



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.

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#### 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

Western Sydney University, Sydney, -, Australia

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.

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Keywords

telepathy, precognition, evolution, predisposition, consciousness

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

Yuan Yan

Alliant International University, Emeryville, California, USA. Southwest Behavioral Health Services, Phoenix, Arizona, USA

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.

Poster - 2 (Fri)

Keywords

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

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

James H Rutherford

Grant Hospital, Columbus, Ohio, USA

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.

Poster - 2 (Fri)

Keywords

Naturalized epistemology, evolution, mental capacities, philosophy, experience

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

Darja Kobal Grum

University of Ljubljana, Department of Psychology, Ljubljana, Slovenia, Slovenia

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.

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Keywords

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

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

Malcolm John Lett

Independent, Chennai, Tamil Nadu, India

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.

Poster - 1 (Wed)

Keywords

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

## Expanding Artificial Intelligence Capacity for Approximating Different Forms of Dream Consciousness

James Frederic Pagel

University of Colorado School of Medicine System, Pueblo, Colorado, USA. Cape Breton University, Glace Bay, Nova Scotia, Canada

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.

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#### 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

Jürgen Kornmeier<sup>1,2,3</sup>, Wolfgang Fach<sup>1</sup>, Anne Giersch<sup>4</sup>, Ellen Joos<sup>4,1</sup>

<sup>1</sup>Institute for Frontier Areas of Psychology and Mental Health, Freiburg, Baden-Württemberg, Germany. <sup>2</sup>Department of Psychiatry and Psychotherapy, Medical Center - University of Freiburg, Freiburg, Baden-Württemberg, Germany. <sup>3</sup>Faculty of Medicine, University of Freiburg, Freiburg, Baden-Württemberg, Germany. <sup>4</sup>INSERM U1114 Hôpital Civil / Clinique psychiatrique, Strasbourg, Alsace, France

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 science<sup>1</sup>. 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.

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#### Keywords

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



## Comparative Effects of Fire Kasina Meditation and Psychedelics

Marjorie H Woollacott<sup>1</sup>, Justin Riddle<sup>2</sup>, Niffe Hermansson<sup>3</sup>, Matthew Sacchet<sup>4,5</sup>, Daneil Ingram<sup>6</sup>

<sup>1</sup>University of Oregon, Eugene, Oregon, USA. <sup>2</sup>Florida State University, Tallahassee, Florida, USA. <sup>3</sup>University of Auckland, Auckland, --, New Zealand. <sup>4</sup>Harvard Medical School, Boston, Massachusetts, USA. <sup>5</sup>Massachusetts General Hospital, Boston, Massachusetts, USA.

<sup>6</sup>EPRC, -, -, USA

### 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.

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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.

Jenny A Vanbergen

JungCity, West Malling, Kent, United Kingdom

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.

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#### 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

Rubin Naiman

University of Arizona, Tucson, AZ, USA

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.

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Keywords

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

## Three keys to Conscious AI

Jin Ma<sup>1</sup>, Kao-Cheng Huang<sup>2</sup>, Kewei Chen<sup>3</sup>

<sup>1</sup>Nanjing Medical University, Nanjing, Jiangsu, China. <sup>2</sup>Dharma Academy, Miaoli, Taiwan, Taiwan. <sup>3</sup>The University of Arizona, Chandler, Arizona, USA

## 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](mailto:jasonma@depontech.com) )

Poster - 1 (Wed)

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

James M Corrigan

Stony Brook University, Stony Brook, NY, USA. Scientific and Medical Network, London,  
London, United Kingdom. Academy for the Advancement of Postmaterialist Sciences,  
Phoenix, AZ, USA

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.

C - 16

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

Bruce Nappi

A3 Research Institute, West Brookfield, MA, USA

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.

Poster - 1 (Wed)

#### 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

Karalee M Kothe<sup>1</sup>, Philip Roehrs<sup>2</sup>, Bruce Greyson<sup>2</sup>, Allan Kellehear<sup>3</sup>, Michael Nahm<sup>4</sup>, Chris Roe<sup>5</sup>, Natasha Tassel-Matamua<sup>6</sup>, Marjorie Woollacott<sup>7</sup>

<sup>1</sup>University of Colorado Denver, Denver, Colorado, USA. <sup>2</sup>University of Virginia, Charlottesville, Virginia, USA. <sup>3</sup>University of Vermont, Burlington, Vermont, USA. <sup>4</sup>Institute for Frontier Areas of Psychology and Mental Health, Freiburg, Baden-Württemberg, Germany. <sup>5</sup>University of Northampton, Northamptonshire, East Midlands of England, United Kingdom. <sup>6</sup>Massey University, Palmerston North, Manawatū-Whanganui, New Zealand. <sup>7</sup>University of Oregon, Eugene, Oregon, USA

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.

C - 2

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”

Cedric Cannard<sup>1,2</sup>, Cassandra Vieten<sup>3,4</sup>, Garret Yount<sup>1</sup>, Arnaud Delorme<sup>1,2,5</sup>

<sup>1</sup>Institute of Noetic Sciences, Novato, CA, USA. <sup>2</sup>Centre de Recherche Cerveau et Cognition (CerCo), CNRS, Université Paul Sabatier, Toulouse, Occitanie, France. <sup>3</sup>Arthur C. Clarke Center for Human Imagination, UCSD, San Diego, CA, USA. <sup>4</sup>Psychedelics and Health Research Initiative, UCSD, San Diego, CA, USA. <sup>5</sup>Swartz Center for Computational Neuroscience, Institute of Neural Computation (INC), UCSD, San Diego, CA, USA

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-corrected)

C - 10

Keywords

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



## Consciousness Force in a Dualist Universe or a Quantum Universe

James Gruhl

Massachusetts Institute of Technology, Cambridge, Massachusetts, USA. Gruhl Associates, Tucson, Arizona, USA

## 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](mailto:multicipation@gmail.com).

Poster - Remote (post)

Keywords

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

## Quantum Ontology of Emergence: Cosmogenesis and Consciousness

Deborah Kala Perkins

Ubiquity University, Woodside, CA, USA

## 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.

C - 19

#### Keywords

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

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

Richard H Morley, Logan T Trujillo

Texas State University, San Marcos, TX, USA

### 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.

C - 17

#### 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

Dorote (Weyers-)Lucci

Sofia University, Costa Mesa, California, USA

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.

C - 28

#### 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

Ruslana Remennikova<sup>1</sup>, Bernard Beitman<sup>2</sup>

<sup>1</sup>Virginia Commonwealth University, Richmond, VA, USA. <sup>2</sup>University of Virginia, Charlottesville, VA, USA

### 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.

Poster - 1 (Wed)

#### 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

Rahul Jain<sup>1</sup>, Tiago Quendera<sup>2</sup>, Mani Hamidi<sup>3</sup>, Mattia Bergomi<sup>4</sup>, Zachary F. Mainen<sup>2</sup>, Gautam Agarwal<sup>5</sup>

<sup>1</sup>Pomona College, Claremont, CA, USA. <sup>2</sup>Champalimaud Research, Lisbon, Estremadura, Portugal. <sup>3</sup>University of Tübingen, Tübingen, Baden-Württemberg, Germany. <sup>4</sup>Veos Digital, Rome, Province of Rome, Italy. <sup>5</sup>W. M. Keck Science Center, Claremont, CA, USA

### 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.

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C - 23

#### 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.

Benjamin Brodeur, [Antonio Zadra](#)

Université de Montréal, Montreal, QC, Canada

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 =  $39 \pm 12$  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  $3.0 \pm 1.2$  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.

Poster - 1 (Wed)

Keywords

dreams, dreaming, emotions, sleep

## Projection and Imagination in Human-AI relationships

Jonathan Erickson

California Institute of Integral Studies, San Francisco, CA, USA. Pacifica Graduate Institute, Carpinteria, CA, USA

### 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.

C - 1

Keywords

Artificial Intelligence, Relationships, Projection, Imagination, Jung



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

Roger Young

University of South Florida, Tampa, FL, USA

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 potently 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.

C - 29

#### 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.

Elena Bezzubova

UCI, Irvine, CA, USA

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.

C - 6

Keywords

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

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Measuring the Qualia of Awe

Jenny Simon

University of Arizona, Sierra Vista, AZ, USA

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.

C - 25

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

Teresa Michelle Nowak

Pacifica Graduate Institute, Tucson, AZ, USA

### 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.

C - 20

#### 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

Brandeis University, Waltham, Massachusetts, USA. University of Southern Maine, Portland,  
Maine, USA. Colorado Mesa University, Grand Junction, Colorado, USA

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-Disiplinary 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."

C - 10

#### 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?

PL - 7

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.

C - 29

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.

C - 29

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

Famira Racy, Makayla Vermette, Alain Morin

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.

C - 29

Keywords

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

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

Frank B Heile

Retired, Santa Clara, California, USA

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](http://www.frankheile.com)

C - 5

#### 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

New York University, New York, New York, USA

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.

PL-1

### Keywords

infant; consciousness; neural markers; theories of consciousness



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Cognition emerges from neural dynamics

Earl K. Miller

The Picower Institute for Learning and Memory and Department of Brain and Cognitive Sciences, Massachusetts Institute of Technology, Cambridge, MA, USA

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.

PL-2

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.

C - 8

Keywords

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

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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>

Existential Clinic 10

Keywords

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Reaching Deeper Levels of Persistent Awakening

Jeffery A. Martin

CIHS, Encinitas, CA, USA

Categories by Discipline

3.0 Cognitive Science and Psychology

Primary Topic Area - TSC Taxonomy

[03.03].....Other sensory modalities

Abstract

For over 10 years our research team has shared our findings on psychological methods that allow 70+% of people who use them to reach the earliest forms of Persistent Non-Symbolic Experience (i.e.: nonduality, enlightenment, persistent mystical consciousness, unity consciousness, etc.). In more recent years we've been working on how to help people reach much deeper stages of persistent awakening. As with initial persistent awakening, these later stages are proving much easier to access than was once suspected. This talk will briefly cover some of these later stages, and then share the insights we've learned from helping research participants to reach them.

C - 23

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.

Poster - 1 (Wed)

