI. The Theory of Embedded Intelligence (TEI) explains consciousness of things as the result of the embedded intelligence of the thing to SPCA. All things in nature exhibit self-consciousness to be the thing it is.

Keywords

embedded, intelligence, technology, artificial, machine-learning, machine-consciousness

The Water Anharmonic Vibrational Frequencies – the Alphabet of Life

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Categories by Discipline

4.0 Physical and Biological Sciences

Primary Topic Area - TSC Taxonomy

[04.16].....Miscellaneous

Abstract

Aquaphotomics is a new Science and Technology Integrative Platform presented in 2005. The principal novelty of this field is placing the focus on water as a complimentary to other molecules in biological or aqueous systems. Water is a highly dynamic molecular system of dipoles that connect to each other forming various structures, i.e. being able to perform various functions adjusting to the environment with speed in the femtosecond range through rearranging its structure. Water is sensitive to any change the system experiences – external or internal. It is an integrative ultimate sensor, a collective mirror. Water – light interaction makes water an autopoietic system: it can produce and maintain itself by creating its own parts, i.e. water molecular structures, thanks to its ability to absorb and illuminate light at various frequencies. Water has coherent and non-coherent part reacting to space-time in a highly correlated manner through exchange of single quantum energy. Because of its quasicrystal structures, very often it is thought as of quantum computer itself. The molecular structure of water, revealed through its interaction with light as a multidimensional spectral pattern (aquagram) of all frequencies becomes a very important tool for investigations and a source of immense information about the state of the system and the environment.[1]. Our spectral analysis of numerous systems under various perturbations at the water overtones` anharmonic vibrational frequencies have shown variations of the intensity of light absorbance repeatedly at the same frequencies but in different combinations depending on the system and its condition. Further on, we discovered that each of these frequencies is assigned to a specific water molecular structure and the combination of these structures and their concentration (expressed by the light absorbance intensity) relates to the functionality of the system. Non - destructive monitoring of the water spectral patterns (aquagram) following a perturbation allowed acquisition of immense information that lead to identification of waters with different functionalities, to diagnosis and understanding of inflammation and stress in animals and plants, to non-invasive observations of blood – water relation in humans etc. For the first time, aquaphotomics study showed that different sound frequencies change the water spectral pattern

of different waters differently, but in similar and respective way. Near infrared spectral monitoring of human palm before and after various types of meditation (using sound or meditation leadership) have shown distinctive individual patterns for each attendee before the meditation, but similar aquagrams especially after the meditation and depending on the type of meditation. For the first time, with Aquaphotomics, we were able to perform non-invasive quantitative measurements of physio-chemical changes in human body related to water structure and its functionalities. We have shown that meditation changes the water structure in the body towards increasing of the antioxidants, i.e. “working water” molecular species. For the first time we could correlate subjective and objective experiences of consciousness. The results of this scientific endeavor lead to a conclusion that the interaction between light and water as the ultimate sensor can open a new venue for consciousness exploration.

Keywords

water molecular structure, anharmonic vibrational frequencies, water as ultimate sensor and quantum field, non-invasive monitoring of water dynamics in living systems

A Modern Platonic Perspective on Experimental Approaches to the Hard Problem

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Categories by Discipline

4.0 Physical and Biological Sciences

Primary Topic Area - TSC Taxonomy

[01.04].....Ontology of consciousness

Abstract

The annual conference of the Society for Consciousness Studies, December 17, 2023, focused on the question: What research/experimental program would revolutionize the scientific search for the fundamental nature of consciousness? I proposed a possible simple answer: Experiments that prove the existence of the Platonic World (Platonic domain of reality). This presentation situates the tri-domain ontology of reality proposed by Penrose (Shadows of the Mind 1994), specifically Penrose' inclusion of the Platonic domain together with the Physical domain and the Mental domain, as three fundamental irreducible ontological domains of reality that operate interactively together to tri-create reality, at the center of future paths toward addressing the “hard problem” of scientifically investigating the ontology of consciousness. The currently popular primary ontologies of reality (Materialism; Idealism; Dualism) are clearly differentiated from this proposal: Plato-Penrose tri-arising. Various experimental approaches at the forefront of science of consciousness are prioritized according to the criterion: Do they assess or indicate the existence of the Platonic domain?

Keywords

Platonic world, Penrose, quantum collapse, state reduction, Born rule, nonduality, dual-aspect monism, neuroscience revolution.

Simplifying Complexity: Integrating Scientific, Philosophical, and Spiritual Approaches to Consciousness Using Systems Science

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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

Emerging is a general systems science, a science of complexity, that describes systems of interacting “system processes.” This year’s plenary speakers frame consciousness in terms of oscillations and Bayesian modeling—inputs resulting in information and growth through feedback loops, frequency fractal models, rhythms and cycles, evolution of consciousness through fitness payoffs, porosity and absorption of boundaries, information as a lifeform, neural networks, and more. Systems Processes Theory describes how systems at all scales of complexity are made up of the same patterns of interactivity. Hierarchy theory describes how each systemic level organizes to the next scalar and temporal level and that the emergent level requires different metrics and displays emergent characteristics. In 2015, Dilip Konepudi and his team placed aluminum ball bearings in oil in a petri dish, circled the wall of the petri dish with a ground electrode, and suspended a source electrode above the surface. When zapped with electric voltage, the beads organized themselves into a treelike network to maximize the current flowing through them and then moved through their environment in wormlike motions to collect more energy. When disturbed by an insulated rod, the beads reformed into a new network. In other words, the beads self-organized into networks to maximize energy transfer, moved purposefully into energy-rich areas, and then adapted when perturbed. Self-organizing agency increases in complexity in systems within systems. At the human social level, bonding with others perpetuates the links in networks of family and community that assure the distribution of information, material, and energy. Informed by input, four to seven times per second, our whole brains break down into chaos and reorganize the four-dimensional projections that we individually experience as reality. At the level of the self, we each continually test and adapt these projections to bond, network, and meet our needs. Consciousness can be characterized as a state space with state variables, a snapshot in time of the system’s overall being indicated by changing metrics. At any given moment, your boundaries may be relatively porous or protectively closed. Physiological feedback--feelings--tell you when you

are on the right track. You may use balancing feedback to open the relatively closed boundaries and to stop the amplifying feedback of protective fear or anger. In higher states, you find the middle way, do unto others as you wish to be treated, and understand karma—the chaotic nature of existence where actions have all kinds of effects. This metascience, this way of seeing, transcends scientific, philosophical, and religious distinctions and offers a path for integrating and modeling the work of scientists, philosophers, and spiritual and indigenous teachers. Most importantly, it is a description of experience that can help us raise our individual and collective consciousness.

Keywords

complexity, systems, systems science, self-organization, networks, emergence, information, agency, feedback loops, religion, spirituality, evolution, nonlinear dynamics

Vacuum Orchestrated Spin Signaling - A Quantum Model of Non-local Cognition

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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 precise mechanism by which cognitive agency arises from fermions, structured into molecules, arranged into proteins, and organized into cells, is presently unknown. Recent advances in the field of bioelectric networks have raised new questions as to the attribution of agency in biological systems, specifically as it pertains to the complex informational processing defined as cognition. In this case, cognitive agency is regarded as the ability to pursue self-generated goals by differing means. Evidence of cognitive agency has been observed in gene regulatory pathways, arguably the most fundamental of biological systems, as well as in plants - both demonstrating the capacity for associative memory and learning through stimulus-response conditioning. A bioelectric map in the form of voltage gradients across cellular networks, has been identified as the source of anatomical and conditioning memory in biological systems. The most dynamic of these bioelectric maps - voltage oscillations across neuronal networks - are the extensively studied brain waves that correspond to the mental states of cognitive information processing. The origin of the information behind the bioelectric map, and how it is communicated to cellular networks, is currently unknown. Advances within the field of relativistic quantum information (RQI) have identified the quantum vacuum as an infinitely entangled structure of information reflecting the quantum-state dynamics of real fermions. It has been further demonstrated that this information is recoverable with a quantum antenna, through the process of entanglement harvesting. Radical pairs are short-lived quantum antennas, interacting with weak electromagnetic fields, which are generated through the process of metabolism - a process unique to living intelligence and not found in artificial intelligence. The radical pair mechanism can explain the isotope dependence observed in the ability of general anesthetics to block conscious awareness and memory, as well as the isotope dependence of lithium in affecting cognitive function. A radical pair model can also explain observed magnetic field effects on microtubule concentrations. Signatures of radical pair dynamics have also been observed in gene regulation, specifically the physiologically perplexing efficiency by which proteins identify consensus sequences on DNA. Here a scheme is developed in which the

cognitive information processing of biological systems originates in the quantum vacuum, and is then signaled to cells via virtual photons that alter the electron spin dynamics of radical pairs within proteins. These alterations to radical pair product yields, are proposed to signal alterations in electric potentials across cellular membranes, thus generating the voltage gradients observed across cellular networks, including the neuronal voltage oscillations of brain waves. In this way, the process of 'vacuum orchestrated spin signaling' (VOSS) is proposed as a process by which the mind, the information of the bioelectric map, originates in the quantum vacuum and is signaled to cellular proteins via the radical pair mechanism.

Keywords

radical-pairs, general anesthesia, microtubules, quantum vacuum, relativistic quantum information, bioelectricity, voltage, cells, brain waves, cognition, agency, entanglement

DDG, the subconscious brain readings hidden deep inside the ultrafast time domain

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Categories by Discipline

4.0 Physical and Biological Sciences

Primary Topic Area - TSC Taxonomy

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

Abstract

We've created a new instrument similar to EEG, named DDG, or Duo Decanogram. DDG differs fundamentally from EEG as it doesn't record the current flow on the brain scalp directly. It utilizes two probes, with one acting as an antenna measuring radiations from the brain surface. The other, with very low power and short duration, pulses in the stream to the brain surface. It identifies a wide range of time durations, pulses, or bursts of signals using a logical analyzer. With the DDG instrument, we've found that the brain signals not only in the familiar milliseconds time domain but also in various durations: milliseconds, microseconds, nanoseconds, and picoseconds. This challenges our longstanding belief that the brain processes information solely in the millisecond time domain. Our understanding has largely been based on measuring muscle potential with EEG on the brain scalp for 150 years. Muscles, membranes, and liquids filled with ions always vibrate in the kilohertz or milliseconds time domain. This makes it scientifically challenging to isolate the actual brain signal from ionic resonance, membrane resonance, cellular resonance, etc. DDG, operating primarily in the microseconds to nanoseconds time domain, where it exhibits maximum activity in the brain, remains unaffected by hand or forehead muscle movements that we can control. We anticipate that DDG will revolutionize brain science, offering significant insights into neurogenesis. This will help us understand how information, cognition, emotion, and other fundamental cognitive responses are linked to neuron bursts or other neural activities like the Microtubule burst, which we've identified as more fundamental to neuron activity.

Consciousness is manifestation of soul supported by multiple evidences

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Categories by Discipline

4.0 Physical and Biological Sciences

Primary Topic Area - TSC Taxonomy

[04.16].....Miscellaneous

Abstract

We synthesize multiple evidences which support the view that consciousness is manifestation of soul: (i) Annie Besant together with colleagues C. Leadbeater and C Jinrajdas (ABC, 1907 in short), used the technique of anima siddhi, in which the conscious body can assume an extremely small form and view the sub quark like structure of chemical elements like hydrogen atom. ABC have made several claims which were proved to be correct by later scientific studies. These predictions included existence of isotopes of various elements, existence of Kr85 etc., which were subsequently confirmed. One of their predictions was existence of 18 sub quark like particles (termed as Anu-s, the ultimate particles, by ABC) in the hydrogen atom, which was further pursued by Stephen Phillips, a particle physicist, from London (Phillips, see Dobyns, H., Y). This agreement supports the view that the conscious body can take miniscule form and acquire knowledge beyond sensory capabilities, consistent with Jain philosophy, as discussed later (ii) Taking clues from ABC and TDVP (Tri Dimensional Distinction Vortical Paradigm) model of Neppe and Close, Pokharna et al (2022) normalised the rest masses of up quarks and down quarks, constituting protons and neutrons with respect to the rest mass of the electron. The rest masses of electron, up quark and down quark are respectively 0.51 Mev/c², 2.01 Mev/c² and 4.79 Mev/c². If the mass of an electron is taken as 1 (electron mass unit) then dividing the rest masses of two quarks by this value of 0.51 Mev/c² and making the result equal to the nearest integer, one finds normalised mass/energy values as 4 for up quark and 9 for down quark respectively. These are termed as quantum units in

TDVP model. This leads to normalised proton mass value of 17 and neutron mass value of 22 emu and Hydrogen = 18 emu. It means that what ABC have seen through Clairvoyance is sub-quark like structures. The number of anu-s seen by ABC and number of sub-quarks like entities computed using the data based on the modern science for Hydrogen atom matches perfectly, this study has been extended to all the 92 stable chemical elements and it was found that the correlation coefficient between these two numbers coming from two completely independent sources is 0.9996 with average statistical error of +8.64 percent (Quantum units are more). This is absolutely astonishing. Similar claims were made by ancient Jain Aacharyas and monks who have attempted quantitative estimates of sizes of microscopic particles of matter through clairvoyance. Their estimates were found to match statistically with sizes of atoms and nuclei as found in the modern science. We have looked for mechanism for viewing these sub-quarks like entities through clairvoyance. We have found that Mitchell, E. D., and Staretz, R., (2017) have explored the possibility of a quantum hologram (QH) and its link with Zero Point Field (ZPF). Using the concept of Phase Conjugate Adaptive Resonance (PCAR), they have explored the possibility of transfer of information from one QH (of ABC) to another QH (of Particle). Detailed explanations of clairvoyance and bodies which can be reduced to an extremely small size are given in Jain aagamas.

Keywords

soul, quantum hologram, phase conjugate adaptive resonance (PCAR), clairvoyance, sub-quark, anu, electron mass unit (emu) and jainism

Positive Geometries of 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

Spacetime has no operational meaning beyond the Planck scale: roughly 10^{-33} centimeters, 10^{-43} seconds. Therefore many high-energy theoretical physicists conclude that “spacetime is doomed,” i.e., that it’s not part of fundamental reality (see, e.g., David Gross, 2005, *Current Science*, 89, 12, 2035-2040). They also conclude that “reductionism is doomed,” i.e., that it’s false to claim that probing smaller scales of spacetime can reveal more fundamental constituents of reality and more fundamental laws governing the behavior of such constituents. In the last decade, physicists have discovered new structures entirely beyond spacetime and quantum theory, structures such as decorated permutations and positive geometries. These structures accurately predict amplitudes for scattering processes of subatomic particles, and reveal new symmetries of these processes (see, e.g., <https://wwwth.mpp.mpg.de/positive-geometry.html>). Most theories of consciousness are not yet informed by these advances in high-energy physics. Most theories still assume that spacetime is fundamental. Most propose that conscious experiences, or the illusion of conscious experiences, have a reductive explanation in terms of objects in spacetime, such as networks of neurons. If spacetime is doomed, then so are these theories. They have failed, so far, to explain any specific conscious experience, such as the taste of vanilla (or the illusion of the taste of vanilla). If spacetime is doomed, this failure is principled. We propose a mathematical theory of consciousness informed by recent advances in high-energy physics. This theory posits a social network of interacting “conscious agents,” entirely outside spacetime and quantum theory, and irreducible to anything inside spacetime. Agents and interactions are modeled by Markov chains: a Markovian dynamics outside spacetime. Interacting agents combine and fuse, creating new agents and qualia. We introduce a partial order on Markovian kernels: $M < N$ iff M is a trace chain of N . This induces a nonBoolean logic on Markovian kernels, the “trace logic,” and gives a theory of observation: Agent M observes agent N only if $M < N$. It also gives a theory of the relationship between observation and probabilistic belief: The map taking a kernel to its stationary measure is a homomorphism between the trace logic of observations and the Lebesgue logic of probability

measures. We then discuss how the Markovian dynamics of conscious agents may project onto the positive geometries beyond spacetime discovered by physicists, and give a precise map from Markov chains to decorated permutations. One goal is to precisely predict the amplitudes for scattering processes in spacetime using a theory of conscious agents beyond spacetime. A new picture emerges. Consciousness does not arise from any physical process inside spacetime. Consciousness is not simply the fire that breathes life into the equations of physics in spacetime. Instead, spacetime arises as merely one of countless user interfaces that conscious agents construct to facilitate their interactions with each other. Spacetime is not fundamental reality, it is just one of the simpler, and lower-resolution, VR headsets used by conscious agents. Science inside spacetime studies one headset. It's time to take that headset off, and explore the reality beyond.

Keywords

Spacetime, positive geometry, conscious agent, Markov chain, hard problem, scattering amplitude, reductionism

The Search for Extraterrestrial Consciousness

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Categories by Discipline

4.0 Physical and Biological Sciences

Primary Topic Area - TSC Taxonomy

[04.11].....Consciousness and evolution

Abstract

While understanding the fundamental nature of consciousness remains a challenge, the possibility exists for learning more by detecting the presence of potentially conscious entities throughout the universe. I'll survey and discuss progress and options in this area, including the search for technosignatures and ideas about the properties of conscious species and their functional requirements as seen through the lens of astrobiology. Some of those requirements may relate to the externalization of information that appears associated with 'human-style' consciousness and can be tied to fundamental constraints such as the Landauer-limit for irreversible bit operations.

Keywords

astrobiology, technosignatures, information theory, SETI, search for life

Unveiling Asteroid Bennu's Mysteries: Insights from OSIRIS-REx and the Quest for Cosmic Origins

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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

The OSIRIS-REx mission, tasked with the ambitious goal of retrieving a pristine sample from Bennu's surface and returning it to Earth, has provided scientists with a unique opportunity to study an ancient relic from the early solar system. The comprehensive analysis of the Bennu asteroid's returned samples unveils intriguing insights into its mineralogical, elemental, and isotopic composition. The data obtained from these samples establish strong parallels between Bennu samples and type-1 carbonaceous chondrites, shedding light on the asteroid's likely formation and evolutionary history. Noteworthy differences also emerge, fueling curiosity about the specific mechanisms responsible for Bennu's distinct attributes. Additionally, these findings have significant implications for the field of astrobiology, as the study hints at the potential relevance of Bennu and similar objects in unraveling the mysteries of life's origin and the role of extraterrestrial materials in terrestrial evolution. Moreover, the exploration of the orchestrated objective reduction hypothesis and the discovery that many Bennu organic compounds demonstrate fluorescence further deepens the significance of these discoveries in our quest to understand the fundamental aspects of existence, consciousness, and the origins of life in the cosmos. Dante S. Lauretta
Regents Professor, Lunar and Planetary Laboratory Principal Investigator, OSIRIS-REx Asteroid Sample Return Mission Director, Arizona Astrobiology Center

Keywords

Bennu, extraterrestrial, terrestrial evolution, cosmos, origins of life

Psychedelic interactions with tubulin and their effect on the optical properties of aromatic amino acid lattices in the microtubule cytoskeleton

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Categories by Discipline

4.0 Physical and Biological Sciences

Primary Topic Area - TSC Taxonomy

[02.19].....Psychedelics and psychopharmacology

Abstract

Microtubules are self-assembling biological helical nanotubes made of the protein tubulin that are essential for cell motility, cell architecture, cell division, and intracellular trafficking. In the nervous system microtubules play a crucial role in maintaining neuron structure, transporting materials for synaptic plasticity, and are a potential facilitator of signaling and sub-neural information processing. It has been hypothesized that this hollow molecular nanostructure may support optical transitions in photoexcited tryptophan, tyrosine, or phenylalanine amino acid lattices to function as a light-harvester, similar to photosynthetic units; this ability coupled with its shape is analogous to a quantum wire. In support of this, recent experimental work demonstrates that electronic energy can diffuse across microtubules in a manner that cannot be explained by conventional Förster theory making them effective light harvesters, an effect that is dampened by the presence of anesthetics. Like anesthetics, hallucinogens are natural molecular probes of consciousness, and both appear to target microtubules directly. There is also a consistent structural relationship between the phenylethylamine hallucinogens and the microtubule polymerization inhibitor colchicine. Additionally, there is a structural relationship with the indoleamine hallucinogens and the indole-based vinca alkaloids, however this is less clear. Regardless, this suggests a potential for direct modulation of the cytoskeleton and its optical properties by psychedelic compounds. Here we present theoretical work of the interaction of psychedelics with microtubules and the potential effect on energy transfer between amino acids in tubulin. Results demonstrate the potential for psychedelic manipulation of the optical properties of aromatic amino acid lattices in microtubule protein structures.

Keywords

coherent energy transfer, excitonic transport, quantum biology, quantum optics, microtubule, psychedelics, structure-based simulation, optical biophysics

Terrence Howard

Terrence Howard

THOWARD TECH, Los Angeles, 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

The following models are gravity free particle physics simulations and are not animations nor CGI graphics in the standard sense as there are no “keyframe animations” present. All of the forces being used are externally applied vortexes only and limited uses of central or offset magnetic fields. There are no other internal attraction forces present in the simulations. They are using emulated particles of specified masses in conjunction with specific externally applied forces, harmonic resonance and emulated magnetic fields only. The vortex spiral forces, similar to tornado simulations are arranged using Terrence Howard’s “Lynchpin” configuration where the basic form has four vortexes Poynting to a common centre point. The secondary group or 3 vortexes are radially offset at 120 degree intervals and tilted at 109.5 degrees relative to 1 primary vertical vortex perpendicular to the group of three secondary vortexes for a total of 4 per Lynchpin grouping. When activated and acting on the particles in the simulated physics system, the resulting mass velocity outputs spontaneously create stable planetary, galaxy and plasmoid type systems of motion exhibiting actual scientifically observable phenomena such as but not limited to the following: - Coherent structures similar plasma and magnetic fields. - Atmospheric flows and currents similar to observed wind, ocean and cyclonic motions. - Rotating crustal shells similar to continental drift characteristics as observed on Earth. - The characteristic “hexagon” observed on the poles of the planet Saturn and the counter rotation on the poles of the Sun and Jupiter’s surfaces. - Stabilized galactic spiral arms in various groupings and morphologies. - Proper mass displacements leading to close correlations to observed planar profiles as in the slight saddle shape warping of known galaxies and nebula clouds. - The results are hyperbolic geometric inertial systems. - Non-euclidian chiral asymmetries of force in motion. We will that gravity is nothing but a effect of electricity and that the fundamentals that academic has used for the last 6000 years are now obsolete in view of the fact that the fracto has been discovered and the grand unified field equation has been solved.

Complex chemical mixtures and the consciousness of molecular diversity in BioGeosystems and Extraterrestrial Materials

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Categories by Discipline

4.0 Physical and Biological Sciences

Primary Topic Area - TSC Taxonomy

[04.02].....Quantum field approaches

Abstract

Understanding on a molecular level complex organic mixtures in Bio- and/or Geosystems is a huge challenge in modern sciences and implies constant development and adaptation of modern ultrahigh-resolving analytical technology with innovative solutions for their resolved analysis. We aim to present concepts for the consciousness of chemical diversity of chemical mixtures subjected to biotic and abiotic processes. With complex systems we need high resolving analytical technologies to disentangle chemical complexity into its elementary parts (i.e. compositional and structural resolution) in a global integrated approach termed systems chemical analytics. The “complex” systems, phenomena or objects are various and related to our direct environment such as life, ecosystems, nature, universe, human, brain, food, flavours or even wine. Complex chemistry involves the interactions of elements, their adaptation – and their organization to reach homeostasis. Life and Living systems (Biomes) from ubiquitous microbiomes through higher organisms to entire ecosystems, are involved in their specific interactions and more general ecosystems adaptations. Chemical complexity ruled by the genomes can be found in inter-kingdom interactions at the macrolevel of the ecosystems or at on the organism level when taking account of supersystems such as Holobiontes. After-life involving generally globally transformed organic matter on short term or geological time scales to complex organic matter and geopolymers in diagenetic processes lead to a highly diverse and complex chemistry not found in any chemical database. Pre-Life complex chemistry involves prebiotic chemistry following the only rules of abiotic chemical reactions. These complex mixtures will be found in many meteoritic samples and especially from return samples such as from Ryugu or Bennu, considered as chemical witnesses of processed geomaterials (former planets or asteroids) in extreme temperatures, pressures and water alteration processes. From this highest diverse and complex chemistry emerged molecules

crucial for the early steps of life. We present here concepts and experimental results for the awareness of chemical complexity/diversity, with examples from the interfaces in Biome and Abiomes of (bio)geochemical systems in Life, after-Life and pre-Life stages that sets huge challenges for analytical chemistry to describe the dynamic chemistry herein. References: (1) Ph. Schmitt-Kopplin, D. Hemmler, F. Moritz, R. D. Gougeon, M. Lucio, M. Meringer, C. Müller, M. Harir, N. Hertkorn, Systems Chemical Analytics: Introduction to the challenges of chemical complexity analysis, Faraday discussions, 2019, DOI: 10.1039/c9fd00078j (2) Diederich Ph, T. Geisberger, Y. Yan, C. Seitz, A. Ruf, C. Huber, N Hertkorn, Ph Schmitt-Kopplin Formation, stabilization and fate of acetaldehyde and higher aldehydes in an autonomously changing prebiotic system emerging from acetylene Communications Chemistry, 2023, 6(1) 3 (3) Naraoka H, et al. Soluble organic molecules in samples of the carbonaceous asteroid (162173) Ryugu. Science. 2023, 379(6634):eabn9033. (4) Schmitt-Kopplin Ph, M. Matzka, A Ruf, B Menez, H Chennaoui Aoudjehane, M Harir, M Lucio, J Hertzog, N Hertkorn, RD Gougeon, V Hoffmann, NW Hinman, L Ferrière, A Greshake, Z Gabelica, L Trif, A Steele, Complex carbonaceous matter in Tissint martian meteorites give insights into the diversity of organic geochemistry on Mars, Science Advances, 2023, 9(2), eadd643

Keywords

biosystems, geosystems, biotic, abiotic, chemical complexity, homeostatis, biomes, microbiomes, inter-kingdom interactions, supersystems, Holobiontes, geopolymers, diagenetic processes, pre-life complex chemistry, Ryugu, Bennu, bio-geochemical systems, Life, after-Life and pre-Life

Interacting spiral waves organize brain dynamics and have functional correlates to cognition

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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 this presentation, I will discuss our recent discovery of spiral (or vortical) wave patterns—referred to as "brain spirals"—within the human brain during both resting and cognitive task states. These brain spirals exhibit intriguing properties: they rotate around phase singular centres, with the centres themselves propagating across the cortex. I will demonstrate how the properties of these brain spirals, such as their rotational directions and locations, are task-relevant and can be used to classify different cognitive tasks. Additionally, I will illustrate that the interactions of these brain spirals provide a mechanism for flexibly coordinating activity flow between different brain areas during cognitive processing. These findings suggest that brain spirals play an essential role in organizing the spatiotemporal dynamics of the human brain, potentially enabling cortex-wide brain computation to occur in a fundamentally distributed and dynamic manner, and have functional correlates to cognitive processing.

Keywords

spiral, vortical wave patterns, brain spirals, task-relevant rotational directions and locations, cognitive tasks, cognitive processing, spatiotemporal dynamics, cortex-wide brain computation

Tao Calligraphy Tracing Meditation in Health Recovery - 30th Annual The Science of Consciousness by University of Arizona, Center for Consciousness Studies

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Categories by Discipline

4.0 Physical and Biological Sciences

Primary Topic Area - TSC Taxonomy

[04.12].....Medicine and healing

Abstract

Introduction: There is intensive research underway to study the effect of meditation on health. Researchers also report that painting calligraphy can positively influence some illnesses. Although there are different kinds of meditations, it all comes down to mindfulness. The practice of mindfulness involves heightened awareness which can improve our attention, focus, and other mental capacities. There is also a solid body of research indicating that the practice of Mindfulness is having a significant effect not only on the function of the brain, but also on overall health. For several years, the authors have taught and studied the effect of a unique style of meditation where mindfulness (heightened awareness) is achieved by a combination of movement and focus on Chinese Tao Calligraphy. In this practice, the practitioners trace the lines of calligraphy with their fingers and simultaneously chant a Mantra, which enables them to achieve a deep state of mindfulness while maintaining a fully awake state. This unique practice can best be understood as a combination of meditation and Qi Gong (energy practice). Therefore, the healing effect on the mind and body can be quite profound. Methods: Several Progressive IRB approved follow-up studies investigated the efficacy of Tao Calligraphy Tracing Meditation and Mantra Chanting as a plausible complementary treatment for various illnesses. The subjects were asked to repeatedly trace the lines of the Greatest Love Tao calligraphy with their fingers while simultaneously chanting the Greatest Love mantra. This practice was to be carried out for at least 30 minutes, two times a day, for a minimum of 3 months. Results: The study of various illnesses in 96 subjects, using standardized Rand Quality of Life Questionnaire SF36 was completed in 1 month, in 6 months, in 1 year and in 2 years. In 1 month, in 6 months, and in 1 year ANOVA analysis showed that all Indexes exhibited statistically significant positive improvement, while at 2 years, six indexes exhibited statistically significant positive improvement, one index improved but not significantly and General

Health index worsened statistically significantly. The study of Breast cancer in 18 subjects used Standardized Quality of Life Questionnaire QLQ-C30, completed at baseline, at 3 months and at the conclusion of the study (6 months). ANOVA analysis showed that all 15 indexes of EORTC QLQ-C30 exhibited positive improvement, one index (Emotional Function) improved statistically significantly. The study of Chronic Pain in 45 subjects used the short-form McGill Pain questionnaire (SF-MPQ) that was filled out at the start of the study and again after three months. An ANOVA analysis revealed a statistically significant improvement of overall pain intensity (PPI) and the category of fearful pain. More detailed results will be shared at the time of presentation. Conclusions: The results of our studies confirmed efficacy of combining Tao Calligraphy Tracing Meditation and conventional medical treatment. Meditation with Tracing Tao Calligraphy was easy to learn, was well tolerated and no complications arose. We found that Tao Calligraphy tracing with chanting the mantra is a useful addition to standard treatment protocols.

Keywords

Tao Calligraphy, Mindfulness, Healing, SF36, Meditation, Cancer, Chronic Pain,

Vitalism and Naturopathy in Psychedelic Medicine

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Categories by Discipline

4.0 Physical and Biological Sciences

Primary Topic Area - TSC Taxonomy

[04.12].....Medicine and healing

Abstract

Psychedelic therapy is seeing a rapid rise in popularity both in clinical research and in the greater culture. Because it involves the use of drugs, psychology, and spirituality, professionals from a variety of backgrounds such as physicians, psychotherapists, chaplains, etc. are increasingly becoming interested or directly involved. In this paper the authors describe why naturopathic doctors, with additional training, are well suited to provide psychedelic therapy. Naturopaths are rooted in the non-materialistic metaphysics of vitalism, which is consistent with the concept of the inner healing intelligence widely accepted in the psychedelic therapy community. In addition to the compatible foundational philosophies, naturopaths also possess a wide range of clinical skills including herbalism, pharmacology, and counseling, among others, that can be directly applied to psychedelic therapy and integration.

Keywords

Psychedelic, psychedelic therapy, inner organic healing intelligence, vitalism, metaphysics, naturopathy

CosmoIntel

Effects of T-Consciousness Fields on Cell Cycle Progression and ATP Production in Raji and HEK-293 Cell Lines under Microgravity and Earth's Gravity Conditions

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Categories by Discipline

4.0 Physical and Biological Sciences

Primary Topic Area - TSC Taxonomy

[04.10].....Origin and nature of life

Abstract

T-Consciousness Fields (TCFs), conceptualized as non-physical fields by Mohammad Ali Taheri, have been the subject of previous studies exploring their application on various cell lines and ATP production. These investigations have consistently shown that TCFs can enhance cell viability and increase ATP concentration. Recognizing the detrimental impact of reduced gravity on human health during space missions, this study aimed to examine the effects of TCFs under different gravity conditions using a clinostat device to simulate microgravity (MG). In the initial experiment, the Faradarmani Consciousness Field (FCF), a type of TCFs, was applied to Raji lymphoma cells, and cell cycle progression was assessed under both microgravity (MG) and Earth's gravity (1G) conditions. Control samples without TCFs treatment were included. Flow cytometry analysis revealed that MG stress significantly induced the Sub-G1 phase by up to 42% and reduced the percentages of G1 and S phases by approximately 57% and 30%, respectively, compared to the 1G condition. Notably, the behavior of FCF-treated samples remained largely unchanged. In the second experiment, the effects of TCFs on cell cycle progression and ATP production in the HEK-293 cell line were evaluated under both 1G and MG conditions. Results demonstrated that MG increased the Sub-G1 phase by around 50%, while TCFs treatment maintained this phase's percentage at levels similar to the control in 1G conditions. Furthermore, the S phase in TCFs-treated cells was 18.5% higher compared to their clinorotated counterparts. Under Earth's gravity, TCFs induced a 29% increase in the G2 phase compared to the control. Additionally, MG significantly reduced ATP production by an average of 90%, but under TCFs, the ATP concentration was approximately two times higher than in samples without TCFs. In conclusion, this study not only reaffirms the distinctive effects of TCFs but also suggests that TCFs treatment leads to

improved cell survival in reduced gravity by inhibiting apoptosis, as indicated by the reduced sub-G1 phase. According to Taheri, these observed changes in cellular behavior are attributed to information transmission through TCFs, which may compensate for the reduced gravity.

Keywords

Taheri Consciousness Field, Faradarmani, microgravity, information, cell cycle, Raji

Experiential

Quantum Physics of Soul Sickness and Soul Healing

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Categories by Discipline

4.0 Physical and Biological Sciences

Primary Topic Area - TSC Taxonomy

[04.12].....Medicine and healing

Abstract

Soul and soul sickness are mentioned in many spiritual and religious texts. Can one scientifically define and study soul sickness and soul healing? It is known that the current allopathic medicine often treats the symptoms but cannot address the root cause of diseases. Can one develop more advanced healing techniques to heal at the root cause? In this work, we propose that the limitation of allopathic medicine is due to its basis on the classical physics. To find and address the root causes of sicknesses, one needs to apply quantum physics to the medical field. In our research studies, we find that a new interpretation of quantum physics provides a scientific definition for soul, spiritual heart, and mind. This makes it possible to study soul scientifically. Through introducing the concept and definition for positive information and negative information, we can give life, soul sickness, and soul healing a scientific definition. It reveals that soul sickness is the state of a life system that has a significant increase of negative information with a decrease of positive information, which affects one's function and fulfillment in certain areas of life. Soul sickness is the root cause of all sickness, difficulties, and challenges in one's life. Soul healing is to change the negative information in one's quantum field into positive information. Soul healing can address the root cause of sickness, challenges and difficulties in every aspect of life. In this presentation, we will review traditional wisdoms about soul sickness and soul healing from various traditions. We will present our quantum theory of soul, soul sickness, and soul healing. We will show that this quantum theory can provide us scientific understanding about various soul sickness and its impact on health, wellness, relationship, finances, environment, and world peace. We will point out various causes of soul sickness. We will discuss different soul healing techniques, clinical research and case studies on soul healing. If time allows, we can also do some soul healing demonstration so that the participants can experience soul healing techniques and learn how to use soul healing techniques for self-healing. We conclude that: (1) Soul sickness is the root cause of all sickness and difficulties in life. Soul healing is critical for health, wellness, and success in every aspect of life. (2) Soul healing can be applied remotely by oneself or others. (3) Soul healing

techniques complement all current medicine and healing modalities. (4) Soul healing techniques are easy, simple, and pleasant to implement by medical doctors, health practitioners, psychiatrists, business consultants, other professionals, and everyone in conjunction with other healing modalities and medical treatment to enhance the efficacy of all treatments. Considering the importance and advantage of soul healing, more attention and studies should be directed to soul healing. Health professionals and everyone should learn about soul healing.

Keywords

quantum theory of consciousness, quantum physics definition of soul, life, soul sickness, soul healing, soul sickness, sou healing, quantum physics definition of positive information and negative information

The geometrization of the wave function of quantum mechanics.

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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

Quantum theory is based on the wave function or spinor field, whose physical meaning has caused serious questions and disputes in the scientific community from the very beginning of the formation of the foundations of quantum mechanics. The development of quantum theory began with the work of Louis de Broglie, who compared a plane wave to the motion of quantum particles. Later, the probabilistic (Copenhagen) interpretation was adopted. But, de Broglie disagreed with such an interpretation in his attempt to find the deterministic nature of the physical reality behind the foundations of quantum mechanics. According to Louis de Broglie's idea, the wave used in quantum mechanics should be physically real, unified with the particle, which is a local region of large amplitude and energy concentration, a singularity moving in space and taking a quite definite position in the wave. On the other hand, a group of de Broglie's followers - T. Takabayasi, J. Vigier and P. Holland attempted to derive a feasible model of the quantum matter applicable to subsequent formulation of the quantum mechanical theory (T. Takabayasi, J. P. Vigier, Prog. Theor. Phys. 18, 573 (1957); T. Takabayasi, Prog. Theor. Phys. 70, 1 (1983)). This model can be constructed in a highly realistic manner, specifically, the authors have formulated the theory in the form of a specified hydrodynamics of a fluid carrying intrinsic angular momentum, called "spin". We developed the idea of Takabayasi, Holland and Vigier, that the spinor wave must represent a new physical field propagating in space and influencing the corpuscle of mass moving within it. We assume that this new field is created by the intrinsic spin of the particle and is a part of spacetime. We offer and develop the new geometro-hydrodynamical interpretation that connects the hydrodynamical formalism of the quantum mechanics for a spinning particle with the triad structure underlying the classical spin, based on these ideas (Mariya Iv. Trukhanova, Phys. Lett. A, 381, Issue 35, 2887 (2017)). We evolved the geometro-hydrodynamical representation of a spinor field as an assembly of very small rotating particles continuously distributed in space. This fluid carries the intrinsic angular momentum or spin, and each fluid element is represented by the triad, and the spin vector is fixed to the third axis of the triad. We assume that the spinor field has a geometrical nature and can produce new intrinsic forces and torques affecting the particle with

spin (Mariya Trukhanova, The geometro-hydrodynamical formalism of the quantum spinning particle, Progress of Theoretical and Experimental Physics, Volume 2018, Issue 12, 123A01 (2018)). At the initial stage, we proceeded towards the realm of geometrical description. The spacetime structure is described by the Riemann–Cartan geometry with the curvature and torsion. In this interpretation, the triad becomes the element of space, and we can identify the triad field as a fluid. We identify the spinor wave with the field or fluid of frames and the motion of each frame defined by its location in the field.

Keywords

wave-pilot theory, quantum hydrodynamics, spacetime geometry, quantum mechanics interpretation, fundamentals of quantum mechanics.

Final category: 5.0 Experiential Approaches

35

Thermodynamic Spacetime Theory.

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Categories by Discipline

5.0 Experiential Approaches

Primary Topic Area - TSC Taxonomy

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

Abstract

The theory proposed here presents a straightforward concept that challenges the conventional understanding of heat and energy. The current definition of heat describes it as the transfer of kinetic energy between the particles composing substances or from an energy source to an object. In other words, when we pour coffee into a coffee mug and the mug gets hot, it is allegedly because the particles in the coffee transfer their kinetic energy to the particles in the mug. This alleged transfer of kinetic energy happens at a microscopic scale so far removed from our capacity to observe that we can only analyze it by its statistical effects; but until recent years, there has been no experiment that could confirm or deny the validity of this hypothesis. According to this classical model, heat should in principle be completely independent from gravity, but based on this assumption, the corrections of general relativity predict an increase in gravity as the temperature of an object increases. According to the classical definition, energy is the capacity an object has to do work, to move another object; but what actually does the work is not energy, but the force an object exerts on another. From the classical perspective, energy was a capacity attributed to mass-bearing objects and it had no meaning without them; it was a bookkeeping mechanism to calculate work and force. It wasn't until Max Planck used Boltzmann's hypothesis that we started to see energy as something capable of moving mass-bearing objects all by itself, contradicting the very definition of what energy was at the moment and common sense. One of the biggest conundrums in modern physics is the medium problem for radiation. Waves are by definition a perturbation in a medium, and this perturbation is what enables energy to be transferred, but in the case of light and other forms of radiation, we don't have a medium to be perturbed. How can this alleged perturbation in nothingness transfer energy? How can a massless photon displace a mass-bearing electron? We don't have the answer to these questions; we just sweep them under the rug. The core assertion of this theory is that heat is not adequately defined by the conventional notion; instead, it is a

relativistic effect altering the very fabric of spacetime. According to this proposal, the mechanical changes in the motion of microscopic particles associated with temperature fluctuations really correspond to spacetime alterations. This implies that changes in heat are synonymous with alterations in spacetime dimensions. Therefore, when temperature increases and substances expand, we should observe the opposite of what is predicted by general relativity, we should see an increase in the rates of time and space, a decrease in gravity. Conversely, heightened coldness implies decreased space and a dilation in time rate. This seemingly counterintuitive relationship between temperature and gravity may challenge conventional understanding, but unlike the current definition of heat, this theory is supported by experimental evidence: International Journal of Physics “Experiment on the Relationship between Gravity and Temperature.”

Keywords

Relativity, Heat, Spacetime, Heat-spacetime, String Theory, Dark Matter, Modified Gravity,

In Quest of the Non-Sequential, the Non-Relative

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Categories by Discipline

5.0 Experiential Approaches

Primary Topic Area - TSC Taxonomy

[03.17].....Temporal consciousness

Abstract

The abstract: In Quest of the Non-Sequential, the Non-Relative by Dwight Holbrook What if beliefs, values, knowledge itself – i.e., the presumption of an objectivity, a truth from an unbiased perspective – what if ultimately all that turns out to become relative, a notion debated in Thomas Nagel's book *The View from Nowhere*? One could point to the advances in technology and scientific knowledge and wonder, in the end, how the consequences might trigger global environmental catastrophes or devastating wars. And if so, the very notion of “achievements” would seem relative. And so the question here: relative to what? Is there a perspective, a view from somewhere, that holds a stationary status, a perspective that stands on the shoreline, so to speak, an embankment, even as the sequential, the flow of time and change, pass by? This talk begins by taking a closer look at the language being used here to describe that sequential – specifically, the sequential in what respect? And so we begin with the obvious sequential of time Time in an abstract sense of number? Time in the sense we experience it? Time in the sense of change? Questions which take us to the status of memory. The analysis then proceeds to other sequentials involving ethics, changing values, or for example diverse and relative perspectives on cultural norms. We then take up the “sequential” with respect to the instant itself, the moment, so to speak. Is it in measured time or out of it, objective or subjective? If the former, how to measure it or locate it except with respect to memory? And finally, where does the sequential stand with respect to subjectivity vs. objectivity? Are there objective standards that do not change? This presentation then proceeds from the flow of change to the question of that embankment, the non-sequential. It first hypothesizes the notion that there is no embankment, no non-sequential, no foundation, and then considers whether change, the sequential, is itself an abstraction, like number. It seems crucially tied to memory, the source of which resides foremost in us. We then consider the alternative, that the notion of this embankment, the non-sequential, is real, is in fact foundational in spite of all that is relative, swept by in the flow of change. It short, what is postulated is the existence of awareness in the sense that the “now” from our human perspective is always now, not then. And after all, without the “now”

would there be a sequential, a before and after? One could dub this “now” “cognition” without the “re-” of “recognition” and implied memory, although that would seemingly give it a status similar to that of a new born baby’s opaque awareness prior to the time it takes to have the memory to give it recognition capabilities. And yet, all experience comes in the form of happening now tenselessly, at this moment.

Keywords

the constant, the unchanging, the unmoving reference point, the hypothesis of a perspective that can stand outside of time and change, non-sequentiality, the now we experience

Afterlife, Interrupted: A Catholic Priest Explores the Interrupted Death Experience.

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Dominican in Residences at St. Thomas Moore Newman Center at University of Arizona, Tucson, AZ, USA

Categories by Discipline

5.0 Experiential Approaches

Primary Topic Area - TSC Taxonomy

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

Abstract

Father Nathan Castle, O.P., has helped more than 500 “stuck” and not-so-stuck souls who died suddenly and traumatically to adjust to the afterlife. Victims of fires, automobile accidents, shootings, stabbings, drownings, and suicides come to him in his dreams seeking help to resolve their Interrupted Death Experiences. Father Nathan believes that providing such help is something the Holy Spirit has given him and his prayer partners to do. In his *Afterlife, Interrupted*: books, Father Nathan is quick to point out that not everyone who dies suddenly gets stuck. The Interrupted Death Experience Process: 1. Receive the dream and write it down in a dream journal. 2. Schedule time with prayer partner(s). 3. Protective prayer with the Saints and Angels. 4. Begin recording; read the dream account, and welcome the prophetic speech of the guardian angel or the person being helped. 5. Compassionate listening. 6. At the appropriate moment inquire about a guide to assist in the movement. 7. Close with a prayer of gratitude and goodbyes. 8. Debrief (if needed) and transcribe the recording. For those stories shared publicly, have one follow-up session with a prayer partner to ask permission for public sharing. Father Nathan is the author of “*And Toto, Too: The Wizard of Oz as a Spiritual Adventure*” and “*Afterlife, Interrupted (Books 1 and 2): Helping Stuck Souls Cross Over.*” His newest book: “*Afterlife, Interrupted Book 3: Please Let Me Explain*” will be available in December 2023. Father Nathan Castle, O.P., is from Groves, Texas. Father Nathan received MA and MDiv degrees from the Dominican School of Philosophy and Theology at the Graduate Theological Union in Berkeley, California. He served in campus ministries at the University of California Riverside, Arizona State University, and Stanford and is currently in residence at the University of Arizona. Father Nathan has chaired the Executive Board of the Catholic Campus Ministry Association (CCMA). Father Nathan has presented at the last 4 International Association for Near-Death Studies (IANDS) Conferences and The Spiritual Awakening International Conference. He has a Podcast “The Joyful Friar” heard in 68 Countries.

Keywords

Interrupted Death Experience, Crossing Over, International Association of Near-Death (IANDS)

Consciousness and Reality

ABDELLATIF Abdelhamid Abujudeh

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Categories by Discipline

5.0 Experiential Approaches

Primary Topic Area - TSC Taxonomy

[05.09].....Parapsychology

Abstract

Consciousness and Reality TIME to Einstein is that stubborn illusion; to some scientists and philosophers is just a calculator of MOTION, and to the rest is just a riddle. Nobody knows what time is. They presume it is going only forward. But others go more philosophical than scientific and claim that we can travel back in time! All these thoughts or even theories are just speculations or scientific fiction or anything but not pure science. Today, it's high time that there could be a sort of practical experiment that would hopefully provide us with a little bit of new information that may, if properly dealt with, help us sieze/ catch TIME itself or at least one of its components that will hopefully solve its infamous mystery. Thanks to my "EXTRAORDINARY ABILITY" which enables me to 'observe', in a certain "internal personal space-time", something like a PARTICLE moving in something like a WAVE (or you may say a wave function). In this SPIRITUAL or you may say subjective experience, I claim I can see -- now magnified -- the said particle as a diameter in a circle. Or, a better description, a radius in that circle, or the best and exact analogy is a second hand of a clock. YES. This talk looks like describing something imaginary. You may say so, but you'll be stunned when you come to determine, in one measurement, both the (POSITION) and (MOMENTUM) of the second hand of the clock, (i.e, while regularly moving with its usual speed of seconds), which is placed/ hidden behind a thick barrier and find to your surprise, that the two match. The internal second hand synchronizes with my external one. If what I claim is practically and experimentally proved true by me , then you cannot do anything but congratulate the nearest person to you for this MIRACULOUS DISCOVERY that is evidence enough of CONSCIOUSNESS and REALITY. By time and motion combined 'I' could prove how the objective world (the external classical one) corresponds with the quantum world and is 'observed' on 'my' Heavenly Screen. It is very likely that such a 'successful' experiment would have some significance to some theories related to consciousness and reality.

Keywords

consciousness, reality, time, motion, internal space-time, miraculous discovery, heavenly screen, extraordinary ability.

Using eye movement to signal the onset of self-induced out-of-body experiences (OBEs)

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Categories by Discipline

5.0 Experiential Approaches

Primary Topic Area - TSC Taxonomy

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

Abstract

An OBE is a phenomenon in which an individual experiences a detachment of their consciousness from their physical body. The neural mechanisms underlying OBEs remain elusive, primarily due to their unpredictable and spontaneous nature, making their study particularly challenging. Using individuals who can self-induce OBEs in a laboratory setting could be a fruitful avenue for advancing our understanding of the neural signatures and accompaniments of these experiences. However, a significant challenge associated with controlled OBEs is accurately determining the onset of the experience. In this pilot study, we investigated three participants who claimed to self-induce OBEs at will. We sought to determine whether they could report successful OBE self-induction within the confines of a laboratory environment. Furthermore, we aimed to assess the feasibility of using volitional horizontal eye movements as a marker for the onset of the OBE, using electro-oculography (EOG) measurement. Throughout the experimental sessions, we identified room arrangement and environmental factors facilitating OBE self-induction. Two participants reported successful OBE self-induction. Importantly, we found that horizontal eye movements as measured with EOG could potentially serve as a time marker of OBE occurrence, as one of the participants reported generating the instructed eye movement pattern at OBE onset in all three of her sessions, which was corroborated by EOG traces. This research method opens up new avenues for further laboratory exploration and investigation into this intriguing phenomenon.

Keywords

altered states of consciousness, EOG, EEG, eye movement signaling, lucid dreaming.

Cracking the Consciousness Code, The Gnosis of Non-locality and Machine Personality

James Driessen

Scart Publishing, Springville, UT, USA

Categories by Discipline

5.0 Experiential Approaches

Primary Topic Area - TSC Taxonomy

[01.06].....Machine consciousness

Abstract

Have you ever wondered why machines, like computers, calculators and scientific measuring equipment, can “sense” and “report” observations faster, more accurately, and at a higher resolution than any human, yet machines have no ability to conceptualize? Could it be that our brains do something machines do not? Is there a “mystical” or “magical” calculation? Does this have anything to do with quantum mechanics and the collapse of an intrinsically non-local wave form? Intuitively we like to think we are fundamentally connected with the universe. Perhaps, it is the other way around, where quantum mechanics fundamentally blocks that connection to the universe in a way that allows us to become something more. C-mon man! Stop inserting mysticism into nonlocality and just accept that it “is.” Knowing the nature of reality does not make it any less real. Nonlocality needs no explanation. Once you accept it, you find that the “no explanation”—is the explanation. The hard problem is not that hard. INPUT—PROBITY—PARSE—COUNTERFACTUAL—AND PAUSE

Keywords

Bell, Bell test, loophole, coincidence, monitoring, experience, action at a distance, strange loop, quantum nonlocality, Roko's Basilisk, subluminal, local hidden variables, Nobel Prize, entanglement, fringes, photons, Einstein, unspeakable

Measuring effect of writing journal and prayer on emotions through brain waves using EEG

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Categories by Discipline

5.0 Experiential Approaches

Primary Topic Area - TSC Taxonomy

[05.02].....Meditation and mindfulness

Abstract

This research paper investigates the impact of journal writing and prayer on human emotions, focusing on their effects on brain wave patterns detected through electroencephalogram (EEG) recordings. While various studies have explored the potential benefits of meditation in reducing negative emotions, little research has been conducted on the effects of journal writing and prayer. The paper starts by providing a glossary of brain wave types and their corresponding frequencies, namely Gamma, Beta, Alpha, Theta, and Delta. These brain waves are significant as they are associated with the transmission of emotional messages within the brain. Previous literature on brain science suggests that emotions are controlled by the brain, and emotion features can be extracted through the analysis of brain wave messages. The classification of brain wave emotions is vital, although the complexity of human emotion is influenced by environmental and cultural factors. This study employs the classification method proposed by Petrantonakis et al., using four classifiers (quadratic discriminant analysis, k-nearest neighbour, Mahalanobis distance, and Support Vector Machines) to identify six basic emotions: happiness, surprise, anger, fear, disgust, and sadness. The experimental design involves subjects aged 15 to 60, from diverse backgrounds, including both habitual journal writers and non-writers. The EEG apparatus used is the Flowtime Bio Sensing headband, capable of monitoring brainwaves through two channels. During the experiment, subjects were asked to recall an unpleasant incident, and their brain waves were recorded. They were then instructed to write about the incident in a journal, followed by another recording of brain waves. Finally, the subjects prayed for others to find peace from the incident, and their brain waves were recorded once more. The collected brain wave data was classified using the K-nearest neighbour (KNN) method based on the Petrantonakis approach. The results indicated that recalling the unpleasant incident primarily elicited emotions of anger and sadness, while writing in the journal resulted in more positive emotions. After the prayer, emotions shifted towards

happiness and hope. In conclusion, journal writing and prayer appear to influence human emotions, as evident from the EEG readings. The KNN classifier achieved an accuracy of 83% in emotion classification. This study sheds light on potential strategies for emotional regulation and highlights the significance of brain wave analysis in understanding emotional responses to different activities.

Keywords

Brain Waves, EEG, Artificial Intelligence, Mental Health

Exploring how ASMR relates to anomalous interactions with objects (psychometry)

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Categories by Discipline

5.0 Experiential Approaches

Primary Topic Area - TSC Taxonomy

[05.09].....Parapsychology

Abstract

Psychometry has been defined as “the practice of using an object from a person, such as a piece of jewelry or clothing, to obtain information about the person” (Roll, 2003, p. 201). Early studies by psychical researchers tended to explore the claims of self-proclaimed sensitives or mediums and tended to focus on case studies rather than group experiments (cf. Barrington, 2016; Hettinger, 1941; 1948; LeShan, 1967; Pagenstecher, 1924; Smythies, 1987). In many cases, evidence was found in support of psychometry. The topic has been relatively neglected until recently. One recent study explored performance at psychometry tasks among members of the general population, but found better performance in the control group (cf. Baker, Montague & Booth, 2017). This presentation discusses the results of a survey that explored individual difference correlates of subjective psychometry experiences as well as a thematic analysis of descriptions of the nature of the experience. The presentation will also discuss results of an in-progress study that seeks to explore how differences in tendencies to experience the Autonomous Sensory Meridian Response (or ASMR) relate to performance on a psychometry task. Autonomous Sensory Meridian Response (ASMR) is “the experience of tingling sensations in the crown of the head, in response to a range of audio-visual triggers such as whispering, tapping, and hand movements” (Poerio, Blakey, Hostler & Veltri, 2018, p. 1). ASMR has yet to be explored in relation to psi, but seems to be promising as an anomaly-prone variable, given its association with traits that are associated with increased connectivity and tendencies to report exceptional experiences.

Keywords

psychometry, ASMR, mixed methods survey, experiment

Tempognosis: Presence and the PsychoCosmology of Time

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Categories by Discipline

5.0 Experiential Approaches

Primary Topic Area - TSC Taxonomy

[03.17].....Temporal consciousness

Abstract

Studies in the philosophy and science of time often begin by making a fundamental distinction between clock time (as fabricated and measured) and any one of a variety of other "types" of time (e.g., from hard sciences, spiritual source texts, psychology, cosmology). Extensive studies have documented how "clock time" has led to a degradation of consciousness and that a new view of time is essential for growth in consciousness. Many self-help and current psychospiritual guides have also treated the actual, personal, and direct experience of time (e.g., timeshifting, what is happening, "be here now," The Holy Instant, The Power of Now). Quantum physics also offers new insights into the nature of time (cf. entropy; quantum gravity; Carlo Rovelli). Taken together, these and other approaches (e.g., The Sociology of Time) represent an extraordinary amount of scholarship and insight into a broad transdisciplinary field of temporality. The presenter has synthesized some of these approaches into a new model that focuses on helping individuals cultivate a healthy, transpersonal, soul-informed understanding of personal time as a source of spiritual growth and well-being. This model is put forth in a primer ("The Connoisseur of Time," published in 2022) and five books in the "Quest for Presence" collection: The Map and Radiant Forces (2022), The Soulful Capacities (2022), The Attractions (2023), The Trajectories (2023), and The Treasures (2023). All books provide a series of "Contemplations" (and poetry and biography) that guide readers (individually and in groups) to practice an understanding of "Whole Time" as a source for growth. The model marries the mandala principle ('khilkyor') from Tibetan Buddhism along with the conception of time as a "precious weave," as discerned in various mystic writings (e.g., Kabir), and trialectics (Ichazo), core laws from modern physics, and research in positive psychology (e.g., Keltner, Csikszentmihalyi) TEMPOGNOSIS, a core feature of the model, is defined as the process of having knowledge (gnosis) of time (temp) in one's personal life and for nurturing the journey of the soul in this life. Tempognosis can arise in many ways, each of which will be described in this session, along with experiential practices. These include contemplating four "Radiant Forces" (cause-and-effect, gravity, entropy, emergence), cultivating "Soulful Capacities

(acceptance, presence, flow, and synchronicity), understanding one's attraction to the Radiant Forces, being mindful of the ways that the Radiant Forces emerge in day-to-day life (e.g., routines, schedules, pacing), and noticing life's Treasures (e.g., savoring, awe, preciousness, coherence, effortlessness, poignance). This workshop will consist of a brief lecture, guided meditations, and paired and group discussions. The primary objective is to assist participants in seeing themselves as "time weavers" -- empowered experiences of a new vision of time -- as they return from the workshop into their lives. For more information, please visit www.presencequest.life for free readings, tools, and podcasts.

Keywords

temporality, cosmology, positive psychology, self help, mysticism, mandala, physics, new thought

Consciousness Science, Psychological Safety and Humanization of Business

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Categories by Discipline

5.0 Experiential Approaches

Primary Topic Area - TSC Taxonomy

[05.12].....Miscellaneous

Abstract

Psychological safety is becoming increasingly important in workplaces and communities as it helps build a culture of trust, belonging, and common purpose. This presentation will address the key role of consciousness science and nondual awareness in promoting a new, visceral model of safety, and how this can contribute to improving authenticity, creativity, and collaboration, thereby enabling individuals to work together at the highest level of diversity and inclusion to solve complex challenges. The presentation will outline how awareness of nondual consciousness and an integral approach to safety can be used to improve mental wellbeing and psychological safety, the key determinants of 'Total Worker Health' and the social component of the ESG model. The presentation will also address the role of consciousness education in humanization of business and Industry 5.0, which shifts the focus of industry to building societal value, specifically putting research and innovation at the service of the transition to a sustainable, human-centric and resilient economy. An active engagement and collaboration in the consciousness community is crucial in furthering research and science on psychological safety and establishing a sustainable model for building resilient societal structures and improving the future of work.

Keywords

nondual awareness, consciousness science, consciousness education, psychological safety, mental wellbeing, humanization of business, societal value, authenticity, creativity, collaboration

Conflict REVOLUTION® and the New Operating System

Barbara L With

Synergy Alliance, Minneapolis, MN, USA

Categories by Discipline

5.0 Experiential Approaches

Primary Topic Area - TSC Taxonomy

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

Abstract

"Conflict REVOLUTION® and the New Operating System" refers to the philosophy and metaphysical theories that have been espoused in my award-winning books, including "Einstein et al: Manifestation, Conflict REVOLUTION® and the New Operating System" (Synergy Alliance LLC, 2016). These theories were first delivered beginning in the 1990s, and then researched and tested by me and my associates for over 30 years. Conflict REVOLUTION® is an original method to resolve conflict first within self using our revolutionary Map of Human Consciousness. These resources assist the willing in transforming themselves into Compassion-based decision makers, committed to bringing peace to all areas of their individual lives as a way to contribute to their own health and well being, as well as global peace. What makes "Con REV" so unique is this revolutionary process that allows each individual to approach conflict first within themselves. Before negotiating in a resolution mediation, each participant revolves their perspective back onto their Domain to resolve the conflicts within as per the Map of Human Consciousness that Con REV® provides. The Map of Human Consciousness is part of a bigger Unified Field Theory that we have developed over decades of research. In this thesis, we explore the possibilities, much like Einstein did in his thought experiments: What if there is an Afterlife? What if we can speak to Einstein "from beyond the grave?" What would he tell us about the nature of reality, the real root of war, and how humanity can save itself from its own demise? Einstein once said that imagination is more important than knowledge. This work is the product of imagination, intuition, and research into the mysterious world of quantum physics and M-theory. I closed my eyes and imagined I was talking to Einstein, looking much like he did in 1904, before his miracle year: young, wide eyed, without pretense, just an ordinary man imagining extraordinary things. Then I listened and took notes. The messages were so divinely elegant and brilliantly visionary that one truly could imagine Einstein conspiring to get these messages back from Afterlife about a unified field theory and how to create world peace, each individual starting with the self. Most magnificent are his scientific, quantifiable definition of Compassion as the 5th Fundamental Force of the universe, as well as proof of an Afterlife. Leave it

to Einstein to find a way to do such a thing! Our Unified Field and Map of Human Consciousness prove his theory that if we resolve conflicts first within the non-physical energy of the psyche, we can and do naturally and significantly affect what is being created around us. Therefore, if we identify the “Us. vs Them” mentality within ourselves and eradicate it there first, it will (should) have an unexpected and monumental impact on how that plays out in physical reality. All one needs is to be willing to try. This abstract is more timely than ever, what with the world in the state it is in. I would be honored to present it to you.

Keywords

evolution of consciousness, unified field theory, map of human consciousness, Conflict REVOLUTION, peacemaking,

Virtual Reality and Neuromodulation in Inducing Out-of-Body-Experience (VR-NIOBE): Proof of concept of a new paradigm for Psychological & Neuroscientific Study of an Altered State of Consciousness

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Categories by Discipline

5.0 Experiential Approaches

Primary Topic Area - TSC Taxonomy

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

Abstract

Virtual reality (VR) has been used to induce out-of-body experience (OBE), but the construct validity of prior methods has been criticized. The current research evaluated a new VR paradigm to induce OBE that included implementation of a brain computer interface (BCI), affording a means of neuromodulation. **Methods.** 30 volunteers were tested in a VR paradigm that compared subjective report and EEG oscillations at frontal (AF7 and AF8) and right temporoparietal (CP6) regions, to two personalized 360-degree videos, one of which simulated an in-body-experience (IBE) and the other an OBE. Real-time analyses of frontal EEG alpha power determined the speed, brightness, and color saturation of the videos, thus providing neurofeedback as a means for invoking a sense of mental agency over perceived movement of the spatial location of consciousness without bodily movement. **Results.** As compared with response to the IBE in VR, participants reported that they had a greater sense of being in an elevated position above and outside of their bodies, had an experience of looking down at themselves from above, had experiences of floating and of having an invisible body, and felt greater awe during the OBE. Participants also reported that increasing EEG alpha power was not easy, implying variability in perceived control or agency during the OBE. Theta oscillations were lower during the OBE than the IBE, while the difference in alpha and beta oscillations across electrodes varied between the OBE and IBE. **Conclusion.** The current research provides proof of concept of a promising new paradigm that combines VR and neuromodulation in the induction of OBE (VR-NIOBE). Further psychophysiological research and dismantling studies of the paradigm is warranted.

Keywords

out of body experience (OBE), virtual reality (VR), neuroregulation, neurofeedback, electroencephalography (EEG)

Introduction to the Samarpan Meditation Practice.

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Categories by Discipline

5.0 Experiential Approaches

Primary Topic Area - TSC Taxonomy

5.0 Experiential Approaches

Abstract

The aim of this presentation is to introduce Samarpan meditation, a form of 800-year-old meditation technique developed by the Himalayan Sages, as a pathway to experience 'Self realization'. The Samarpan meditation practice is a simple thirty-minute daily meditation with focus on the crown (Sahasrara) Chakra and a genuine aspiration to let go of the body sense and to connect with Universal Consciousness. Unlike other meditation practices, Samarpan meditation does not involve any physical activity like breathing or the continuous chanting of any mantra. There are no restrictions on age, belief system, or lifestyle. I have been practicing this form of meditation for more than a year now. During the presentation, I will provide a background about this technique, the science, the benefits, and a few recordings of knowledgeable meditators sharing their experiences. This will be followed by a 15-minute meditation session.

Keywords

800 years old meditation, crown chakra,

Spontaneous Spiritual Awakenings and their Implications on Science and Society

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Categories by Discipline

5.0 Experiential Approaches

Primary Topic Area - TSC Taxonomy

[05.01].....Phenomenology

Abstract

Spontaneous spiritual awakenings (SSAs) are characterised by a sudden sense of direct contact, union or communion with the universe, 'Universal Consciousness,' or the divine. In this 'enlightened' or 'nondual' state, the experiencer transcends their ordinary sense of self, 'knowing' or 'remembering' their true essence as part of a greater, infinite truth or reality, in perceived oneness and self-realisation. The scientific community is only just beginning to acknowledge the healing potential of mystical experiences mediated by psychedelic drugs and spiritual contemplative practices, yet awakening experiences of a sudden, spontaneous nature have scarcely been explored within an empirical framework, despite a vast amount of cross-cultural anecdotal evidence pointing to their long-term impacts on perception, cognition, behaviour and well-being. To date, mainstream psychology has tended to pathologise these experiences by default, and the topic is still largely misunderstood and misinterpreted, particularly in the West. Drawing on my research on the phenomenological variances, individual differences, effects on well-being and prevalence of SSAs within the general populations, this presentation will explore what we know so far about the psychology of spontaneous awakenings and discuss the implications of such findings on science and society. The importance of integration, community support, and the de-mystification of mystical experiences within mainstream psychology will also be discussed, and I will conclude by sharing my philosophical considerations on how these experiences and the ontological shock they present might offer insight on the nature of consciousness.

Keywords

Nonduality, spiritual experiences, altered states of consciousness, phenomenology, transpersonal psychology, neuroscience, pathology, religion, contemplative practices

A Proper Sufi Beating; The Science of Sufism

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Categories by Discipline

5.0 Experiential Approaches

Primary Topic Area - TSC Taxonomy

[05.05].....Transpersonal and humanistic psychology

Abstract

The presentation begins with the author's background, educational and experiential, as a trained psychotherapist and then student of altered states of consciousness and transpersonal psychology. First focused on Buddhist and then Sufi stories and meditations, as encouraged by a Sufi teacher in Morocco, the author describes in some detail experiential responses to same. A discussion of 'what is consciousness' and the neurotheology of Islam and higher consciousness states is presented. The conclusion of the presentation, both from the Koran and from experience, is that 'the universe is conscious itself,' and that there are real specific efforts to be made with one's own mind and behavior to increase one's connection with same. Finally a discourse on 'the heart of the Koran,' the chapter 'Ya Sin' is presented. The author compares the literal Koran text to a transpersonal version regarding what cognitive, behavioral, and emotional efforts are being suggested in contemporary life.

Keywords

transpersonal, Buddhist, Sufi, Koran, Ya Sin, consciousness

Bridging the Biosphere and Noosphere: Exploring Technologically Mediated Interactions Between Plants and Human Consciousness

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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

In the realm of Vernadsky's concept of the noosphere, wherein human consciousness catalyzes the metamorphosis of the biosphere into an emergent geological state, this study investigates the nuanced interactions between the biosphere and noosphere. A pivotal consideration arises from the acknowledgment that plants, integral components of the biosphere, share an intricate connection with humans. Grounded in the Oxford Living Dictionary's definition of consciousness, encompassing awareness and responsiveness to surroundings, we explore the potential bidirectional transmission of information between plants and humans. To probe this connection empirically, our study introduces two innovative technologies designed to capture messages from plants, focusing specifically on marijuana with a high THC content, renowned for its psychoactive properties. One technology leverages a sound-sensitive apparatus, while the other harnesses biophotons, offering innovative means to decode and transfer plant messages. Subsequently, these technologically recorded messages are imprinted onto a neutral carrier, MCT oil, purged of any marijuana residues. Our research unfolds through the engagement of two distinct participant groups. The first cohort, comprising seasoned marijuana users, incorporates the plant message-infused oil into their smoking devices in the absence of actual marijuana, providing rich qualitative insights into their experiences. The second group, devoid of psychedelic herb use history, serves as a comparative reference. Intriguingly, the anecdotal results unveil an unexpected contrast: non-users report no effects when smoking MCT oil, while regular marijuana users attest to a heightened psychoactive experience, validating the successful transference of plant messages. Moreover, a fascinating observation emerges from the second group, who report maximal effects when exposed to a fusion of two MCT oils—one permeated with messages captured through sound and the other through biophotons. The finding suggests a possible synergy in combining different technological capture methods, highlighting the complexities of the interaction between the noosphere and biosphere. Expanding on the implications of our preliminary research, an intriguing hypothesis

emerges, suggesting that omnipresent consciousness may manifest itself uniquely when interwoven into a suitable carrier within the “dense” matter. In our study, this carrier is notably the residual marijuana chemical components persisting in the bodies of regular marijuana users. The heightened psychoactive effects observed in this group when consuming technologically infused MCT oil might be attributed to the residual presence of marijuana compounds, acting as a receptive medium for the transmitted plant messages. This postulation prompts a reevaluation of the relationship between consciousness and matter, suggesting that certain substances lingering within the human body may serve as conduits for the manifestation and amplification of consciousness. Further investigations are warranted to scrutinize the intricate interplay between residual chemical components and consciousness, shedding light on the nuanced dynamics that shape altered states of consciousness and the profound connections between the human mind and the material world. This line of inquiry holds promise for potentially unlocking novel avenues for therapeutic interventions and cognitive exploration.

Keywords

Noosphere; plant consciousness; psychedelics; hemp; biophotons; technology.

Breath and Consciousness from Sāmkhya-Yoga through Tantra to Hathayoga

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Categories by Discipline

5.0 Experiential Approaches

Primary Topic Area - TSC Taxonomy

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

Abstract

The Indian tantric tradition that developed as a system of metaphysics and mind-body practices from c. 6th century CE evolved in to the hathayoga system of practice from c. 13th century CE on. The early tantric system had its metaphysical base in Sāmkhya philosophy. This system offers and details an explanation in terms of consciousness as an "inner vehicle" with three subdivisions. Sāmkhya-Yoga thus developed a practical approach to consciousness by emphasizing awareness of the state of one's mind. The evolution of Tantric practice involved an intricate approach across aspects of a lived life to address consciousness by way of the state of mind. Both Tantra, and later Hathayoga, were based primarily on the nature of the breath and the state of mind and their interrelationship. Specifically, the hathayoga practices were centered on control over the breath to influence the state of consciousness and its subsequent arising in one's awareness, in the so-called 'mind'. The substrate of consciousness, termed 'prāṇa', predates these practices but was a central concept within both the theory and praxis of tantra and hathayoga. 'Prāṇa' is considered both the physical breath and the force that moves the mind, effectively representative of life. It is subtle with mental and physiological components influencing the physical. Equally, how the physical is handled influences this flow of the substrate of consciousness, 'prāṇa', revealed physiologically but more importantly as the state of the 'mind'. The most influential hathayoga text from the 15th century CE succinctly classifies the relationship between breath and mind, echoing earlier texts: "As the breath moves, so the mind moves, as the mind moves so the breath moves." Tantra, therefore, considered practices of the breath and techniques of visualization with mantra as the primary means to manage consciousness. Hathayoga evolving out of a reformed tantra gave the predominant focus to management of the breath. To do so it also employed skillful conditioning of the physical body via postural configuration and cleansing and fluidity of the different physiological systems. The entire approach had one primary purpose: the stilling of consciousness. Robust health, longevity, and mental wellbeing are noted as identifying markers of change or progress but are seen as secondary outcomes to the change in the state of mind.

Keywords

Sāmkhya-Yoga, Tantra, Hathayoga, consciousness, mind, breath, prāna, practice

Unveiling the Ontological Landscape of Spiritual Experiences: An AI-Driven Analysis

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Categories by Discipline

5.0 Experiential Approaches

Primary Topic Area - TSC Taxonomy

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

Abstract

In this study, we utilized artificial intelligence to extract ontological insights from a diverse collection of approximately 500 narratives recounting various spiritual experiences. These narratives spanned several categories of experience, including Near-death, mystical, mediumistic, and other spiritual experiences. The statements extracted from these narratives were systematically correlated with a set of 18 axioms, originating from prior research, forming the foundation of our quest to derive a standardized framework for understanding consciousness and reality that includes spiritual experiences. Our analysis revealed a substantial correlation between the ontological statements generated by the AI and the hypothesized axioms. This correlation underscores the significance of the 18 axioms, hinting at a profound interconnection between the narratives of spiritual experiences and fundamental principles governing consciousness and reality. This research represents a significant step forward in our exploration of spiritual experiences, offering fresh perspectives on the common themes that permeate narratives across diverse cultural and experiential backgrounds. By adopting an AI-driven approach, we transcend traditional qualitative research boundaries, providing an objective and data-driven lens through which to examine these seemingly disconnected experiences. From these analyses we propose an emergent view of reality, the Continuum of Existence, which includes both ordinary and spiritual reality. Our research not only contributes to the ongoing study of consciousness but also challenges conventional notions of mystical or spiritual experiences as hallucinogenic and/or delusional, and enriches our understanding of this state of experience within the intricate tapestry of human experience.

Keywords

Near-death experience, spirituality, Ontological Statements, AI, Cognitive City

Exploring Consciousness with the Feldenkrais Method® - Moving and the Sense of Self

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Categories by Discipline

5.0 Experiential Approaches

Primary Topic Area - TSC Taxonomy

[05.01].....Phenomenology

Abstract

This presentation will explore how the movement lessons of the Feldenkrais Method® can provide an unexpected, and largely unexplored, resource for the science of human consciousness. The presentation will offer four chapters: A meta-theoretical frame distinguishing linguistic descriptions of consciousness as a noun or as a verb, that is, an embodied, biological activity. An epistemological frame concerning what we can know about the biology of moving. This includes evolutionary, anatomical-biomechanical, neurological and developmental perspectives of human movement in relation to consciousness and the sense of self. A methodological frame. The core of the Feldenkrais Method is the phenomenological bracketing of moving in Feldenkrais Awareness through Movement® lessons. The process and structure of these lessons will be outlined, with examples. Beyond expanding our knowledge of how humans can move, the lessons also provide insights about how embodied consciousness functions. Therefore, making Feldenkrais lessons a research opportunity. A pragmatic frame which considers how Feldenkrais® lessons make a difference in each person's capacity for a more satisfying way of living. Examples will be offered from the teaching practice of the presenter.

Keywords

Feldenkrais Method®, Awareness, Movement Coordination, Phenomenology, Self-development

Post Psychedelic Integration with the Feldenkrais Method®, a Case Study

Jeff Haller

Inside Moves, Bellevue, WA, USA

Categories by Discipline

5.0 Experiential Approaches

Primary Topic Area - TSC Taxonomy

[02.19].....Psychedelics and psychopharmacology

Abstract

A client with an extensive history of psychedelic use and practical Feldenkrais experience told me: “Psychedelics, blow your perceptions wide open, you are disoriented in a physical sense. The veil between what is internal and external gets ripped apart. Playing with how you perceive the room versus how you perceive yourself. You lose your ego. After some of those higher-level ego loss experiences getting thrust back into your ego gets disorienting. With psychedelics the experience is faster, artificial. With the Feldenkrais Method, it is natural. Feldenkrais lessons give you a grounded place for your ego to be and process some of those experiences. You learn to can slow down, and integrate the feeling of oneness with all things in a much more grounded and practical way, while functioning in your daily life.” The Feldenkrais Method is uniquely suited for helping people integrate their post psychedelic experiences into daily life functioning. The entire premise of the Feldenkrais Method centers on the integration of the experience of thinking, sensing, feeling, and moving in a cohesive way to meet and thrive in a changing world. As noted above, the psychedelic experience distorts the cohesive process a person utilizes to organize their sense of self. Spatial/temporal relationships and one’s sense of dimension are altered. Changes in ego dominance and one’s sense of reality occur. Feldenkrais lessons utilize movement processes for enhancing one’s awareness of the foundations of the core sense of self; our coordination of sensing and moving. Feldenkrais lessons tap into prefrontal capacities for clarifying one’s intention, directing our attention, to gain a greater sense of physical integrity, emotional dignity, and the experience of wholeness. In this presentation you will experience a brief Feldenkrais exploration that will foster your insight and support our dialogue about the process and outcomes of my meeting with this remarkable man.

Keywords

Feldenkrais Method®, Psychedelics, Awareness/Movement, Integration

Introducing Hiroshi Motoyama's Ontological Nirvana Theory (ONT): A Superior Alternative to Perennialist Theories of Mystical Experience

Timothy M. Laporte

CIHS, Encinitas, CA, USA

Categories by Discipline

5.0 Experiential Approaches

Primary Topic Area - TSC Taxonomy

[05.10].....Contemplation and mysticism

Abstract

Contemporary discourse on mysticism—both popular and academic—has largely been dominated by reactions for and against the “perennialist” hypothesis, which asserts that there is a “common core” to mystical experiences that is invariant across cultures and historical time periods. Perennialist authors—Bucke, James, Huxley, Underhill, Otto, Zaehner, Stace, Forman, and others—have proposed certain defining characteristics of these experiences, an approach which has found some favor among analytic philosophers (i.e., Yandell, Alston) and much skepticism in academic religious studies departments (i.e., Katz, Proudfoot, Bagger, Sharf). Whatever its merits, perennialism has, perhaps ironically, succeeded most clearly in demonstrating that the theory itself is a remarkably common and recurring contemporary intuition. Perennialism’s success as a popular theory of mystical experience derives at least in part from the attractive notion that it can connect traditional Eastern religious theories, such as Buddhism’s nirvana and Yoga’s kaivalya, with the extraordinary experiences of contemporary people, whether found in meditation, psychedelic altered states, or just ordinary daily living. But here the theory stumbles badly. Perennialist theories generally take a phenomenological approach, while supporters such as Yandell and Alston have pursued epistemological implications. This contrasts jarringly with Buddhist and Yogic theories, which are first and foremost ontological theories of mysticism. For instance, Buddhism’s nirvana (literally, “blowing out” or “extinguishing”) refers to the transformation from being entrapped in a cyclical existence of endless reincarnation to being released from this cycle. The being that undergoes reincarnation is thus “extinguished” via nirvana. This is much more than a mystical experience—it is a mystical event. Likewise, Yoga’s kaivalya (“isolation”) refers to a process by which consciousness (purusa) is separated or “isolated” from the physical/material matrix (prakrti). As with Buddhism’s nirvana, Yoga’s kaivalya also entails an end to the cycle of reincarnation. Whatever you think of these theories, they are sharply distinguished from perennialism. Perennialism claims to speak for Buddhism and Yoga—indeed, perennialists seem to favor these

traditions to the chagrin of critics such as Katz—but an examination in this light reveals that perennialism fails to articulate an ontological approach to mysticism that would be recognizable to Buddhism or Yoga. Perennialism’s dominance of the popular and academic landscape has left little room for ontological theories of mysticism. This presentation seeks to change that status quo by introducing the ontological nirvana theory (ONT) of Hiroshi Motoyama. Motoyama—a Shinto priest, parapsychologist who studied with Rhine, and founder of the California Institute for Human Science—spent his life formulating an ontological theory of mysticism which he sought to buttress with scientific (parapsychological and psychophysiological) investigations. In so doing, Motoyama built an intellectually-coherent ontological theory of nirvana (ONT) that presents a more productive way forward for the field of mysticism studies than has been managed in over a century of debates dominated by perennialism. This presentation will introduce the core elements of the Motoyama’s ONT and outline avenues for further investigation. Progress in the field of mysticism studies is both desirable and attainable.

Keywords

mysticism, perennialism, Motoyama, nirvana, kaivalya, ontological nirvana theory

Rethinking The Nature of Consciousness: Addressing The Hard Problem, Binding Problem & Anomalous Experiences With Zero-Point Field Theory & The Astroglia Syncytium

Nikki C. Johnson

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Categories by Discipline

5.0 Experiential Approaches

Primary Topic Area - TSC Taxonomy

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

Abstract

For centuries, we as a species have struggled to wrap our heads around the ontological nature and mechanistic means of consciousness — presuming, as mainstream Western science tends to assume, that consciousness is produced by the brain and is therefore confined to this substrate. Three issues have emerged as particularly stubborn challenges from this perspective: (1) the “Hard Problem” (i.e., the explanatory gap that seems to exist in accounting for the basis of subjective experience in the context of physical matter); (2) the “Binding Problem” (i.e., the issue of how separate features somehow combine to form a unified perceptual experience); and (3) the Problem of “Anomalous Experiences” (i.e., a peculiar array of subjectively reported conscious experiences and phenomena that seem to challenge normative beliefs about what is possible, based upon their apparent inability to be explained by the prevailing paradigm). Although the latter issue receives far less attention in mainstream discussion of consciousness, it may in fact be the key factor to resolving all three problems, signaling the existence of ontological misassumptions that have tended to be applied in the search for answers about consciousness without awareness of these misconceptions. By suspending the presupposition that consciousness simply must begin and end with neuronal activity in the brain and considering that it may be a more fundamental aspect of the cosmos with both local and nonlocal properties, we do find — as Thomas Kuhn suggested in *The Structure of Scientific Revolutions* — that these anomalies may lead us toward a paradigm-shifting breakthrough. This presentation addresses all three of these problems simultaneously by building upon the work of experts based in many different disciplines — with a type of glial cell known as astrocytes playing a highly underrated mechanistic role. It argues in favor of Joachim Keppler’s Zero-Point Field theory as a nonlocal solution to the Hard Problem, emphasizing that all of the specific conditions identified by Keppler as necessary for quantum coherence to be formed in cortical microcolumns are regulated by astrocytes. It extends this framework with a mechanistic

means of addressing the Binding Problem, recognizing that astrocytes are interlinked across the brain and spinal cord by gap junctions to form a “functional syncytium,” enabling these cells to work together as a single unit — drawing upon recent papers calling for the revival of reticular theory via astroglia and highlighting astrocytic influence in the “tripartite synapse.” Finally, it suggests that astrocytes may play a pivotal role in Anomalous Experiences. In regulating uptake and release of glutamate and GABA, astrocytes effectively manage excitation-inhibition balance and thus a vital factor linked to consciousness known as “criticality.” In shifting brain states closer to the “critical point” than typically experienced in waking state, astrocytes may thereby enable altered states of consciousness, which have been shown to correlate with a variety of Anomalous Experiences. Taken altogether, this presentation offers specific mechanisms based in physics and neurophysiology that may address three of the toughest challenges associated with consciousness all at once.

Keywords

ontology of consciousness, anomalous experiences, parapsychology, quantum field theories of consciousness, altered states of consciousness, criticality, hard problem, astrocytes

Personifying the Act of Dreaming as a Dual-Consciousness and Delving into its Variants. From First Person Percept to Configurable Systems of Observation to comprehend experiences-events.

Charles V. Davis

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Categories by Discipline

5.0 Experiential Approaches

Primary Topic Area - TSC Taxonomy

[05.07].....Lucid dreaming

Abstract

What was perceived as “Vivid Dreams” early in Childhood, and learned responses with self-realizations that one is in bed sleeping in "reality". And knowing one can do whatever one wants in those Dual States of Consciousness, classically known as Lucid Dreaming. Evolving throughout a lifetime of experiences, inadvertently honing skills, progressing "abilities" to higher levels of control, awareness and resolve. Where variants advance with every cycle of effort. And possibly taking it much further than as-understood, Remote Viewing. Including Out-of-the-Body, Astro-Traveling, and Lucidity with "Interaction" of physical real-world objects. The gamut of multi-variant types, seems to correspond contiguous levels of ability, heighten awareness, and Real-World Physical relationships. The never before felt anatomic sensations, as "Tingling" up and down the spine, one gets when passing right through the front door of a home, late at night is utterly fantastic. Exploring the inside rooms within, during the quiet still of the night, sometimes pets are there. Looking directly in presence's direction. Eyes following the slow passage by, but never barking, making a sound or even movement except as a head turn. This provides a stimulus-response test or a recognition exercise. In the realm of classic "Out-of-Body" experiences, after a number of progressive cycles of effort. Seems process is almost stable and repeatable. With Increasing autonomous control, enabling "in real (dream) time" to pose the question during Experience-Event. Qualifying to dispel notions the event is still yet, anything but just a dream. Like an in-Vitro / In-Vivo configuration where terms become secondary environments within environments. We establish a feedback test to prove or disprove phenomena, by coming up with the thought to, "Find a mirror" and look at it. Experiences advance cognitively within dream states as presence of mind, problem solving reactions and ethereal, "Wishing for tools" popping into place to use "at will". Events have a repeatability with interaction continually unfolding with an increase of depth and details. As stimuli-response dipole flips, the resultant mind-body characteristics; slow-moving/fast-motion,

single/full duplex engagement, visual acuity and aural-like perception become apparent. Quantum-like environment-boundary conditions are defined-as, Sub-Local (below ground), Local, & Non-Local. Physical Real World Locality Points of Entrance/Exit transitions reveal's Global pathway limitations. Where one cannot go farther out to the "Universe at large". Appearing to transpire is the Universe comes to that physical point in proximity of Terra-Ferma, interacting with the Physical Known Real-World Reality. Sleep Paralysis is typically during slumber, but when it happens during fully awake states. The results are at the opposite end of the Fun scale. And on to the absolutely terrorizing levels of fear until managed. Almost gives cause for concern with "Entities" coming back as one transfers back into sole-soma. Case in examples is given. The Medical Industry's body of knowledge is vast for Sleep Science Technology. Data mining legacy Information, fusing into development and application of H/W-S/W Engineering Instrumentation, tools, work processes and resultant datum, gleamed as mass quantified information. Enables multidimensional visualization to learn and discover, and work to understand experiences-events is presented.

Keywords

Dual States of Consciousness, Lucid Dreaming, Remote Viewing, Out-of-the-Body, Astro-Traveling, Hypnogogic State of Mind.

The Linguistics of Unconscious and Conscious Processes

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Categories by Discipline

5.0 Experiential Approaches

Primary Topic Area - TSC Taxonomy

[03.09].....Unconscious/conscious processes

Abstract

The subconscious has a linguistic process that is separate from both conscious and unconscious thought. To understand conscious processing, it is necessary to compare and contrast it with unconscious processing. An adequate description of unconscious processing is essential for advancing the study of consciousness. There has been substantial research on the range and boundaries of unconscious processing, but no consensus has yet developed. Completing the integration process successfully requires collaboration between the conscious, unconscious, and subconscious. The conscious mind, and symptoms that show up in the neurological system are the main topics of therapy. Because the change process doesn't take place where the problem is, it has no effect on unconscious behaviors, emotions, or triggers. The subconscious has a linguistic process that is separate from both conscious and unconscious thought as well as from all memories. To form memories, behavior is influenced by both internal and external stimuli. Memories come in two varieties; Memories of content, and Memories of emotions. Only memories from conscious and unconscious active experiences play a role in behavior formation. The conscious mind has power over the subconscious, yet the subconscious is capable of much more than we anticipated. Quantum theory suggests invisible forces are used to create and control us within hidden realities. These hidden realities can be accessed through hypnosis. The subconscious can be utilized to integrate, treat, and reprogram a variety of problems once it has been trained to respectfully collaborate with the unconscious to overcome barriers that are preventing healing. These memory structures, also referred to as shadows or parts, are associated with emotional suffering brought on by traumatic experiences. Memories can combine to generate complicated structures that can stop the therapy process. The subconscious needs three things in order to be an ally in the integration and reprogramming process, and they are as follows: Clear communication. Access to every memory. And agreement with the dynamics of our personality; which are the amnesic and dissociative portions of ourselves. Pre-birth amnesic elements might interfere with adult behavior and act as hurdles to any type of change work. Whenever the

unconscious is stimulated to release, let go of, and consciously integrate the assets of the trigger while training on the subconscious levels to rewire the fully automated unconscious behaviors into conscious behaviors, we can transfer and empower ourselves to make the changes by becoming aware enough to merge the knowledge, wisdom, and understanding of the behavior patterns that surface. Allowing the unconscious to become conscious. By using triggers in our external reality, we may begin the process of integrating deeply ingrained ideas, unresolved emotions, and aspects of our personalities that we are unconscious of and that are affecting events in life without even realizing it. The ancient language of the subconscious uses images and metaphors to communicate. Metaphors are highly effective communication tools. By gaining access to different states of consciousness, the subconscious can be trained as a healing ally.

Keywords

subconscious, linguistic process, unconscious communication, integration process

Soul Sickness and Soul Healing

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Categories by Discipline

5.0 Experiential Approaches

Primary Topic Area - TSC Taxonomy

[05.01].....Phenomenology

Abstract

In this concurrent presentation, Dr. Rulin Xiu, Ph.D, quantum physicist and string theorist, will present her work of using quantum physics to define and study life, soul, soul sickness, and soul healing. She will show that soul sickness is the state of a life system that has a significant increase of negative information and/or decrease of positive information. Soul healing can address the root cause of all sickness, difficulties, and challenges in every aspect of life. It is urgently needed for everyone, our society and the world. Dr. Peter Hudoba, MD, FRCS, will present his clinical research on the soul healing techniques with more than nineteen clinical studies on more than six hundred subjects. The world-renowned spiritual healer, Dr. and Master Sha (M.D., China; DTCM, China and Canada) will teach the spiritual wisdom underlying soul healing and soul healing techniques. He will demonstrate the wisdom and power of ancient soul healing techniques and of his new Tao technologies, which are some of the most powerful soul healing techniques available today. Participants will experience soul healing first-hand and learn how to do soul healing for themselves and others. Master Zhi Gang Sha is a Tao grandmaster, world-renowned healer, spiritual teacher, humanitarian, and eleven-time New York Times bestselling author of thirty-one books in English. Dr. and Master Sha is recognized by many as one of the most powerful soul healers in the world. He has focused on offering advanced soul healing and teaching basic and advanced soul healing techniques for more than thirty years. He has created Tao technologies, his most advanced soul healing tools, to help people heal and transform their lives at the deepest level. Recently, Master Sha's sharing the wisdom and experience of his Tao technologies has received massive public attention. One short video on his Instagram page has received more than fifty million views in five weeks.

Keywords

soul sickness, soul healing, quantum physics, mathematical definition of life

Experiential

We Think About What Our Emotional System Feels Is Important: A Phenomenological Demonstration of Childhood Conditioning On Self Perception and Efficacy.

Dr Douglas J Tataryn

EBIQ Integral, Selkirk, Manitoba, Canada

Categories by Discipline

5.0 Experiential Approaches

Primary Topic Area - TSC Taxonomy

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

Abstract

Kahneman's work illustrating the often divergent conclusions reached between fast and slow thinking has done much to popularize the complexity of the neural structures giving rise to human conscious experience. This work however is only the most recent framework suggesting that human consciousness is not a unitary process but is composed of many parts. Mahayana Buddhism speaks of the Trikaya or the three bodies of a being. Gurdjieff's Forth Way speaks of humans as "Three brained beings", which is consistent with Freud's Id, Ego, and Super-ego delineation of human consciousness. All of these frames are consistent with the thesis of MacLean's 1990 tome entitled The Triune Brain in Evolution. Richard Schwartz's Internal Family Systems is a powerful clinical intervention that takes this multiple parts proposal further and names the many roles various internal "parts" of us play in many normal and mental health challenges. In the first years of his clinical practice the author collected data using a variation of Gendlin's Focusing process, targeted at "finding the word that resonated with the essence of the client's pain and tears". After three years, no new words were found and the resultant list was referred to as the "nine core feeling dimensions". According to the Bio-Emotive Framework, which grew out of this research, activation of any one of these feelings will elicit one of four primary emotions and behavioral states, depending on the inter-personal context in which it is invoked. While not explicitly researched and tested, the author's clinical experience is that these core feelings are at the basis of Bowlby and Ainsworth's different attachment patterns as well as the various negative schemas and cognitive distortions often encountered and worked with in therapy. It is the authors working hypothesis that human's are: 1) hard-wired to absorb impressions as to their relational status and relative capacities early in life, relative to our primary group/ family. 2) These impressions are very difficult to update, even after changing groups in which our relational status and capacities may be very different. Participants will be paired into dyads and guided through a short experiential exercise

designed to access the "fast cognition" programming of their childhood, in spite of what their slow rational cognition may (want to) believe. This will produce a personal psychograph illustrating how this foundational part of them is configured on the nine core feeling dimensions. Participants can expect deep insights and understandings about unconscious patterns of thoughts, feelings, and behaviours over their life as well as opportunities to feel and articulate these experiences in emotionally vulnerable ways (or not, depending on their levels of comfort). Implications of the core feelings for meditation may also be discussed.

Keywords

emotions, free will, Buddhism, spirituality, Kahneman, fast and slow thinking, triune brain, bio-Emotive Framework, core feelings, experiential, IFS

Experiential

The Consciousness Teachings of Rumi

Sohail Shakeri

CIHS, Encinitas, CA, USA

Categories by Discipline

5.0 Experiential Approaches

Primary Topic Area - TSC Taxonomy

[05.02].....Meditation and mindfulness

Abstract

1-A meditation wellness guided in-person experience and presentation on either Wed, 4/24/24 or Thurs, 4/25/24 from 7:15am-8am in a ballroom. My presentation(s) will be centered around the love frequency teachings of Rumi, first by giving a brief description of how the love frequency energy manifests and generates, then by demonstrating it through a guided meditation. In the description overview, I will elucidate how Rumi's teachings validate in the heart space what Hameroff and Penrose's teachings validate in the intellectual space, namely that consciousness is a vast mystery beyond the realm of computational calculations, which are linear and bit-focused by nature. In this presentation, we will be reciting from Rumi's masterpiece, the Divan of Shams, in both English and also briefly in the original Persian, with a short recitation by Persian poetry master reciter Mojdeh Habibi, to communicate the energetic power of Rumi's words. Then I will lead the audience in a guided meditation to honor the Eastern mysticism teachings of Rumi in a heart-centered way to help activate the heart chakra, generate the love frequency energy and cultivate the container of consciousness for the remainder of the conference. Tools used will include connecting participants to their breath and their senses, allowing people to feel into their own innate wisdom and intuitive guidance. The presentation will allow people to connect to how the love frequency teachings of Rumi are aimed specifically at cultivating and expanding consciousness within the human being. 2-Breakout session presentation along with 4-5 other presenters. In this presentation, I will elucidate teachings of Rumi, leveraging examples from his masterful stories to show his understanding of consciousness from his experiences, to demonstrate how his teachings complement the work of Hameroff and Penrose, and are aimed at transferring emotional and spiritual intelligence waves of energy from the heart to the intellect via microtubules. We will look at connecting Rumi's Eastern mysticism teachings with the contemporary quantum physics understanding of the universe of the Orch OR theory and showing how ancient mystical teachings are aligned with modern scientific discoveries of Hameroff and Penrose, which recognize the limitations of computational intelligence or logical-rational intelligence, as termed by Howard

Gardner in his theory of multiple intelligences. This presentation will also allow people to connect to how the love frequency teachings of Rumi are aimed at cultivating and expanding consciousness within the human being, with an emphasis here on more theoretical discourse about Rumi and Consciousness, as this will be part of the workshop material alongside other academics.

Keywords

Consciousness, Love Frequency, Heart Chakra Teachings, Eastern Mysticism, Rumi, Jalaluddin Rumi, Sufism, Sufi Teachings, Wisdom Teachings, Meditation, Guided Meditation, Awareness, Awareness of Breath

VR

Altered States Art as a Meditative & Restorative Tool - Painting Colour and Sound with Gestures in Virtual Reality

Leslie Deere

Glasgow School of Art, Glasgow, Scotland, United Kingdom. Guildhall, London, London, United Kingdom

Categories by Discipline

5.0 Experiential Approaches

Primary Topic Area - TSC Taxonomy

[06.15].....Miscellaneous

Abstract

Array Infnitive is a practice-based PhD research project that investigates the ways in which audiovisuals in virtual reality (VR) affect and impact participants. This studio-led work draws upon ambient audio and colourful VR visuals, which correspond to the chakra system, that are generated, processed, and 'played' via gesture. Acting as researcher, lead artist, composer, and healer, I encourage participants to use improvised hand gestures and bodily movements to create amplified soundscapes and VR particle trails, which are projected onto a wall for those not in VR to view, creating a colour-sound bath and immersive art installation at the same time. One aim of this project was to create an altered state of consciousness (ASC) experience through ambient music making and mesmeric VR visuals. Methodologically, to understand audience experience in the context of this project, I undertook case studies, research studies, and field work to investigate audience response, as well as to gain feedback on the impact of VR audiovisuals, ASC reaction, and gestural performance as a form of instrumentation in VR. The outcomes of this research contribute to the field of art and therapy by way of exploring and expanding the definition of VR experience and of improvised live sound & image-making as a form of meditation. The development of gesture-controlled VR audiovisual content for participatory experiences has been established and tested in a variety of settings through this research, including both public-facing interactions and controlled research studies. Discoveries revolve around participant experience and affective response to sensory contact through VR, as well as demonstrating the ability of this work to evoke a genuine ASC. The ASC research for this project was advised by Dr David Luke (Greenwich University) who is a founder of Breaking Convention, Europe's largest conference on psychedelic research. Array Infnitive as been presented twice at Breaking Convention and also ALPs Conference on psychedelic research in Geneva, Switzerland (2023). The PhD builds upon the notion of 'enchantment' presented by Erika Fischer-Lichte, regarding live action in art and theatre as

a spatial, embodied event: something that has energy and sensation (Carlson, 2008). As well as Fischer-Lichte's exploration of 'enlivening' a room into a performance space, she argues that live action extends possibilities of perception and expands the relationship between participants. The cybernetic is present in this artwork, through a corporeal, tangible, biological conduit. This work does not employ algorithms or artificial intelligence (AI) to generate content. Other referenced research and material includes Maaïke Bleeker's 'Corporeal Literacy' and 'Bodymind' concepts (Bleeker, 2022) and Jonathan Weinel's *Inner Sound, Altered States of Consciousness in Electronic Music and Audio-Visual Media* (2018). In addition, essays and published papers such as Seigworth and Gregg's 'An inventory of shimmers' (2010) and Dr David Glowacki's research into group VR ASC experience were also reference material for the thesis. *Array Infinitive* takes inspiration and points of reference from many artists, therapeutic techniques and composers who work with a variety of media, and produce work that is less about what it 'means' and more about what it 'does'.

Keywords

VR Art, VR Experience, Altered States Art, Gestural Audiovisuals, Audiovisual Art, Colour Therapy, Sound Therapy, Coloursound Bath, Meditation, Movement as Meditation

VR

Sound Medicine ® Binaural Beats Alpha Theta Silent Disco Experiential Elizabeth W. Krasnoff, PhD - Sound Medicine ®

Elizabeth W Krasnoff

Sound Medicine ® Binaural Beats Alpha Theta Silent Disco Experiential, NY, NY, USA

Categories by Discipline

5.0 Experiential Approaches

Primary Topic Area - TSC Taxonomy

[05.11].....Virtual reality

Abstract

Bring your current practice of stillness, yoga, movement, or breathing—and take it to a deeper level with binaural beats. Participant arrives and puts on headphones; listens to audio on the headphones for a minimum of ten minutes either silent and lying down with eyes closed, sitting, or moving and stretching. These formulas are lab tested at PsyTek labs under director Dr. Gaétan Chevalier, with support from former president Thomas Brophy, PhD of CIHS, and the mentorship of Leslie “Allan” Combs, PhD. Check out the video here. https://www.youtube.com/watch?v=sn-guF_CZEs The results of this pilot study, which allows my formulas to be considered qualified as evidence based, were published in Frontiers in Neuroscience. Come check it out for yourself: <https://www.frontiersin.org/articles/10.3389/fnhum.2023.1138650/full> - or visit me at: www.sound-medicine.com.

Keywords

binaural beats, yoga, movement, breathing, sound,

Final category: 6.0 Culture and Humanities

17

Implications of Julian Jaynes's Consciousness Theory for the Origins of Musical Expression

Steven N Wingate

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Categories by Discipline

6.0 Culture and Humanities

Primary Topic Area - TSC Taxonomy

[06.03].....Music

Abstract

This presentation explores the connections between Julian Jaynes's theories presented in *The Origin of Consciousness in the Breakdown of the Bicameral Mind* (1976) and developing scholarship in the origins and nature of human musical capacity. Aided by advances in neuroscience, particularly our increased understanding of auditory cognition and improved measurement of responses to auditory stimuli, an academic community has coalesced around the questions of how musicality evolved, its functionality in early human populations, and its relationship with language. Jaynes's theory, and especially his speculations about the vestiges of archaic psychic structures in contemporary human expression (poetry, religious ritual, etc.) has direct implications for how we conceive of and discuss the evolution of musicality. While the evolution of music has been an enduring side conversation within the musicology community, music archaeology has begun to establish itself as an intensely interdisciplinary field of study in the past three decades. The seminal scholarly essay collection *The Origins of Music* (1999), edited by Nils Wallin, Björn Merker, and Stephen Brown, includes contributions from evolutionary biologists and neuroscientists, and it can be seen as a launching point for music archaeology as an academic field. More recent books such as Stephen Mithen's *The Singing Neanderthals* (2007), the late Iain Morley's *The Prehistory of Music* (2013), and Gary Tomlinson's *A Million Years of Music* (2018) have engaged in robust speculation about the interwoven evolution of music, language, and consciousness. In *The Origin of Consciousness*, Jaynes does not say much about music directly (though he does note that "music too begins in the bicameral mind"). He discusses it primarily in the context of its relationship with poetry, which he examines in some detail, especially the bardic tradition. But recent scholarship has revealed deep evolutionary connections between music and language, both in cultural practice and neurological processes. Looking at Jaynes through the lens

of this scholarship—for instance Steven Brown's “musilanguage” model of musical and linguistic co-evolution (2000), Derek Bickerton's “protolanguage” (1990), and Ray Jackendoff's “protosyllables” (1999)—allows us to recontextualize Jaynes's ideas about poetry and more fully incorporate music into his theories. Scholars in the Jaynes tradition, such as Julie Kane (2004) and Tanya M. Luhrmann (2022), have furthered his ideas about poetry in ways that open the door to bringing music into the Jaynes conversation. In the music archaeology community, scholars such as Mithen and Tomlinson have worked to establish the connection between music and consciousness, forging viable (though not explicit) connections between music archaeology and Jaynes's bicameral mind theory. My presentation seeks to begin the work of making these connections explicit and clear, in particular by examining the music-adjacent expressions Jaynes discusses—the prophecies of the Sibyls, the poem/songs of aoidoi and rhapsodes, etc—in the context of music archaeology.

Keywords

Music archaeology, Julian Jaynes, origins of consciousness, origins of music, bicameral mind theory, music evolution, language evolution, song, poetry

Understanding Virtual Reality Art Experiences through 4E Cognition

Denise Doyle

University of Wolverhampton, Wolverhampton, West Midlands, United Kingdom

Categories by Discipline

6.0 Culture and Humanities

Primary Topic Area - TSC Taxonomy

[05.11].....Virtual reality

Abstract

‘The body never lies [...] the senses are always true’ (Innaratu in Raessens 2019: 639). This paper attempts to define virtual reality experiences that are used within immersive interactive artworks and considers how the brain responds to this different sense of ‘reality’. David Chalmers argues that rather than this being an illusion, virtual reality devices should be more appropriately called ‘reality machines’ as they in fact involve non-illusory perceptions of real virtual reality (Chalmers 2022: 205-6). Turning to the field of the cognitive sciences and to 4E Cognition here there is an attempt to bring together, ‘a group of overlapping accounts of the nature of cognition’ itself (Henley 2021: 130). Mia Burnett and Shaun Gallagher comment that 4E Cognition includes a variety of approaches but are ‘typically listed as embodied, embedded, extended and enactive, but sometimes including ecological – and do not form a unified theory’ (Burnett & Gallagher 2019: 158). Mathew Henley notes that there is a continued debate as to the precise definition of these terms, but more generally embodied cognition is understood to be mental phenomena that is more closely associated with the whole-body experience as opposed to merely something that occurs in the head or brain. In embedded cognition mental phenomena is dependent upon the environment it finds itself in, whereas a theory of extended cognition is constituted by a bodily interaction with that environment. And finally, enactive cognition constitutes a co-relationship between the body and the environment in cognitive terms (Henley 2021). This paper uses the four aspects of 4E cognition outlined above to understand the power and nature of the virtual reality experience in mixed reality installations such as *Carne y Arena* (Virtually present. Physically invisible) (2017) by Mexican Director Ajejandro G. Innaritu. Based on true accounts of Mexican and Central American refugees in creating the work he explained that he wanted the visitor to ‘go through a direct experience walking in the immigrants’ feet, under their skin, and into their hearts’ (Innaritu 2017). Joost Raessens explains that, in this mixed reality piece Innaritu positions the viewer both as a visitor and a participant. At the start of the VR experience the viewer is a bystander unnoticed by the migrants or the border police. The viewer is slowly turned into a participant – for example when their own

shadow is cast on a migrant's body, or when they feel the desert wind on their skin. Innaritu explains virtual reality is all that cinema is not: 'the frame is gone and the two-dimensional limits are dissolved [...] during this realistically unreal experience, our brain wires and most of our senses were tested' (Innaritu 2017). Working with enactive, embodied, embedded, and extended cognition to understand the 'immediacy effect', the idea that virtual reality brings us closer to reality, may enable a better understanding of what happens to the brain-body experience when navigating enclosed and extended virtual realities.

Keywords

Virtual Reality, Immersive Artworks, 4E Cognition, Carne y Arena, Innaritu, Body-Brain, Mixed Reality

A new paradigm on death

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Categories by Discipline

6.0 Culture and Humanities

Primary Topic Area - TSC Taxonomy

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

Abstract

Death has consumed, confused, and seems to make living life more fearful in most societies. When death is approached with an attitude of compassion and looked at from the side of the deceased, we allow for a new understanding. Birth and death are on the same polarity, but Life has no opposite and therefore must be looked at from a non-dualistic vision. Non dualistic understanding is the new paradigm that takes us beyond thought and emotion to a higher dimension of mind power. As we explore the death of our human based form and the accompanying fears, thoughts, and emotions, we will come to a place of "What can be" as opposed to "What could have been"....As we move further into this more open-minded willingness and away from our seeming mentality of resistance, we will come upon consciousness that is not dependent on form. In actuality, humanness is dependent, and only has its being because of consciousness. We are the awareness of this consciousness in our essence. We will take a deep dive into Awareness of Consciousness and how this can completely change how we experience life and how we view death. This journey will have the effect and give all the opportunity to discover the power of living life from the "inside out" as opposed to the "outside in". This is the critical point that humanity is moving toward. And a new paradigm for understanding death has the potential to accelerate this journey.

Keywords

A new paradigm on death, Birth/Death/Life, Consciousness and death, Beyond thought/emotion.

Intertextual T-Consciousness

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Categories by Discipline

6.0 Culture and Humanities

Primary Topic Area - TSC Taxonomy

[06.01]......Literature and hermeneutics

Abstract

At the 139th meeting of the American Association for the Advancement in Science in 1972, Edward Lorenz raised an iconic question that historicized the Butterfly Effect and anticipated the emergence of Chaos Theory: “Does the flap of a butterfly’s wings in Brazil set off a tornado in Texas?” Although as a meteorologist, Lorenz addressed unpredictability in atmospheric changes and physical space, the Butterfly Effect, as a question that foregrounds the theory, has been charged with philosophical and conceptual bearings in both science and humanities. In the past half a century, Chaos Theory has frequently been called upon in multidisciplinary fields to address dynamism, unpredictability, and initial conditions’ impact on complex systems in physical space or socio-cultural spheres. Intertextual studies in literature and culture have occasionally employed the Butterfly Effect approach as a possibility without offering more practical means of further adapting it in the discourse. By embodying border-crossing and non-linear rapports in between texts and contexts, Chaos Theory can inform discussions of intertextuality, as it allows approaching literature(s) as complex system(s) and explores meta-textual and hypertextual interactions within and beyond the text(s). However, how intertextuality takes place, and what initial conditions may initiate it, are still open-ended questions. This study introduces the theory of Particles’ Interuniversal Connection by Mohammad Ali Taheri to revisit the relation between Chaos Theory and intertextuality. Through this dialogic approach the paper aims to place the concepts of intertextuality and chaos in a new perspective. We will approach the materialization of a given text and the far-reaching domain of its border-crossing impact on other texts as the package of intertextuality from the point of view of T-Consciousness interconnection that exists in between the particles in any complex system. The Particles’ Interuniversalism, theorized by Taheri, establishes the concept of particles’ interrelatedness in the Cosmic Consciousness Network (CCN) and maintains the possibility of T-consciousness-level interaction and exchange of information in between the particles. As a result, any one particle may affect the whole system, providing a new explanation of the Butterfly Effect in a complex system. The concept of T-Consciousness (as the

third constituent of the universe which is neither matter nor energy) will back up this theoretical framework, and we will draw on Taheri's theory of Particle's Mind and Collective Mind to conceptualize the mind of the word, the mind of the text, and to approach intertextuality as a collective mind phenomenon. The first stage of this research project on the Word's Unity of Existence (presented at the 2022 TSC conference) has initiated an interdisciplinary discourse of (T)consciousness studies, language studies and hermeneutics, and the second stage focuses on further broadening the horizon by introducing a philosophical insight into intertextual T-consciousness in different aspects of the universe.

Keywords

T-Consciousness Theory, Chaos Theory, Intertextuality, Particles' Interuniversalism

Developing a Consciousness Educators' Network

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Categories by Discipline

6.0 Culture and Humanities

Primary Topic Area - TSC Taxonomy

[06.10].....Education

Abstract

'Consciousness Studies' has become a popular area of inquiry in Science, Neuroscience and Philosophy. But it has made little impact on other disciplines, including Education. And as education is the process by which people learn, our view is that, if we transform Education as a discipline through introducing ideas of a postmaterialist consciousness, then we will have created a means by which the content of all other disciplines might be transformed. However, there is no proven pathway by which such a transformation can take place. As educational researchers, we were interested in engaging others in addressing this challenge. So we organised a series of three interactive webinars, in which we explored the question: "How can we bring postmaterialist perspectives of consciousness into education at all levels, from early years, through primary, secondary, higher education, and beyond?" In other words, we are seeking to create a comprehensive pedagogy and curriculum for Consciousness Education. We defined Consciousness Education as "education about perspectives on the source and nature of consciousness and their implications for ways of being, knowing, teaching, and learning." The inclusion of the word 'perspectives' was significant, as it allowed us to be open to alternative ways of understanding consciousness, encouraging constructive dialogue about the diverse meanings that consciousness has in different contexts. However, in the spirit of inquiry, we were open to this understanding evolving over time. Following the webinars, we invited interested participants to join us in forming an international network of Consciousness Educators, and to engage in an ongoing participatory research project. Each educator was committed to developing consciousness education in a specific setting, for a specific purpose. Using cooperative/ collaborative inquiry (Heron 1996) as a methodology, we met on a monthly basis, sharing our experiences, and learning from each other about the content and processes of Consciousness Education. An intended outcome of our research is to compile a book to support the development of future consciousness educators. In this presentation, we will share the learning we have gained so far, and will involve the

audience in a dialogue about what they consider to be the potential and challenges of Consciousness Education.

Keywords

Consciousness, education, consciousness education, collaborative inquiry, postmaterialism.

The ineluctable mobility of the mind: empathy, exponential growth factor, and (re)discovering astronautical vision

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Categories by Discipline

6.0 Culture and Humanities

Primary Topic Area - TSC Taxonomy

[06.07].....Anthropology

Abstract

Evolutionary perspectives often posit the emergence of consciousness within the iterative interplay between subjective experience and the material world. Our collective anthropological epic and its teleological tendencies reinforce a biocultural dialectic in which our meta-journey from simple to complex biological organisms correlate with material and mental milestones that take us from stone tools to large language modules within a few million years. This paper rearticulates the story of upright walking apes through the intersection of the neurological and technological adaptations that created the Homo sapiens experience. Ultimately, we see how our first footsteps as cooperative hunters in the savannah led to subjective alienation, and how spacewalks, surprisingly, might bring us back to where we started by renewing proclivities toward collective consciousness(es) that decenter the “human” from our “being.”

Keywords

evolution of consciousness, anthropology, technology and culture

Consciousness and *The Cloud of Unknowing*

Kevin Goodrich

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Categories by Discipline

6.0 Culture and Humanities

Primary Topic Area - TSC Taxonomy

[06.04].....Religion and spirituality

Abstract

The 14th century English mystical text, *The Cloud of Unknowing* is a seminal work of spirituality, literature, and theology. This is evidenced by the wide diversity of individuals that have utilized the text in recent decades. The Cloud's diverse modern audience includes academic scholars from disparate fields, as well as prayer and meditation practitioners of various religious and spiritual outlooks. The wide number of approaches to *The Cloud* is suggestive of the wide number of approaches to consciousness studies, especially as they relate to reflections on the meaning of consciousness for human living. In this talk, some of these approaches will be elucidated with a view toward exploring the existential concerns of human beings related to both everyday consciousness and unusual states of consciousness. What is the meaning of consciousness for human living? This question remains whether consciousness is understood individually, collectively or as a manifestation of an ultimate reality, material or otherwise. How do the advances made in consciousness studies inform human living, especially in regard to behaviors of human meaning making? Behavior that sociological research reveals common to all humans, including those described as religious and spiritual and those described as spiritual but not religious. Two theological approaches will characterize the exploration of consciousness in this talk. The first will be a practical theology of consciousness. Practical theology is a modern theological discipline which draws upon the social and natural sciences in doing theology. In practical theology the empirical specifics of a given reality or event are given first priority before considering theological, philosophical, or spiritual meaning. The second theological approach will be that of mystical theology. A way of doing theology that gives first priority to the experience of God or Spirit in prayer and contemplation. It was this approach that shaped the writing and initial reception of *The Cloud* and other works of medieval mystical theology, such as Walter Hilton's *The Ladder of Perfection* and Julian of Norwich's *The Revelations of Divine Love*. The talk will suggest and invite possibilities for multi-disciplinary engagement with questions of human meaning as related to consciousness. It will also suggest ways in which theologians, spiritual practitioners, and religious communities

might better listen to, be informed by, and cooperate with the research and work of scientists and philosophers in consciousness studies.

Keywords

Cloud of Unknowing, Practical Theology, Mystical Theology, Consciousness and Spirituality, Human Living and Consciousness, The Meaning of Consciousness

OPEN YOUR EYE: THE EVOLVING RELATIONSHIP BETWEEN PSYCHEDELICS, THE MOVIES AND CONSCIOUSNESS

Nick Day

Conscious Pictures, Tucson, AZ, USA

Categories by Discipline

6.0 Culture and Humanities

Primary Topic Area - TSC Taxonomy

[06.11].....Entertainment

Abstract

Since the earliest days of cinema, the theme of consciousness and the deeper nature of reality has been irresistible for filmmakers. Topics familiar in consciousness studies, such as altered states, brain-in-a-vat scenarios, alternate realities, lucid dreams, NDEs and multiple flavors of AI frequently occur in movies, either as central to the drama or as a backdrop. Psychedelics, too, became well established in the language of cinema from the 1960s onwards, with generations of filmmakers utilizing “trippy” aesthetics into their storytelling and mise en scène. Of course, our capacity to accept the artifice of a movie and become immersed in its story is in itself a remarkable aspect of our own consciousness, an altered state. Watching a film is among the richest experiences we can have, and neuroscience has recently been studying “our brain on movies.” Hardly surprising, then, that psychedelics have also provided such inspiration for filmmakers. The referencing of psychedelics in cinema can take multiple forms. A film might depict a trip as integral to the action, as in the counterculture classic *Easy Rider* or *Fear and Loathing in Las Vegas*. Other films seek to replicate the psychedelic experience more subjectively, as in *Altered States* or *Enter the Void*, which uses a first person point-of-view to depict a neon-soaked DMT trip. Some non-narrative films employ a psychedelic “lens” even if they don’t have any direct connection to psychedelics themselves, for example, *Samsara*, which depicts the world from a novel and altered perspective. Similarly, the classic 15-minute stargate sequence in *2001: A Space Odyssey* where Bowman’s allegorical journey of cosmic rebirth through a tunnel of light is not only integral to the story, but also provides an unforgettable psychedelic-like experience for the audience. Experimental cinema from the 1920s onwards created films that might be considered psychedelic, intended to “manifest the mind,” often using animated abstract patterns and impressionistic objects, as in *Five Minutes of Pure Cinema*. This era also gave us *Le Chien Andalou*, still considered a surrealist masterpiece. Of course, outlandish and surreal imagery is hardly the preserve of the avant garde, and some of the trippiest sequences in the history of cinema can be found in the

animated features of Walt Disney, including Fantasia, Dumbo and Alice in Wonderland. More recently, Hollywood's slew of superhero blockbusters are crammed with trippy imagery that presupposes an audience very familiar with psychedelic aesthetics, and direct references to psilocybin, LSD, consciousness and the quantum realm are to be found in Doctor Strange. It's evident that the urge to alter our state of consciousness is deeply ingrained in the human psyche, and psychedelics and cinema can be regarded as technologies that provide novel and (mostly) pleasurable ways to attain this. In this presentation, award-winning filmmaker and consciousness scholar Nick Day further develops his thesis on the symbiosis between psychedelics and cinema, tracing how each has influenced the other and helped to inform our understanding of consciousness itself.

Keywords

psychedelics, cinema, movies, storytelling, narrative, altered states, archetypes, consciousness, Platonic values, science fiction, avant garde, fantasy, animation, LSD, psilocybin, DMT

Introducing the Market Mind Hypothesis: Understanding markets and minds through cognitive economics (including how the mind-body problem extends into the economic system)

Patrick Schotanus

University of Edinburgh, Edinburgh, Midlothian, United Kingdom

Categories by Discipline

6.0 Culture and Humanities

Primary Topic Area - TSC Taxonomy

[06.15].....Miscellaneous

Abstract

I discuss my heterodox economic theory, the Market Mind Hypothesis (MMH), which I recently introduced to a wider audience via my book (Schotanus, 2023). In short, based on 4E cognition the MMH submits that (what investors have always casually referred to as) "the market mind" (e.g. Soros, 1987; Marks, 2011) exists and is real. In popular terms, "Mr Market" is a collective entity who reflects our mentality. More technically, the market—embodying numerous conscious humans and their technologies—intersubjectively extends investors' minds, whereby it not only distributes their knowledge (e.g. Hayek, 1945) but also manifests collective consciousness. Prices are the main informational signatures of this which are "dually realised" (Chalmers, 1996), with market mood as the immersive experience (phenomenally), especially in real-time, varying from despair to exuberance. Moreover, the notorious mind~body problem gets extended into the economic system, beyond the traditional "explanatory gap". While originating from my thirty years of experience as an investment professional, the MMH is now increasingly being developed with collaborators, both in cognitive science and economics. The MMH is a standard-bearer and so-called postcognitivist interpretation of cognitive economics. Cognitive economics partners cognitive science with economics, each offering complementary explanations to the other. Specifically, cognitive science teaches economics about mentality (present in markets, e.g. herd mentality), whereas economics teaches cognitive science about market forces (present in minds; e.g. your unconscious "System 1" competing with your deliberate "System 2"). Combining these culminates in the two-way Market Mind premise: market-as-mind (roughly related to the so-called macrofoundations of economics), respectively mind-as-market (roughly related to the so-called microfoundations of economics). Its shared underlying Market Mind Principle is intelligent (and sometimes conscious) self-organisation via 'market' dynamics, centred on exchange, aimed at discovery, ultimately of value. In terms of complexity, for example, these complementary market forces—e.g. competition~cooperation,

consumption~production, deflation~inflation, risk~reward, saving~spending, supply~demand—spawn the synergetic emergence of group phenomena from (e.g. microscopic) individual level exchanges. In fact, the MMH highlights their prominence in much of our biological world, including our microbiome (e.g. bacteria, protists, and [artificial] xenobots). That evolution is reflecting such market dynamics has been acknowledged by many biologists (including Darwin himself), e.g. “[natural selection] is, in essence, Adam Smith’s economics transferred to nature . . . Reproductive success becomes analogous to profit” (Gould, 2002, p. 122). Still, the implications have not been properly grasped. In terms of economics, the MMH challenges mainstream economics, a partnering of the strange bedfellows of New Classical and Keynesian economics. Specifically, the MMH criticises mainstream’s mechanical worldview which is flawed ontologically, epistemologically, and methodologically. The MMH's purpose is to contribute to the revision of economics, which is urgently required, especially following the various systemic crises over the past few decades (exemplified by the GFC). These were dangerous (to the point of existential) and have had devastating and lingering impacts on society. In short, unlike other sciences economics is not an innocent bystander which just observes events 'objectively'. Rather, its flawed paradigm shapes events and has been detrimental to our worrying predicament.

Keywords

Consciousness, 4E cognition, Cognitive science, Discovery, Economics, Extended mind, Finance, Free will, Investment, Mind-body problem, Philosophy of mind

What can randomness tell us about coherence?

Todd Bureau

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Categories by Discipline

6.0 Culture and Humanities

Primary Topic Area - TSC Taxonomy

[06.04]......Religion and spirituality

Abstract

Random number generators (RNGs) are like high speed coin flippers and are used as the standard to measure against in quite a number of sophisticated fields from cryptography to machine learning. Inspired persons devised some inspired applications in the '90's to investigate whether aspects of the non-material world could affect the "randomicity" of these physical apparatuses. In a purely physicalist world they should not. But, the results of targeted smaller scale experiments were encouraging enough to develop the Global Consciousness Project, a nearly 20 year effort documenting the effects of human attention and emotion on RNGs. In a world where the physical is what usually counts because it's measurable, this project in its data collection over a global network with rigorous analysis, showed a cumulative 7 sigma deviation from expected randomness, with subtle data correlations associated with shared human events—in other words a one in three trillion odds against chance. 500 events were formally analyzed ranging from the 9/11 terrorist attacks, to natural disasters, to peace and compassion gatherings. Intriguingly, the latter showed strongly more pronounced effect sizes. This talk will be of a bit of all of that, as well as the history and future efforts, as the second generation (gcp2.net) rolls out with a fifty fold increase in data collection and consequent new investigative strategies. New strategies are also part of separate efforts investigating related phenomena of both the human and what is not. The ECREE dictum of Carl Sagan that, "extraordinary claims require extraordinary evidence", can be used as a gatekeeper of accepted thought and as a cudgel against what is not. The nearly half century hunt for the Higgs boson required untold resources and was considered settled by most with the resultant 5 sigma accepted standard. Particle physics is touted as a universal for all, and other endeavors with higher deviations but smaller fanfare can languish obscurely in misplaced doubt. Particles can tell us about the physical, but some research can tell us about the human universal that has the potential to cause an individual to see themselves differently in relation to the whole, and that can have a whole lot of significance. Consciousness has been pondered through human history but the greatest questions remain. Modernity's technological prowess and infatuation with the physical,

means that the loudest investigative efforts consist mostly of those poking and prodding within the confines of a skull. But that hasn't been and is not currently the only means. Mystical traditions offer options for inquiry, as do the lived experiences of so many, but what might suggest that there's any credence physically to conceptions that consciousness might not be limited to the physical? Beyond the lives outwardly lived in ways of understanding differently, individuals, wisdom traditions, and spiritual systems all talk of "interconnection", but can it possibly be demonstrated empirically? Apparently so, and the extraordinary evidence can have extraordinary implications. Discussion following will be of those possibilities, to possibly be continued in the bar, and certainly in the future.

Keywords

Global Consciousness Project, consciousness fields, interconnectivity, random number generators, PEAR lab, HeartMath Institute, Wyrld Research, oREGano project

Angel and Orphan Lexicons

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Categories by Discipline

6.0 Culture and Humanities

Primary Topic Area - TSC Taxonomy

[06.12].....Visual Art Forms

Abstract

A poster presentation of two contrasting poetic matrices or meaning environments: The Essential Angel Lexicon and The Orphan's Lexicon. These are a dual modality, visual / linguistic form of expression - a network of explicit meaning 'nodes' and an implicit meaning 'ground'. After creation of performance art led to exceptional experiences (altered perception, synchronicity, sense of unus mundus), the matrix was the outcome of a search for a form of expression that would engage viewers in a bidirectional interaction between mental and physical to produce an altered awareness and replicate a fragment of the original experience. The project originates from the visual art discourse and intersects with conceptual metaphor theory and cognitive science. Ideas and matrices are explicated at length in 'The Record: Mind, Matter, and What Happened in 1987' (Marianne Neill, 2021).

Keywords

visual art, language, cognition, conceptual metaphor theory, consciousness and reality

Meditation, Monotheism, Misogyny, and Massacres: *Spirituality in the West versus East*

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Categories by Discipline

6.0 Culture and Humanities

Primary Topic Area - TSC Taxonomy

[06.04].....Religion and spirituality

Abstract

<pre> Religion is the original study of consciousness. Adherents believe it elevates humanity. Yet, the horrific slaughter in the "Holy Land" in 2023 is only the most recent outbreak of religiously inspired war. Eastern religions notably include wordless meditation creating Altered States of Consciousness (ASC). Adherents report internal peace and compassion from such, first-person, ASC. Western religions, by contrast, require mainly lengthy recitation if any meditational practice at all. However, their founding documents claim god spoke directly to their patriarchs, often demanding violence. Perhaps those communications were ASC. My study explores the issues of violence and ASC in Western religion. The stakes are enormous! Western religion has fueled Crusades, Inquisition, conquest, chattel slavery, Holocaust, and Zionism. I considered two opinions of ASC. ASC might reveal the true spiritual universe, or mystics might only be exploring their own nervous systems. In either case, ASC should remain consistent across societies. I defined "Western religions" as the Abrahamic religions: Judaism, Christianity, and Islam, excluding small or modern sects like Druze, Mormonism, and Sikhism. I defined "founding documents" as beginning with the Torah. My somewhat novel approach included: Analyzing stories as memes propagated for express reasons, Postulating a neural mechanism of ASC induction, Analyzing rituals and history for practices consistent with that mechanism, Postulating a neural mechanism for belief in magic as classified by Sir James George Frazer, Analyzing the stories for events consistent with that mechanism, and Comparing known Egyptian history to Biblical texts. I discovered that Biblical scholars already know surprisingly many answers that Western religious authorities never promulgate: Evidence exists for a "secret baptism" practiced by Jesus and his disciples, a spiritual practice which has been lost. All of the founding documents were redacted by military leaders if not entirely created by them. About half of the "Epistles of Paul" are forgeries. Syncretism, (merging of beliefs), is natural and prevalent whenever societies meet. Authorities continuously suppress syncretism. ASC practices do arise in the West, but authorities marginalize and even persecute

them. Bronze Age Levantine societies were matrilineal and several stories conceal this fact. The attacks on other religions started with persecution of goddesses worshiped by women. The ages and quantities of people in the Bible are exaggerated and arbitrary. The Biblical conquest of Canaan was at most an exaggeration to inspire soldiers. The claims by the Prophets that monotheism brought Israel more prosperity than polytheism are provably untrue. I arrived at several of my own conclusions: The pursuit of ASC by mystics does indeed lead to compassion and non-violence. ASC do appear in Western religions but they are generally not the source of doctrine. The Bronze Age Collapse increased the demand for militarism and for loyal soldiers to travel great distances. A patriarchal and exclusive religion met this demand. A novel theory explains the Exodus and the Ark of the Covenant. To this day, Western religion is used falsely to justify continuous war and oppression. Contact: [Http://JustasticCreative.com](http://JustasticCreative.com) HHarrison@JustasticCreative.com HarlandH5@yahoo.FR </pre>

Keywords

Peace, Contemplation, Feminism, Testament, Gaza, Sensory, Deprivation, Exodus, Sympathetic

`Concepts in the Indian Science of Consciousness

Christopher Lord

France

Categories by Discipline

6.0 Culture and Humanities

Primary Topic Area - TSC Taxonomy

[01.14].....Philosophy of perception

Abstract

Concepts From The Indian Science Of Consciousness (abstract) Christopher Lord In the recent CIHS hybrid conference in California, I gave a virtual presentation on the history of the concept of consciousness in the West. This is part 2 of that presentation. While there is no concept of consciousness in Greek philosophy, it is easy to find the origin of the concept in the Latin logic-based theology known as Scholastic philosophy. Latin conscientia has a specific Scholastic meaning: awareness of your own sins. It is a moral and supernatural idea, since you share this knowledge with God. Descartes is the link with modern thought, as he was at the same time the first modern philosopher and the last major Scholastic thinker. His concept of 'conscience' in French was translated into 'consciousness' in English by Locke and Hobbes, and these English Protestants removed the Catholic theological explanation. Many people in the West now look to the East to find a replacement for the missing theological element. The source of these ideas is found in the Indian thought system. India has a real science of consciousness, in the sense that consciousness is studied and manipulated using techniques which are developed systematically and transmitted in a technical literature to be taught and learnt. If we look at the history of this science, we see that meditation has been a central feature of the Indian thought system from the earliest times. The earliest recorded version of meditation is associated with the fire worship of the Vedic culture. The Vedic Sanskrit term dhī धी comes from a very old layer of Indo-Iranian culture, in which elemental nature deities were worshiped. It means 'imaginative vision', and the original form of meditation, described in the Rig Veda, meant staring into the sacred fire to obtain this vision. Fire worship was abandoned, and in the Rig Veda it is said that the focused attention on the fire can be replaced by focused attention inside yourself. The Vedic word dhī evolved to dhyā ध्या, 'to contemplate' and then to dhyāna ध्यान, which is the term for 'meditation' in classical Sanskrit and in Hindu practice, especially yoga. Transported to China and then Japan by Buddhism, it became chán 禪 in Chinese, pronounced as 'Zen' in Japanese. Apart from meditation itself, there are many

concepts of consciousness developed over centuries of Hindu philosophy. The Ātman आत्मन् and Brahman ब्रह्मन् of the Upanishads; the relationship of consciousness to time and therefore to karma कर्मन्; prakṛti प्रकृति (original nature) as impregnated with consciousness; and in general terms, the principle that consciousness is not a feature of the individual but of the whole of reality, addressed by the science of consciousness. However it is conceived, India's science of consciousness is based not on explaining how an individual is conscious, but on developing the individual's ability to gain direct experience of the universal fabric of consciousness that, like time, is a constant feature of the universe.

Keywords

India, philosophy, consciousness

Understanding Transcendence: Interoception in, of, and for Altered States of Consciousness

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Categories by Discipline

6.0 Culture and Humanities

Primary Topic Area - TSC Taxonomy

[06.06].....Sociology

Abstract

This paper examines transcendence from a phenomenological perspective, alongside some of the conceptual frames people use to explain their experiences of altered states. I draw on participant-observation data from across multiple field sites over several years of field work, including (neo)shamanic journeys, drum circles, energy healing, astral projection, and trance meditation, and supplement these findings with survey research, interview data and other studies of transcendence. Focusing on interoception (the felt experience of/in the internal body), I explore the role of the sensory-emotional in transcendent experience. I theorize relationships between these aspects of altered states and conceptual-discursive strategies for understanding and articulating these experiences. I posit that interoception plays a significant role in reaching/achieving altered states, in sense-making processes of these states, and, most importantly, in the dialectic between the two. Ultimately, I seek to contribute to our understanding of interoception, its role in experiences and articulations of transcendence, and therefore to broader theories of consciousness.

Keywords

consciousness, transcendence, altered states, interoception, shamanism, meditation

Collective Consciousness and Authoritarian Populism: Manipulation-Awareness, Resistance, and Community

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Categories by Discipline

6.0 Culture and Humanities

Primary Topic Area - TSC Taxonomy

[06.06].....Sociology

Abstract

This paper expands on Durkheim's concept of "collective consciousness" by incorporating insights from Jungian Psychology, Wendt's Quantum Social Science, and other relevant fields. This framework is then used to assess contemporary authoritarian populism. The digital revolution has ushered in a new media landscape characterized by echo chambers, algorithmic filtering, AI-generated content, and an overwhelming flow of post-truth propaganda. This new information ecosystem has significantly fragmented public attention and rendered the collective consciousness of societies more susceptible to political manipulation. Authoritarian populist leaders around the world exploit this vulnerability by manipulating public sentiment to capture and consolidate power. They skillfully craft narratives that weave societal traditions and values with tailor-made symbology, triggering suppressed historical shadows as needed. These narratives construct culturally and psychologically grounded alternative realities for the socialization of political supporters into the populist mass movement. Over time, successful populists manipulate their societies towards an authoritarian regime. The study explores how populist leaders resonate with and amplify latent fears, desires, and archetypes shaping the collective consciousness of their societies. It also proposes strategies and tactics for resisting populist manipulation and fostering a more harmonious society.

Keywords

authoritarian populism, collective consciousness, Jungian Psychology, quantum social science, new media ecosystem, propaganda, resistance to manipulation, empathy, community building, cooperation

Demarcation and discovery: how lessons learned from mainstreaming cold fusion research may help consciousness studies

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Categories by Discipline

6.0 Culture and Humanities

Primary Topic Area - TSC Taxonomy

[06.06].....Sociology

Abstract

This presentation provides some “lessons learned” from the process of turning a controversial field of study into mainstream science. The presented case revolves around the field formerly known as cold fusion. Efforts to engage with claims of cold fusion systematically culminated in a Department of Energy research program on the topic that commenced in 2023 (which this author helped bring about) [1]. Many such lessons may apply to subfields of consciousness studies as well, especially subfields that involve anomaly reports and that challenge scientific orthodoxy. Here I present a framework to guide practitioners, policymakers and science funders in their engagement with such frontier science topics. Some background on the cold fusion case: anomalous particle emissions and elemental transmutations in metal-hydrogen systems at ambient temperatures have been reported as early as the 1920s [2]. However, conventional physics has not been able to explain such reports, leaving them largely by the wayside. Recently, strong experimental work has accumulated and matching explanations -- combining nuclear physics with quantum optics -- have emerged [3]. Anomalous phenomena falling by the wayside is consistent with Atmanspacher’s observation [4] that some anomalies are simply too far from the current frontier of science to be actionable. To make them more actionable the following measures help: * Systematic engagement with the existing literature in the field with the goal of identifying a small, consistent set of strongest experiments to date, and proactive engagement with alternative explanations. * Willingness to identify methodological weaknesses in past research and suggestions on how to address such weaknesses going forward. * Recognition that there is a division of expertise when it comes to (1) (re-)producing anomalous phenomena; (2) measuring and characterizing them; and (3) explaining them. All too often papers in early-stage fields dabble in all three areas but deliver satisfactory results in at most one area, thereby greatly weakening the paper by taking on too large of a scope. * Involvement of practitioners who claim to have obtained anomalous results; and also involvement of independent experts with deep expertise in relevant diagnostics, protocols, and statistical

techniques. Such experts can ensure the use of best practices and vouch for the credibility of obtained results. * Clear separation between the first task of demonstrating whether an anomaly truly exists as an anomaly (and is not the result of a measurement error or misinterpretation for instance); and the second task of explaining the anomaly. The latter may in some cases occur much later. The motivation behind such a framework is to help develop systematic research programs on topics of consciousness studies that to date have been considered anomalous and unactionable from the perspective of mainstream science. If successful, this could mean access to established funding mechanisms, e.g. through the National Institutes of Health, and a greater influx of researchers, e.g. doctoral students who will benefit from framing research in ways that avoids career damage. [1] <https://arpa-e.energy.gov/arpa-e-lenr-program-kickoff-meeting> [2] Paneth & Peters (1926) *Naturwissenschaften* [3] Metzler et al. (2024) *New J Physics* [4] Atmanspacher (2009) *J Sci Explor*

Keywords

mainstreaming controversial research topics, philosophy of science, science policy

Social Media and Consciousness in times of the rise of Large Language Models, aka AI - a 2024 Snapshot on the Meta-Analysis

Sascha Seifert

Conscious Pictures, Tucson, AZ, USA. Mouna Entertainment, Stuttgart, Baden-Wuerttemberg, Germany. Sascha Seifert · Investors · Speaker · Entrepreneur, Stuttgart, Baden-Wuerttemberg, Germany

Categories by Discipline

6.0 Culture and Humanities

Primary Topic Area - TSC Taxonomy

[06.06].....Sociology

Abstract

Once in a while, it is helpful to remind ourselves that the moment we talk about Social Media, we de facto talk about networks built through technology, enabling interaction between humans based on computational models entirely. This perspective is a valuable and essential reference frame for looking at the relevant changes that have shaken the Social Media realm over the last few years. Large Language Models (short: LLMs, aka AI) entered the scene, enabling humans to seemingly create more striking input variants than ever before through visuals and text-producing interfaces. Post-pandemic, post-tech optimism, new computerized social networks were added that seem to promote even more division and bias. (Ross, A., Robertson C.T., Fletcher R., Kleis Nielsen, R.: A literature review: Echo chambers, filter bubbles, and polarization. 2022.) Some recent changes in ownership and political influence-taking enhanced the problems of filter bubbles instead of curbing them, while political and socioeconomic landscapes changed drastically, creating extended room for the expression of human bias since the establishment of computerized Social Networks in general. My 2024 talk picks up where my previous talks at TSC on the broader subject had to break off. With rightful debates about the global influences on our society's consciousness by Social Media still not coming to rest, I'm having another updated, closer, in-depth look at the current situation in the universe of Social Networks, aka Social Media. If you visualize any contemporary Social Media Network, the network structures' similarity to neural networks is evident and striking. This applies to structure as well as to input/output conditions. And, while for those studying brains, this seems obvious, the creators of computerized social networks seem just to have focussed (consciously or subconsciously) on the hardware structure only, ignoring any input/output effects of such systems. (Hardey, M.: Social Network Analysis in an age of digital information. 2018. And: Wellman, B., Salaff, J., Dimitrova, D., Garton, L., Gulia, M., and Haythornthwaite, C.: Computer

Networks as Social Networks: Collaborative Work, Telework, and Virtual Community. 1996). While there has been abundant criticism of computer-enabled social network mechanics and designs over the last five to ten years already, the rise of LLMs (aka AI) has amplified these critical voices regarding machines influencing human interactions, debate, opinion-making, cognition, and perception. (Stahl, B.C., Leach, T.: Assessing the ethical and social concerns of artificial intelligence in neuroinformatics research: an empirical test of the European Union Assessment List for Trustworthy AI (ALTAI). 2022) As, from a bird's eye perspective, AI is just about to enter the mainstream discussion, the process of general debate and criticism has just begun while the (potential) implications of further enhanced machine capabilities become increasingly evident to more people. My talk will give an overview of the current situation in general and present the state of science in the field, discussing selected studies. By this, I will update you on where I see connections between human consciousness and its current expressions and threats in the Social networks we summarise as Social Media.

Keywords

networks, neural networks, social media, large language models, social networks

Myths and Models of Time and Timelessness

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Categories by Discipline

6.0 Culture and Humanities

Primary Topic Area - TSC Taxonomy

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

Abstract

Time is perhaps reality's greatest mystery. On one hand, time is a puzzling enigma that eludes all attempts at total comprehension. On the other hand, time is the most familiar thing in the world. The only other mystery that comes close to time in scope and scale is consciousness, with which time is inextricably wound. The apparent reality of time's forward, linear flow is so fundamental to the human experience that time often feels synonymous with consciousness itself. Yet, our current scientific models of time, and what those models suggest about the organization of the physical universe, require us to consider the experiential flow of time an "illusion." It is this chasm between these two incompatible truths that makes the study of time a dynamic, inexhaustible playground for life's greatest attempts at self-definition. This essay takes part in the history of that playground. In it, historic and modern Western scientific and philosophical perspectives on time (Aristotle/Newton, Einstein & the theories of Special & General Relativity, Minkowski/Einstein's Block Universe, Presentism vs. Eternalism, The Spatialization of Time, Neuroscientific Bases for the Scientific Preference for Eternalism), are juxtaposed with Greek mythological (Chronos, Saturn, Kairos, Aion) and Chinese mythological and philosophical (Time as Moment of Connection Between Fields, Number Boxes Lo-Shu and Ho-Tu, Cyclical Time vs Linear Time, Acausal Connection Principles) perspectives on time, and a striking isomorphism is shown. The conversation between these two approaches to time is then used to investigate the phenomenon of synchronicity, as defined by Carl Jung and Wolfgang Pauli during their lengthy correspondence. Through a scholarly but playful exchange between science and the humanities, this essay seeks to produce new insight not only into the nature of time but also into the ways in which our various interpretations of time's phenomena impact the phenomena themselves. "It is probably true quite generally that in the history of human thinking the most fruitful developments frequently take place at those points where two different lines of thought meet. These lines may have their roots in quite different parts of human culture, in different times or different cultural environments or different religious traditions: hence it they actually meet, that is, if they are at least so much related to each other that a real

interaction can take place, then one may hope that new and interesting developments may follow.”
– Werner Heisenberg

Keywords

Time, Timelessness, Physics, Neuroscience, Philosophy, General Relativity, Special Relativity, Eternalism, Presentism, The Spatialization of Time, Greek Mythology, Chinese Mythology, Synchronicity, Einstein, Jung, Pauli

Metaphors of Consciousness

Olga Colbert

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Categories by Discipline

6.0 Culture and Humanities

Primary Topic Area - TSC Taxonomy

[06.01]......Literature and hermeneutics

Abstract

In literary works, the preferred trope used to convey the presence of consciousness in non-human animals and plants is called prosopopoeia or personification. Animal and plant advocates have argued for years that such tropes devalue non-human animals and plants by comparing them to the human experience. I go a step further by arguing that current research on plant and animal consciousness shows that some expressions that are considered poetic language, such as prosopopoeia, constitute in fact an accurate representation of plant or animal behavior or abilities. Using a contemporary Spanish novel as a case study, I show how the extensive use of figurative language utilized to convey that plants produce sounds, remember, or show intentionality can be supported by cutting-edge research on plant consciousness and non-human animal consciousness studies. For instance, at one point in the novel a plant is said to emit “a vegetal moan.” While it is easy to dismiss this as an example of anthropomorphizing a natural sound, cavitation sounds resemble screams in two important ways: they are distress sounds, and they have “roughness.” I draw on the field of plant cognition, such as the work of Daniel Chamovitz, Peter Wohlleben, Roman Zweifel, I. Khait, Nicoletta Lanese, Vaughan, Monica Gagliano, and Paco Calvo to compare literary metaphors with scientific research. In the field of animal cognition, I lean on the work of Frans de Waal, Francesco Ferrari, Brian Hare, Michael Tomasello and Temple Grandin, among others.

Keywords

plant consciousness; animal consciousness; panpsychism; literature;

The Simulation Hypothesis: RPG vs. NPC and the parallels between AI, technoscience and religious ideas of consciousness.

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Categories by Discipline

6.0 Culture and Humanities

Primary Topic Area - TSC Taxonomy

[01.02].....Materialism and dualism

Abstract

The Simulation Hypothesis has been called “religion for atheists” by the religious communities and “pseudoscience for believers” by members the scientific community. Nevertheless, the idea of simulated conscious beings within simulated virtual realities raises interesting parallels between ensouled actors from religious traditions and technoscientific/materialist views of consciousness. This talk explores those parallels and shows how simulation theory can provide a new understanding of the idea of ensoulment from various religious traditions, as well as a new model for understanding free will vs. determinism. These parallels are explored along the axis of the RPG (role playing game) vs. NPC (non-player character) flavors of the simulation; these two ends of the axis are not mutually exclusive as both Chalmers and Virk have pointed out, but intermingle within mixed sims. This paper also shows how recording of simulated actions, as well as intentions and feelings with the sim can provide a way to replay consciousness and provide an interesting bridge between technoscience and religious ideas of choice, punishment, judgement, and karma across the scriptures of the world’s religion’s (including Islam, Christianity, Buddhism, Hinduism and Judaism).

Keywords

AI, simulation, video games, religion, souls, karma, qualia

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Voices

Tanya M Luhrmann

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Categories by Discipline

6.0 Culture and Humanities

Primary Topic Area - TSC Taxonomy

[03.19].....Cognitive theories of consciousness

Abstract

They are strange experiences—a voice whispered on the wind, a god who speaks from on high—but far more common than we think. At the beginning of most great religions lies a voice. Who hears such voices? I have spoken to hundreds of people, in many countries, who have heard voices, some only once, some more often. Most of these people are not psychiatrically ill. Some are. In this talk I will discuss what we know about the difference between mad voices and sane voices, and what traits and practices and cultural ideas make sane voices more likely. Fundamentally, this is a story about how people come to experience thoughts as not their own and not inside them. It is a theory of culture and consciousness.

Keywords

voices, spiritual experience, the phenomenology of thought, culture

Virtual embodiment in music interaction and experience

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Categories by Discipline

6.0 Culture and Humanities

Primary Topic Area - TSC Taxonomy

[06.03]......Music

Abstract

Human music interaction involves highly intricate body-brain coordination dynamics. When successful, embodied music interaction may lead to powerful human experiences, including altered states of (shared) consciousness. In my talk, I will advocate for the potential of technologies in the domain of ‘extended reality’ (XR) to better understand the embodied (social) mind and its complex behaviors, and to extent these into the virtual realm. In a first part, I will discuss how we used XR as methodological tool in a series of experimental studies to investigate anticipatory synchronization and intersubjectivity in musical interactions. Part of this research entails the combined use of computational modelling (from a coupled oscillator perspective) and adaptive virtual agents to gain deeper insights into the control principles of human temporal synchronization in musical ensembles. Building on this research, I will explain in the second part of my talk how we develop XR technologies into biofeedback systems to spontaneously adapt motor and experiential states in humans. Applications of these biofeedback systems are situated in the domains of sports, motor rehabilitation and music/dance pedagogy. Finally, in a third part, I will present and demonstrate an XR version of the self-operating time crystal model of the human brain as 3D fractal architecture of clocks, as developed by Bandyopadhyaya and colleagues (2020).

Keywords

Music, virtual embodiment, extended reality

Remembering The Truth Messianic Consciousness

Sean Clayton

Abundance Alchemist, Austin, TX, USA

Categories by Discipline

6.0 Culture and Humanities

Primary Topic Area - TSC Taxonomy

[06.04].....Religion and spirituality

Abstract

In a captivating conversation, we explore the dynamic interplay between ancient spiritual teachings and today's technological breakthroughs, aiming for a collective rise in consciousness. Discover how: - Ancient Codes and Modern Minds: *Delve into the secrets of Messianic Codes and Kabbalistic insights, showcasing their enduring wisdom. - Vibrational Harmony: Learn about the transformative power of letters, numbers, and sounds as universal connectors to deeper truths. - Technology as a Catalyst: See how current tech innovations are not just tools but partners in our spiritual journey, linking hearts and minds. - Simple Steps to Ascension: Uncover straightforward, effective practices to weave these ancient teachings into the fabric of everyday life, paving the way for unity and elevated awareness. This engaging dialogue invites us to bridge worlds—melding the wisdom of the ages with the potential of the future—igniting a worldwide evolution toward more conscious living.

Keywords

ancient spiritual teachings, technological breakthroughs, vibrational harmony, tech innovations

A.I. + Human Collaborative Intelligence

Zann Gill

GAIL, Los Altos, CA, USA

Categories by Discipline

6.0 Culture and Humanities

Primary Topic Area - TSC Taxonomy

[03.18].....Intelligence and creativity

Abstract

Two extreme views contend in the A.I. debate: First: A.I. will drive the human species extinct. Second: A.I. will be a great equalizer and enabler. Human perception of the extinction hypothesis was fact checked by Melanie Mitchell: 50% of AI researchers believe there's a 10% chance that AI will drive the human species extinct. Those now in control fear AI as "an alien gone out of control." In contrast, the global open source community models collaborative autonomy, a distributed indie network rapidly iterating, innovating, and evolving. As a grad student, I was inspired by Buckminster Fuller's pre-Internet concept for World Game, designed to be played in university gymnasias, where a 75 foot Dymaxion Map of the world was laid out as a gameboard on the gymnasium floor. When the public Internet made a global, persistent "gameboard" possible, I started earthDECKS, where DECKS stands for Distributed, Evolving Collaborative Knowledge System and also evokes "decks" of story cards in a human - machine iterative learning loop that can manifest collaborative intelligence, the 21st century incarnation of what Buckminster Fuller called World Game. With the surge of A.I., I saw the missing puzzle piece to grow and evolve a global platform to track local progress toward addressing the grave crises of life on Earth today. A.I. is a bandwagon with momentum to drive a collaborative intelligence initiative, attracting global engagement, mobilizing fear to kickstart action and motivating construction of a next generation social network to support collaborative intelligence, using A.I. to scale. The Future Impact of AI – roundtable shows my orientation <https://www.youtube.com/watch?v=LIAPQOjEW8> More here: <https://gail.world> and <https://zanngill.com>

Keywords

A.I., collaborative intelligence, creativity, complex systems, problem-solving, human networks

Poetry Slam

The Book of Consciousness

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Categories by Discipline

6.0 Culture and Humanities

Primary Topic Area - TSC Taxonomy

[06.13].....Poetry

Abstract

At the CoC conference in Sicily (May 2023), as many presenters had knocked the dust off their ideas of consciousness based on theories developed in the 1970s, there was a theme that consistently said something along the lines of "I'll leave that to the poets." That was a great technique of deflection, but the problem was, there were no poets present to take their ideas and filter them through the creative nature of poetics and imagery. So the audience suffered through the neuroscientists and quantum theorists as they resurrected to many ideas attached to the scientific mathematics of gravity trying to make consciousness fit those concepts. And never did they think to let go of the old theories they were trying to fit into old math and quantum suspension of reality. They just said they would leave that up to the poets. I attended a conference once when the Dalai Lama was on stage with a group of neuroscientists who were very excited to tell him they had discovered that meditation rearranged the physical form of the brain. The Dalai Lama looked at them, and simply said, "Yes. I know." Which pointed out to scientists that they were using old methods trying to get to conclusions already discovered by other avenues. They should have left it up to the poets. My abstract proposal allows a poet to show up with ideas not based on quantum mechanics, the theory of gravity, or the neuroscientific approach to understanding the brain. Instead, I will rely on creative abilities as a poet to present challenges to those old approaches, calling for different approaches to push through the log-jammed discussion of old white guys talking about what other, older white guys talked about generations ago. It's time to take the foundation built on the shoulders of giants and get newer possibilities based on the power of consciousness to be creative to emerge as novel places to consider and move the discussion(s) along. It is time to consider consciousness as its own field of study and to quit trying to make it conform to other sciences. I am currently working on "The Book of Consciousness" - a collection of poems based on Consciousness studies, and the presentation will include selected readings from that manuscript as well as an interactive sharing of ideas from creatives interested in discussion how their abstractions fit in the Center of Consciousness work.

Keywords

Poetry, creativity, consciousness, gravity, quantum theory, novel emergent, what-if possibilities.

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