

THURSDAY, APRIL 22, 2010

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| 7:30 am–8:30 am | REGISTRATION & CONTINENTAL BREAKFAST |
| 8:30 am–8:45 am | Welcome and Forum Overview – <i>William Linton</i> |
| 8:45 am–9:45 am | World Views, the Integral Age, and the Evolution of Consciousness – <i>Sean Kelly, Ph.D.</i> |
| 9:45 am–10:45 am | What are Entheogens and What Has Been Their Impact on Human Cultures and Institutions? <i>Dennis McKenna, Ph.D.</i> |
| 10:45 am–11:00 am | BREAK |
| 11:00 am–12:00 pm | Neurochemistry and Receptors as Mediators of Consciousness – <i>David E. Nichols, Ph.D.</i> |
| 12:00 pm–1:00 pm | LUNCH |
| 1:00 pm–2:30 pm | Panel Discussion: Sean Kelly, Ph.D., Dennis McKenna, Ph.D., David E. Nichols, Ph.D. – <i>Steve Paulson (Moderator)</i> |
| 2:30 pm–2:45 pm | BREAK |
| 2:45 pm–3:45 pm | Experimental Studies of Psilocybin Occasioned Mystical-Type Experiences: Findings and Implications – <i>Roland Griffiths, Ph.D.</i> |
| 3:45 pm–5:00 pm | RECEPTION |

FRIDAY, APRIL 23, 2010

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| 7:30 am–8:30 am | REGISTRATION & CONTINENTAL BREAKFAST |
| 8:30 am–8:45 am | Welcome and Day Two Overview – <i>William Linton</i> |
| 8:45 am–9:45 am | Psychological Dimensions, Neural Networks and Neurotransmitter Dynamics Associated with Psychedelic-induced Altered States of Consciousness in Humans – <i>Franz X. Vollenweider, M.D.</i> |
| 9:45 am–10:00 am | BREAK |
| 10:00 am–10:30 am | Neuropsychological Approaches in Understanding Psychedelic-induced States of Consciousness – <i>Michael Kometer, M.S.</i> |
| 10:30 am–11:30 am | The Phenomenology and Therapeutic Effects of Entheogens in Cancer Patients: – <i>Charles S. Grob, M.D.</i> |
| 11:30 am– 12:30 pm | LUNCH |
| 12:30 pm–2:00 pm | What Can Neuroscience Tell Us About Consciousness? The Role of Integrative Brain Mechanisms in Consciousness – <i>Antoine Lutz, Ph.D.</i> Neuroscientific Research on Meditation: Implications for Understanding Consciousness – <i>Richard J. Davidson, Ph.D.</i> |
| 2:00 pm–2:15 pm | BREAK |
| 2:15 pm–3:30 pm | Panel Discussion: Richard J. Davidson, Ph.D., Charles Grob, M.D., Michael Kometer, M.S., Antoine Lutz, Ph.D., Franz X. Vollenweider, M.D. – <i>Roland Griffiths, Ph.D.</i> – <i>Moderator</i> |
| 3:30 pm–3:45 pm | BREAK |
| 3:45 pm–4:45 pm | Science, Consciousness and Light: Beyond Space, Time, Matter – <i>Peter Russell</i> |
| 4:45 pm–5:15 pm | Closing Meditation – <i>Peter Russell</i> |
| 5:15 pm–6:00 pm | RECEPTION |

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- Center for Spirituality and Healing, University of Minnesota
- Wisconsin Academy for Entrepreneurship and Enterprise Growth
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9th Annual International Bioethics Forum
Taking the Measure of the Magic Mirror
Toward a Science of Consciousness



April 22-23, 2010
BioPharmaceutical Technology Center, Madison, WI

What do you think about when you think about thinking? About experiencing? What is consciousness?

Join leaders in their fields in exploring many dimensions of this fascinating - and elusive - topic.

- What can we learn from thinkers of the past - how did they frame perception and reality?
- What are entheogens and what has been their impact on human cultures and institutions?
- How have altered states of consciousness influenced human history, culture and institutions?
- Can consciousness be defined by brain chemistry, and, if so, how?
- What are we learning about health and well being from research efforts and clinical studies that examine the neural basis of altered states of consciousness?
- What are the roles of mindfulness and meditation in the exploration and evolution of consciousness?

For more information & to register, please visit: www.btc.org

Presenters

- Richard J. Davidson, Ph.D.** Director, Waisman Laboratory for Brain Imaging and Behavior; Director, Laboratory for Affective Neuroscience; William James and Vilas Research Professor of Psychology and Psychiatry, University of Wisconsin–Madison
- Roland Griffiths, Ph.D.** Professor of Behavioral Biology, Department of Neuroscience, Johns Hopkins University School of Medicine
- Charles S. Grob, M.D.** Chief, Child Psychiatry; Professor, Psychiatry and Biobehavioral Sciences, David Geffen School of Medicine, University of California–Los Angeles
- Sean Kelly, Ph.D.** Professor, Philosophy, Cosmology, and Consciousness, California Institute of Integral Studies
- Michael Kometer, M.S.** Doctoral Candidate & Researcher, Neuropsychopharmacology and Brain Imaging Research Group, University of Zurich
- William Linton** Chairman & CEO, Promega Corporation
- Antoine Lutz, Ph.D.** Associate Scientist, Waisman Lab for Brain Imaging and Behavior, University of Wisconsin–Madison
- Dennis McKenna, Ph.D.** Assistant Professor, Center for Spirituality and Healing, University of Minnesota
- David E. Nichols, Ph.D.** Robert C. and Charlotte P. Anderson Distinguished Chair, Department of Medicinal Chemistry and Molecular Pharmacology, Purdue University
- Steve Paulson** Executive Producer, To The Best of Our Knowledge, Wisconsin Public Radio and Public Radio International
- Peter Russell** Fellow, Institute of Noetic Sciences, The World Business Academy and The Findhorn Foundation
- Franz X. Vollenweider, M.D.** Professor, University Hospital of Psychiatry; Director, Neuropsychopharmacology and Brain Imaging & Heffter Research Center Zurich, University of Zurich

Abstracts

World Views, the Integral Age, and the Evolution of Consciousness

Sean Kelly, Ph.D.

This talk will help set a context for the rich offerings of the conference by outlining the evolution of consciousness leading to our critical moment in this first century of the new millennium. The nature of world views and the major mutations of consciousness that have unfolded from prehistory to the present will be considered. Drawing from the history of religion and philosophy, transpersonal psychology, and the new sciences, something of the new integral paradigm or world view that is emerging in concert with what many see as the birth of a new era will be shared. Variouslly described as The Integral Age, the Planetary Era, The Great Turning, and the Second Axial Age, this new era and its associated emerging worldview holds the promise of healing the modern split between matter and consciousness, fact and value, and the secular and the spiritual. Guided by the principles of wholeness and complexity, the world is no longer the object of a mechanistic and disenchanting gaze, but comes back to life and is re-enchanting, even as it struggles through a painful and uncertain birth.

The Impact of Entheogens on Human History, Culture, and Evolution

Dennis McKenna, Ph.D.

Entheogens, psychedelic plants and fungi, have been used in human societies for at least 60,000 years, and probably much longer. The psychedelic experience represented a *Mysterium Tremendum et Fascinum* – a fearful and fascinating mystery – for our Paleolithic ancestors and it represents much the same for us today. Psychedelics afford direct experience of the numinous, a sense of the wholly other – and such experiences engender notions of the divine, the supernatural, the infinite, and of non-human intelligence. At the same time, the psychedelic experience is humbling, reminding us forcefully of our limitations in time and space even as it reveals dimensions far more vast and strange than we can imagine.

These perceptions have profoundly influenced the development of human culture, history, institutions, and possibly even evolution, though usually their origin is not acknowledged, and they most commonly are actively suppressed or denied. On occasion, psychedelics have erupted into the historical continuum in dramatic ways, such as the ‘psychedelic revolution’ of the 60s, or outbreaks of ergotism in the Middle Ages; more often, their influence has been subtle, but on-going. From pre-history to the present, psychedelics have been available to anyone with a will to pursue arcane knowledge, and psychedelic experiences arising from them continue to influence our understanding of what it is to be human, minded, and conscious in a universe that appears to be none of these. This talk will examine psychedelics in their cultural, historical and evolutionary contexts and speculate on their possible significance to our species and its current existential dilemma.

Neurochemistry and Receptors as Mediators of Consciousness

David E. Nichols, Ph.D.

In the science of pharmacology, if one wishes to understand some physiological process, one can administer a substance that perturbs the process in some way, and then observe some effect that hopefully leads to understanding of the normal unperturbed process. Likewise, if one wishes to understand consciousness, the same principle should apply, and one could employ a substance that perturbs consciousness. As we know, psychedelics produce dramatic alterations in consciousness and would therefore seem to be perfect tools to help understand consciousness. Thus, this presentation will focus on some of the molecular aspects of psychedelics, including their brain targets, how they interact with those targets, the kinds of signals they generate, and some of the brain areas where these effects occur. There is now a general consensus that psychedelics activate the 5-HT_{2A} type of serotonin receptor. These receptors are quite ancient, probably differentiating from the larger serotonin receptor family about 600-700 million years ago. Thus, these receptors have been around since the evolution of nervous systems began and, one might argue, have therefore been integrated into brain function at a very fundamental level. Reductionist neuroscience approaches to the study of this receptor in the brain will no doubt ultimately elucidate many of the components and processes involved in consciousness; the so-called “easy problems” of consciousness. It seems unlikely, however, that this knowledge will lead in any direct way to understanding consciousness. The explanatory gap between physical processes and consciousness is not one that will be easily bridged, but understanding how some of the component processes are affected by psychedelics may at least give some appreciation for the difficulty of the problem.

Experimental Studies of Psilocybin Occasioned Mystical-Type Experiences: Findings and Implications

Roland Griffiths, Ph.D.

This presentation will begin with a brief review of some history of psilocybin use and research. The primary focus will be a description of a series of studies being conducted at Johns Hopkins investigating the effects of psilocybin. Emphasis will be given to published and unpublished studies in healthy volunteers showing that psilocybin can occasion mystical-type experiences in a high proportion of volunteers. The implications of these findings for future basic and applied research on consciousness will be discussed. Brief descriptions will also be given of an ongoing psilocybin therapeutic trial with psychologically distressed cancer patients and a pilot study examining the facilitation of cigarette smoking cessation treatment by psilocybin.

Psychological Dimensions, Neural Networks and Neurotransmitter Dynamics Associated with Psychedelic-induced Altered States of Consciousness in Humans

Franz X. Vollenweider, M.D.

First, new data on the phenomenology and structure of psychedelic-induced altered states of consciousness (ASC) based on a meta-analysis of a series of controlled studies conducted in healthy human subjects (n= 534) using state-of-the art psychometric and neuropsychological measures will be presented. Second, it will be demonstrated that specific etiology-independent key dimensions of ASC, such as the experience of unity, ecstatic or anxious loss of ego-boundaries, religious exaltation or visionary states, are associated with circumscribed changes in brain activity in various extended neural networks. Third, novel data indicating that the serotonin 5-HT_{2A} receptor together with the glutamate system plays a key role in the mechanism of action of classic hallucinogens such as psilocybin will be presented, and the implications of this recent finding for the understanding and putative treatment of some psychiatric disorders will be discussed.

Neuropsychological Approaches in Understanding Psychedelic-induced States of Consciousness

Michael Kometer, M.S.

New evidence regarding how psychedelic-induced alterations in spatiotemporal brain dynamics are linked to phenomenological dimensions of altered states of consciousness will be presented. This association will be characterized by new findings obtained in neuropsychological experiments on the influence of the classic hallucinogen psilocybin on perception, emotion, and cognition. A central focus will be to describe how psilocybin modulates specific stages of visual processing and how these alterations may give rise to visual hallucinations. Finally, the significance of modern neuropsychological concepts to further our understanding of psychedelic states, and its impact for the treatment of psychiatric disorders, will be considered.

The Use of Psilocybin in Psychiatry: An Experimental Model with Advanced-Stage Cancer Patients

Charles S. Grob, M.D.

This talk will examine the rationale and research record of a hallucinogen treatment model using psilocybin to treat severe anxiety and demoralization in patients with advanced metastatic cancer. The ethnobotany and anthropology of hallucinogenic mushrooms, where psilocybin occurs in nature, will be reviewed, as will the chemistry and toxicity of psilocybin. The prior research record from the 1950s to the early 1970s with hallucinogen treatment will be discussed, with particular emphasis on research examining the effects of hallucinogens in terminal cancer patients. An examination of more recent research over the past decade with psilocybin will also be presented, as will our recently completed pilot research study at Harbor-UCLA Medical Center investigating the safety and efficacy of psilocybin in the treatment of existential anxiety and demoralization in patients with advanced cancer.

What Can Neuroscience Tell Us About Consciousness? The Role of Integrative Brain Mechanisms in Consciousness

Antoine Lutz, Ph.D.

The emergence of a unified cognitive moment relies on the coordination of scattered mosaics of functionally specialized brain regions. Here we review the mechanisms of large-scale integration that counterbalance the distributed anatomical and functional organization of brain activity to enable the emergence of coherent behavior and cognition. Although the mechanisms of large-scale integration during consciousness are still largely unknown, we argue that a plausible candidate for the emergence of an unified moment of consciousness is the formation of dynamic links mediated by neural synchrony over multiple oscillatory frequency bands.

Neuroscientific Research on Meditation: Implications for Understanding Consciousness

Richard J. Davidson, Ph.D.

This talk will present an overview of studies conducted in our laboratory over the past 6 years on neural changes associated with different forms of meditation. Distinctions among three major forms of meditation practice will be made: Focused Attention; Open Monitoring; and Positive Affect Training. These different forms of meditation have different neural and behavioral effects. Data from studies on long-term meditation practitioners as well as those with shorter durations of training will be highlighted. Implications of these findings for understanding variations in conscious states and traits will be discussed. The overall conclusions from these studies is that one can transform consciousness in a relatively enduring way that has consequences for well-being and health.

Science, Consciousness & Light: Beyond Space, Time, Matter

Peter Russell

What is consciousness? Modern science, which has enjoyed so much success in furthering our understanding of the material world, has failed to account for consciousness. Yet without consciousness there would be no science. As far as the contemporary scientific worldview is concerned, consciousness is one big anomaly.

Integrating physics, psychology, philosophy and mysticism, Peter Russell arrives at a new worldview in which consciousness is as fundamental as space, time, and matter—or even more so.

With consciousness as primary, everything remains the same and everything changes. Some of the paradoxes of relativity and quantum theory become less puzzling, and light takes on a special significance, bridging the realms of mind and matter. This new worldview also leads to a radically different understanding of the world’s spiritual traditions.

Closing Meditation

Science can only give us a third-person account of what is essentially a first-hand phenomenon. Throughout history, meditation has been advocated as a practice for directly knowing the true nature of consciousness.

In this closing session, Peter Russell will guide us through a meditation experience that emphasizes complete effortlessness and opening to the fullness of the present moment. This is an inner portal through which we can come to know first-hand the transcendental states of which the great mystics have always spoken.