

# 16th International Conference on Religion & Spirituality in Society

*Plenary Session*

*Entheogens in the History of Religions,  
Contemporary Healing, and Human Evolution*

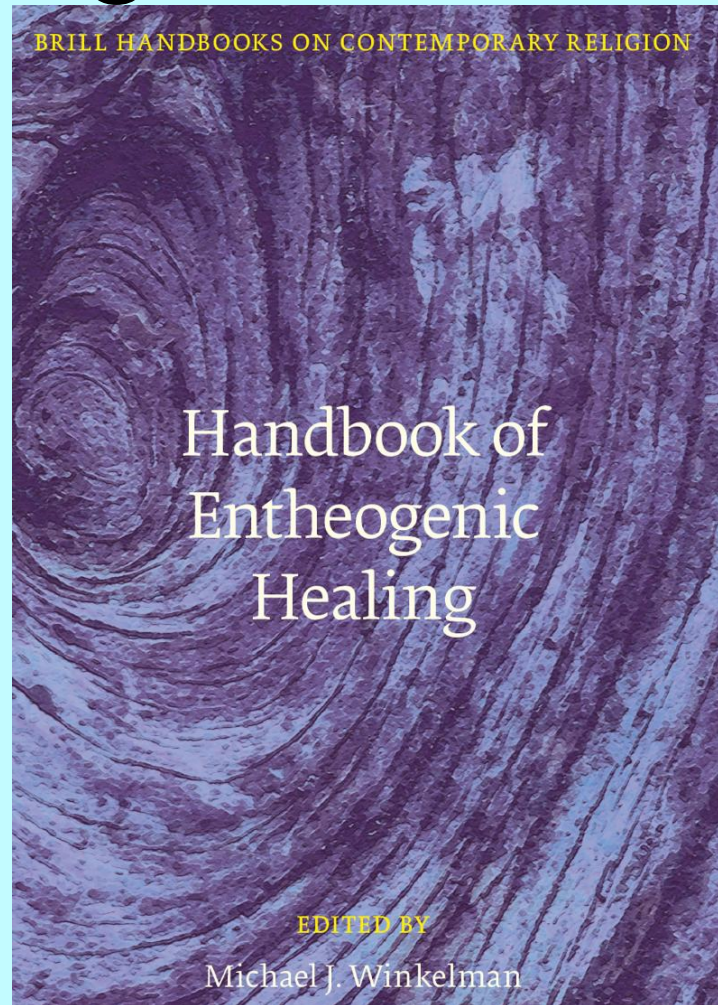
*Dr. Michael J. Winkelman*

*Arizona State University (retired)*

*School of Human Evolution and Social Change*

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# Can Religion Inform Science?



CROSS-CULTURAL AND  
EVOLUTIONARY PERSPECTIVES

# 🔍 Psychedelics in the Past

Primate, Hominid and Forager Fungi Consumption  
Psilocybin found in most ecozones worldwide

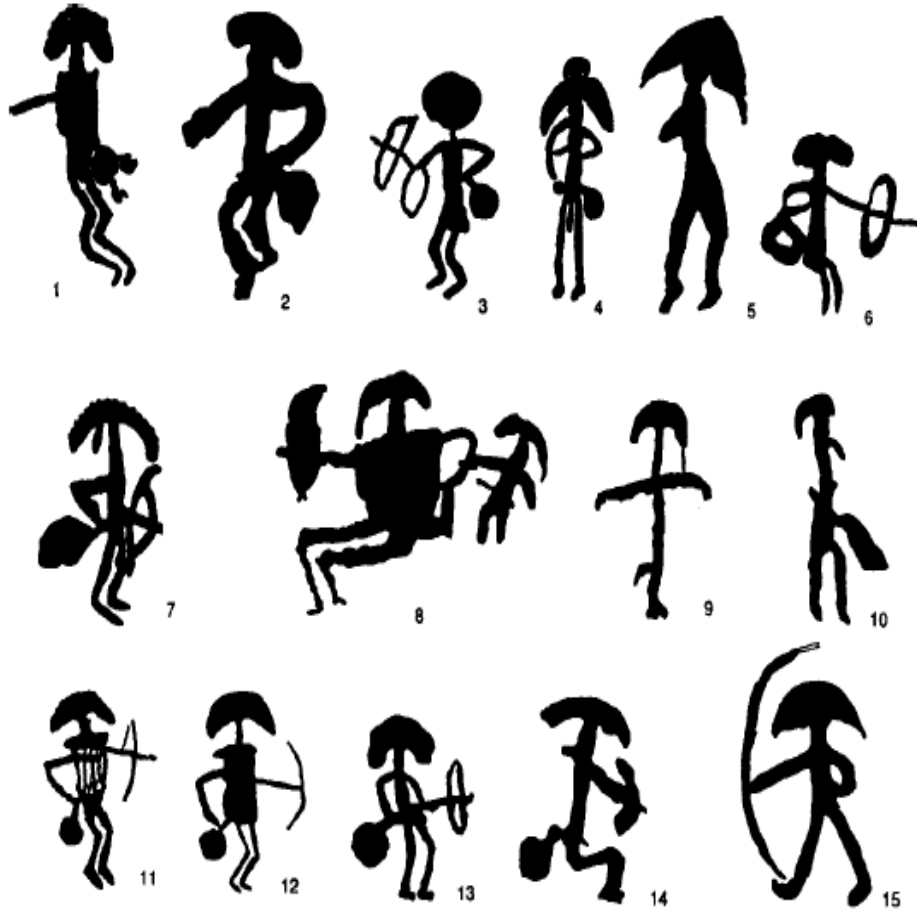


- 🔍 Genera with
- 🔍 psilocybin
  - *Psilocybe*
  - *Panaeolus*
  - *Gymnopilus*
  - *Copelandia*
  - *Hyboloma*
  - *Pluteus*
  - *Inocybe*
  - *Conocybe*
  - *Panaeolina*

# Amanita species worldwide



# Siberian Rock Art



*Panaeolus cinctulus*

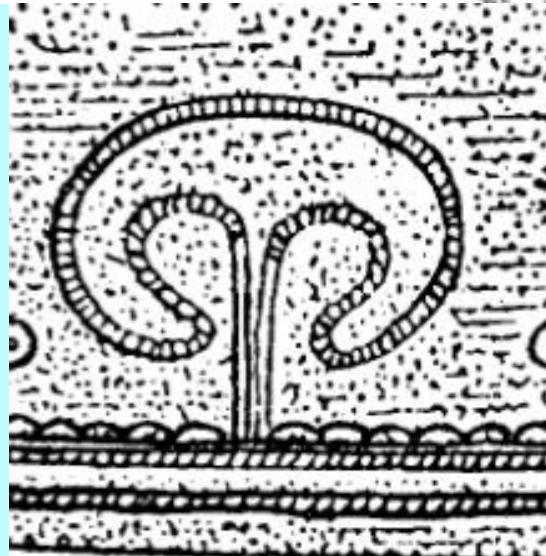


*Amanita muscaria*



*Gymnopilus junonius*

# Bronze Age Europe



# Spain

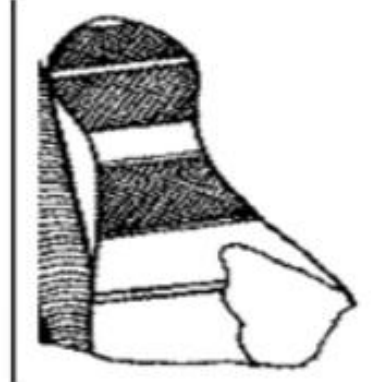


*Psilocybe hispanica*

# Africa-Algeria



# Egypt



# Maya and Guatemala



20



# Mesoamerica



# Columbia

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# Argentina



# Peruvian Mushroom Stones



# “Psychedelics in Pre-history and World Religions” Special Issue *Journal of Psychedelic Studies*

ORIGINAL ARTICLE

*Journal of Psychedelic Studies* 3(2), pp. 43–62 (2019)

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## **Introduction: Evidence for entheogen use in prehistory and world religions**

MICHAEL WINKELMAN\*

Retired, School of Human Evolution and Social Change, Arizona State University, Tempe, AZ, USA

(Received: July 7, 2019; accepted: August 11, 2019)

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This introduction to the special issue reviews research that supports the hypothesis that psychedelics, particularly psilocybin, were central features in the development of religion. The greater response of the human serotonergic system to psychedelics than is the case for chimpanzees' serotonergic receptors indicates that these substances were environmental factors that affected hominin evolution. These substances also contributed to the evolution of ritual

# Mushroom Stones-India





# Khajurajo India



A. *Amanita muscaria*



B. Shantinath 1



A. *Psilocybe cubensis*



B. Blue Spots



C. Parshwanath Temple



D. *Psilocybe pseudoaztecorum*

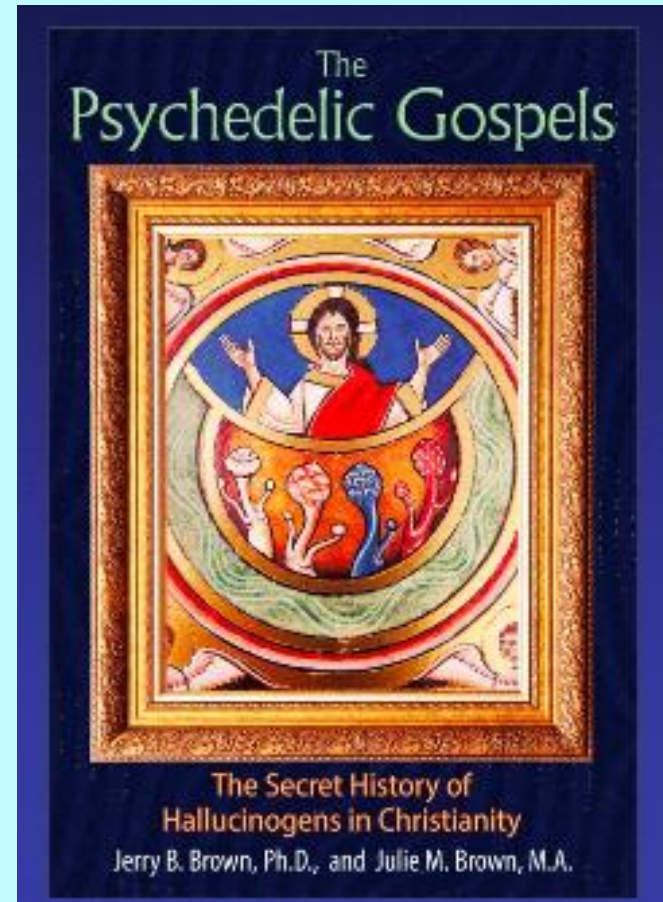
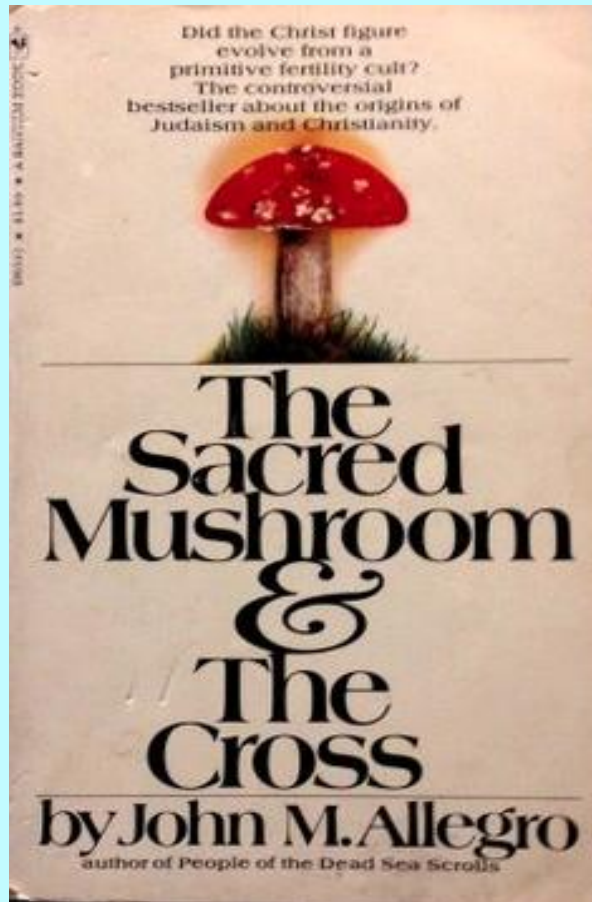


E. Chitragupta



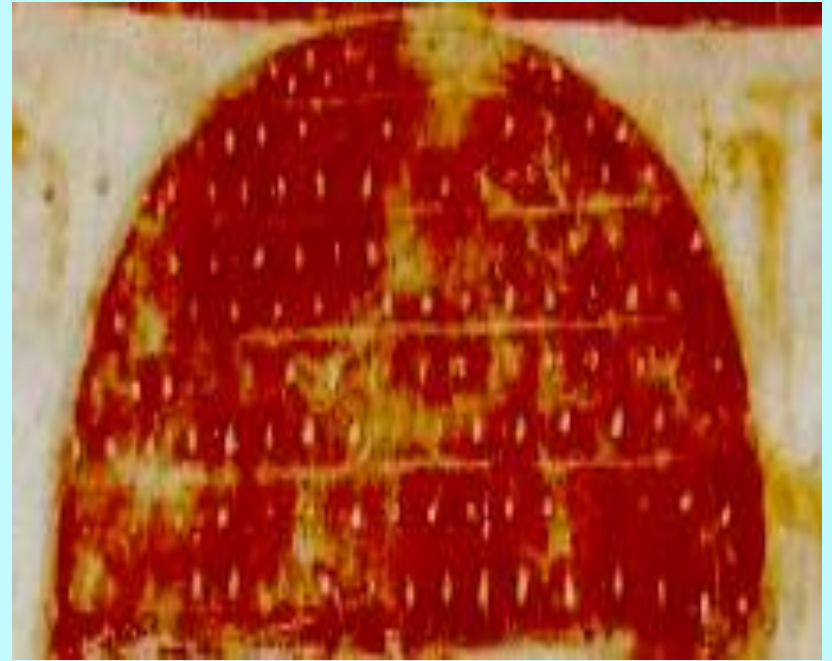
F. Lakshman NE

# Christianity



# Plaincourault Fresco-France

## “Temptation in the Garden of Eden”



# Conversion de St. Eustace

## Chartres Cathedral, France, 12<sup>th</sup> Century





# Transfiguration of Christ

## St. Michael's Church, Germany, 1020



# Great Canterbury Psalter, c. 1200 Canterbury Cathedral, England



Clavicus purpurea,  
ergot fungi



# Why is Entheogenic Use of Psychedelics Transcultural?

Pharmacological effects produce mystical experiences

Home > Psychopharmacology > Article

## Psilocybin can occasion mystical-type experiences having substantial and sustained personal meaning and spiritual significance

Original Investigation | Published: 07 July 2006  
Volume 187, pages 268–283, (2006) [Cite this article](#)

[Save article](#)



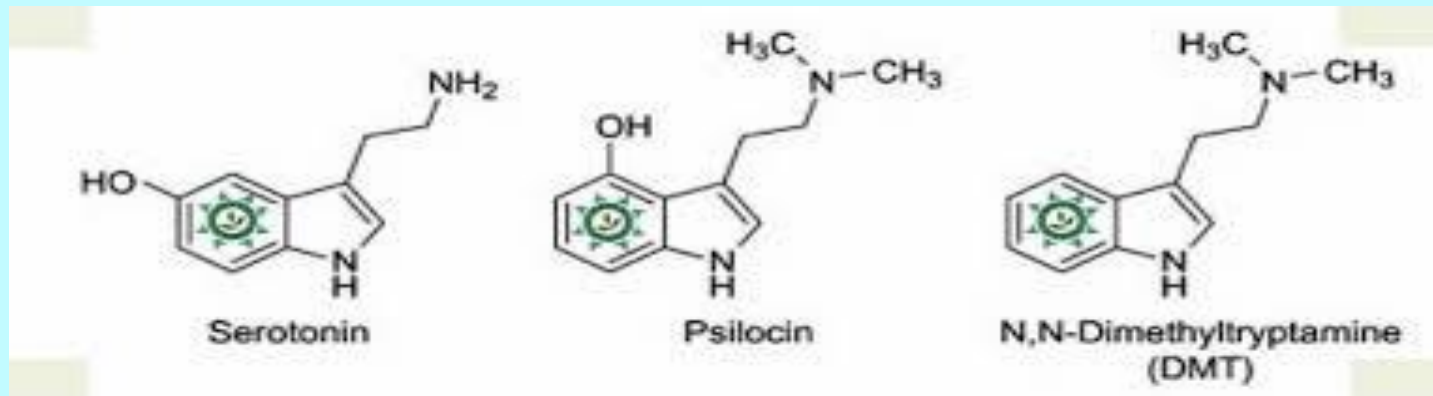
**Psychopharmacology**  
[Aims and scope](#) →  
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R. R. Griffiths [✉](#), W. A. Richards, U. McCann & R. Jesse



WHY DO 5HT2A PSYCHEDELICS  
PRODUCE MYSTICAL EXPERIENCES?

# Psychedelics (5HT2A) and Serotonin

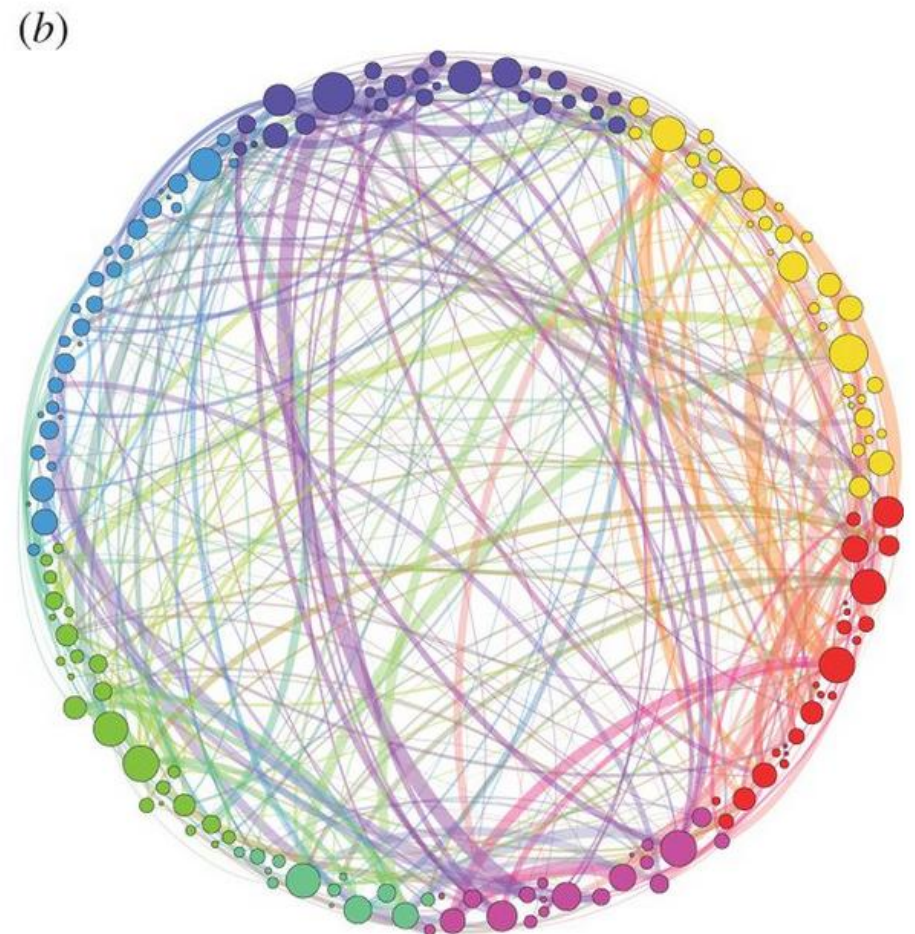
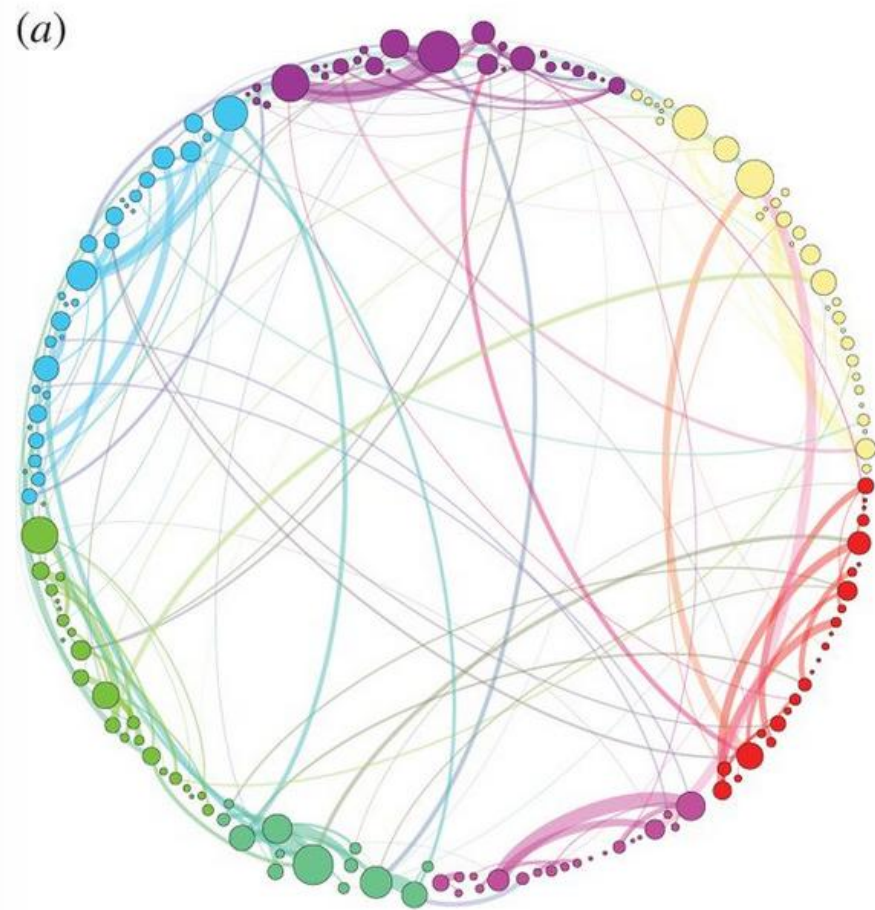


- Psychedelics' Serotonergic Mechanisms
  - Neurotransmitter agonist, especially serotonin 5HT<sub>2A</sub>
  - Range of Serotonin functions--Neuromodulation
  - Drug Instrumentalization
  - Psychosocial effects

# NEUROMODULATORY FUNCTIONS OF SEROTONIN

- SLEEP AND AROUSAL
- THERMOREGULATION
- CARDIOVASCULAR
- SENSORY PROCESSING
- MOTOR ACTIVITY AND COORDINATION
- HORMONES, DRIVES-HUNGER, PAIN
- LEARNING AND MEMORY
- COGNITION AND DECISION MAKING
- TRIUNE BRAIN MODULATION

# Hyper-Associative Brain Connectivity



**PSYCHEDELICS AS PSYCHOINTEGRATORS**

# Adaptive Effects of 5HT<sub>2A</sub> Stimulation

- Neurogenesis and elevated cortical plasticity
- Enhanced associative learning
- Elevated capacity to mediate stress and reduce anxiety
- Enhanced patience and coping
- Enhanced creativity and sociality
- Enhanced ability to resolve crises with active strategies rather than enduring problems

# What were the adaptations of these potentials?

RICHARD EVANS SCHULTES & MICHAEL WINKELMAN

## **The Principal American Hallucinogenic Plants and their Bioactive and Therapeutic Properties**

### **Abstract**

The indigenous cultures of the Americas have the most wide spread use of hallucinogenic species of any area of the world. They are employed among native cultures of the Americas for medicinal and sacred purposes, as well as for a variety of other objectives – protection in travel and home life; agricultural and hunting activities; controlling and adjusting social relations amongst individuals, villages and groups; and influencing human welfare before and even after death. The principal families and genera of hallucinogenic plants – *Strophuraceae*, *Myristicaceae*, *Leguminosae*, *Malpighiaceae*, *Cactaceae*, *Convolvulaceae* and *Solanaceae* – are reviewed here to illustrate their pre-historical and historical background, and their botanical, biochemical and pharmacological properties. The ethnographic data on indigenous uses of these substances are briefly summarized to illustrate the range of effects obtained with these plants in religious rituals and cultural therapies. Highly developed healing traditions selectively utilize different species of the same genus to obtain specific desired effects provided by the pharmacological variation within and across genera.

# AYAHUASCA HEALING

SPIRITUAL, PHYSICAL,  
EMOTIONAL, MENTAL,  
INTERPERSONAL

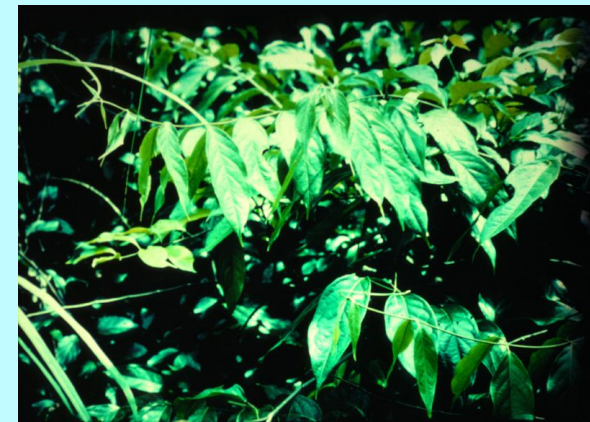
SPIRITUAL-- SUSTO, SOUL LOSS,  
SORCERY  
SOCIAL AND INTERPERSONAL CONFLICT  
SOCIAL INCOMPETENCE  
SEXUAL DYSFUNCTION  
EMOTIONS: STRESS, FEAR, TRAUMA,  
ENVY, ANGER, RESENTMENT  
INTEGRATION & ACCULTURATION



*Banisteriopsis caapi*



*Psychotria viridis*



*Diplopterys cabrerana*

# USES OF CACTACEAE (Peyote, San Pedro)

- Supernatural– sorcery, witchcraft
  - Balance spiritual forces,
  - Purification
- Resolving problems and conflicts
- Restore equilibrium in life
- Incentive to work, change
- Acquiring career, knowledge and guidance and good fortune
- Childbirth and fertility
- Problems of acculturation
- Addiction and Identity problems



# CONVOLVULACEAE

*Ipomoea corymbosa*, “Morning Glory,” Ololiúqui

- HEALING USES
- Spiritual -espanto, mal ojo, soul loss, curses and contamination
- Physical illness-- Fevers, infections, swelling, rheumatism, diabetes, hypertension, dysentery, constipation, fatigue, arthritis, rheumatism, kidney ailments, sexual dysfunction, labor and delivery



# Psilocybin Uses in Meso-America

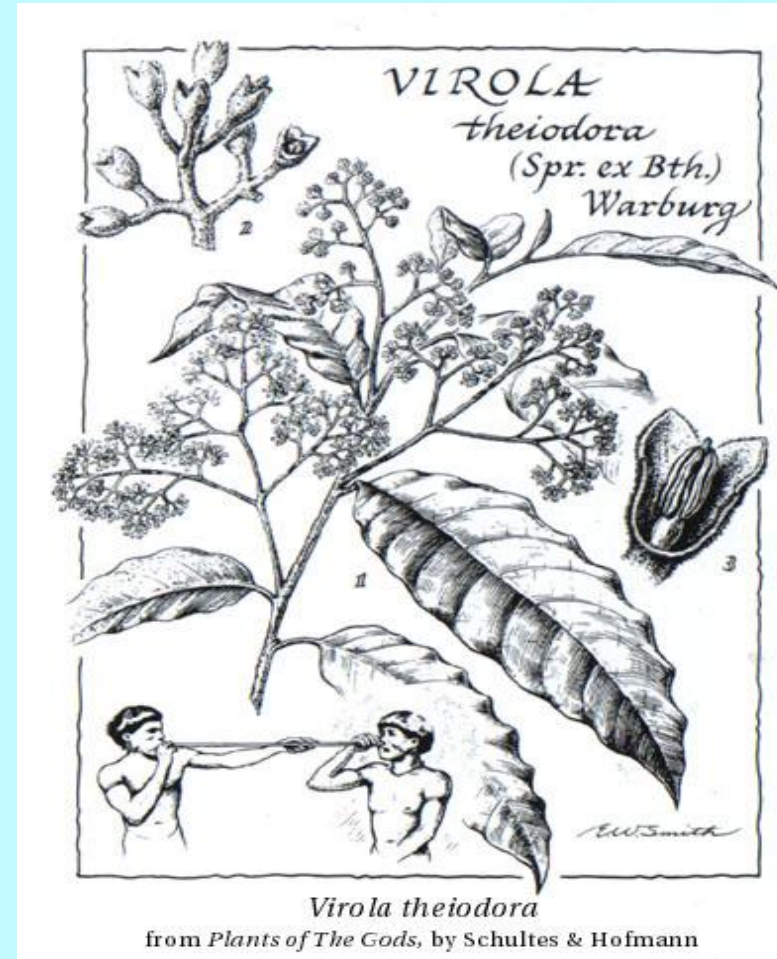
- SPIRITUAL, PHYSICAL, SOCIAL, EMOTIONAL CONDITIONS
- DIVINATION-- DIAGNOSIS, LOST ANIMALS, THIEVES, CONDITION OF FAMILY
- SPIRITUAL-- SORCERY, SPIRIT OBSESSIONS, HEXES, PURIFICATION
- DISPUTE RESOLUTION
- PHYSICAL ILLNESS  
CHILLS, FEVERS, HEADACHE, INFECTIONS, TOOTHACHE



# MYRISTICACEAE (*Virola* sp.)

Snuffs & pastes– Paric , Yakee, Epena, Nyakwana

SHAMANIC HEALING  
MOUTH SORES  
STOMACH PROBLEMS,  
CUTS, WOUNDS  
INTESTINAL WORMS  
BLADDER PROBLEMS  
CHILDBIRTH



# ANADENANTHERA SNUFFS

- SHAMANIC ACTIVITIES
  - DIVINATION AND DIAGNOSIS
  - HEALING
  - SPIRIT COMMUNICATION
- BATTLE AND WARFARE
  - STRENGTH AND STAMINA
- ANCESTOR WORSHIP
- HARVEST FESTIVALS
- SORCERY



# DIVERSE USES– PLACEBO? OR PHYSIOLOGICAL EFFECTS?

- Serotonin 5HT<sub>2A</sub> diverse effects
- Neuroplasticity
- Personal effects
- Social effects
- Cognitive effects

# Psychedelics as Psychoplastogens

- Structural and functional neuroplasticity across levels of the brain
  - Neuroplasticity can increase neurogenesis, stimulate pathways, reconfigure networks
  - Induce long-lasting neural changes
  - Plasticity enhances environmental sensitivity, learning, extinction, cognitive flexibility
- Encourage new behavioral adaptations
- Evolutionary adaptations



# Psychedelics, Sociality, and Human Evolution

José Manuel **Rodríguez Arce**<sup>1\*</sup> and Michael James **Winkelman**<sup>2</sup>

<sup>1</sup> Evolutionary Anthropologist, Independent Researcher, San José, Costa Rica, <sup>2</sup> Retired, School of Human Evolution and Social Change, Arizona State University, Tempe, AZ, United States

Our hominin ancestors inevitably encountered and likely ingested psychedelic mushrooms throughout their evolutionary history. This assertion is supported by current understanding of: early hominins' paleodiet and paleoecology; primate phylogeny of mycophagical and self-medicative behaviors; and the biogeography of psilocybin-containing fungi. These lines of evidence indicate mushrooms (including bioactive species) have been a relevant resource since the Pliocene, when hominins intensified exploitation of forest floor foods. Psilocybin and similar psychedelics that primarily target the serotonin 2A receptor subtype stimulate an active coping strategy response that may provide an enhanced capacity for adaptive changes through a flexible and associative mode of cognition. Such psychedelics also alter emotional processing, self-regulation, and social behavior, often having enduring effects on individual and group well-being and sociality. A homeostatic and drug instrumentalization perspective suggests that incidental inclusion of psychedelics in the diet of hominins, and their eventual addition to rituals and institutions of early humans could have conferred selective

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**Edited by:**  
Antonio Benítez-Burraco,  
Seville University, Spain

# SOCIAL EFFECTS



## **Enhanced Sociality**

Social approach and interaction

Reduced fear and exclusion

Enhanced emotional self-control and tolerance

Pro-social attitudes and social connectedness

Increases in Extraversion and Openness

Lasting altruistic effects

# COGNITIVE EFFECTS



ENHANCED INFO

INTEGRATION

Enhanced mental representations

Unconventional creative  
associations

Perspective change--Improved  
problem-solving

Enhanced insight and awareness

**Improved Cognition->**

PSYCHOINTEGRATION--

INTEGRATION OF

BEHAVIOR, EMOTION AND

COGNITION

Stoned Ape -> Enlightened Ape

# HOW WERE THESE EFFECTS MANAGED BY CULTURES?

## • EVOLVED PSYCHOLOGY OF SET & SETTING

8

 **frontiers**  
in Pharmacology

REVIEW  
published: 23 February 2021  
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### SHAMANIC GUIDELINES FOR PSYCHEDELIC MEDICINE

MICHAEL J. WINKELMAN

### The Evolved Psychology of Psychedelic Set and Setting: Inferences Regarding the Roles of Shamanism and Entheogenic Ecopsychology

Michael James Winkelman <sup>\*†</sup>

School of Human Evolution and Social Change, Arizona State University, Tempe, AZ, United States

This review illustrates the relevance of shamanism and its evolution under effects of psilocybin as a framework for identifying evolved aspects of psychedelic set and setting. Effects of 5HT2 psychedelics on serotonin, stress adaptation, visual systems and personality illustrate adaptive mechanisms through which psychedelics could have enhanced hominin evolution as an environmental factor influencing selection for

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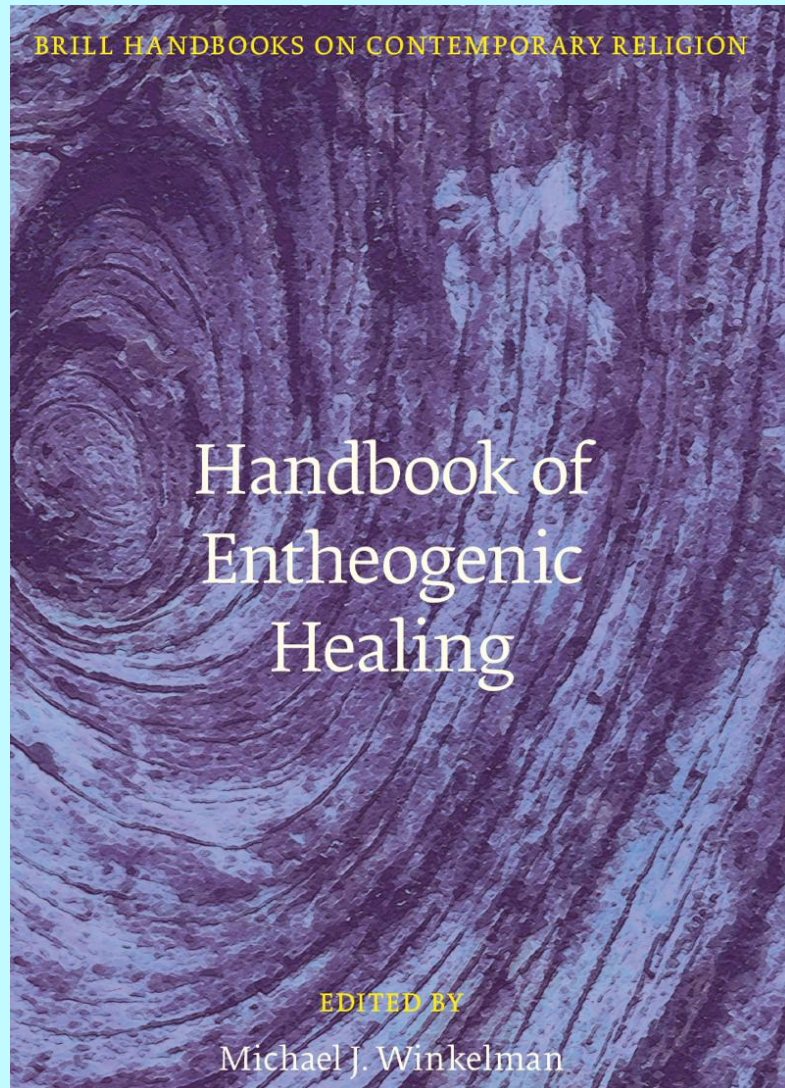
The use of psychedelic substances for medicinal and therapeutic purposes has been around for many thousands of years. These substances are closely related to the practices of shamanism, which has an antiquity of 40,000 years or more, stretching back to the dawn of modern human cultural capacities (Lewis-Williams 1997; Clottes and Lewis-Williams 1998; Ryan 1999; Winkelman 2002a, 2004a). Ritualized use of psychedelic substances likely has a similar antiquity because hunter-gatherer diets inevitably included such substances

# Drug Instrumentalization

Adaptive benefits in socio-cognitive niche

- Amplify environmental connection
- Increased pro-sociality– extraversion and openness
- Improved cognition, better learning & new perspectives
- Enhanced group decision-making
- Facilitation of collective ritual and religious activities
- Manage psychological distress and treat health problems

# ENTHEOGENIC THERAPY IN CROSS-CULTURAL PERSPECTIVE



PREPARATION  
RITUAL CONTEXT  
RITUAL TECHNIQUES  
VISION FUNCTIONS  
HEALING PROCESSES  
INTEGRATION

# Mazatec & Nahua Sacred Mushrooms

- Preparation: Purification, steam bath
  - Abstaining from sex, fasting
- Context: Night long ceremony in nature
  - Groups of family, community
- Techniques: songs a sacred language
  - Chants, whistling, dancing & percussion
- Visions: see mistakes that disrupted life
  - Show how to restore balance, health and well-being
- Integration – seclusion
- No sex or alcohol
  - Commitment to change behaviors

*Psilocybe caeruleascens*



## CHAPTER 2

### Contemporary Uses of Psychoactive Mushrooms in the Mazatec Highlands of Oaxaca, Mexico: Diversity, Knowledge and Healing

*Jesús M. González Mariscal and Genaro Guizasola Martínez*

### Healing of the Thunderbolt and Nahua Entheogenic Medicine (*Psilocybe aztecorum* and *Tagetes lucida*)

*Osiris Sinuhé González Romero and María del Carmen Macuil García*

# Peyote Mara'akate “singers” of the Wixárika (Huichol)

Preparation: Arduous pilgrimage, fasting, no sex

Context: Night-time collective ritual

Techniques: songs, drumming, dancing

Visions: Provide self-diagnosis

Integration – Journey home, Dreams, Purification, Ritual to untie the souls of group members



## CHAPTER 1

### *Wixárika Mara'akate: Healing with the Powers of Peyote*

*Stacy B. Schaefer*

# Virgin Seeds (Morning Glory) *Ipomea*

- Preparation: Sexual abstinence and diet
- Context: Nighttime in darkness with family, community. Group of fasters
- Visions: show circumstances causing disease and how to heal, seeds make person speak cause of problem, dreams show circumstances
- Integration: Dreams, diet, no sex
- Avoid strangers & contamination
- Self-healing thru visions, awareness



## CHAPTER 4

**Virgin Seed (*Ipomoea corymbosa* and *Ipomoea tricolor*) among Mixtec, Nahuas, and Mazatec of Guerrero, Oaxaca, and Puebla (Mexico)**

*Antonella Fagetti*

# Ayahuasca Traditions



## CHAPTER 6

### **Entheogenic Healing among the Kamëntsá Biyá: an Intercultural Dialogue between Tradition and the Post-modern World**

*Alejandro Marín Valencia and Luis Fernando Agreda Muchavisoy*

## CHAPTER 7

### ***Merayabo*: the Entheogenic Knowledge of the Shipibo-Konibo Nation**

*Pedro Favaron and Chonon Bensho*

## CHAPTER 8

### ***Vegetalista* Healing Traditions of the Peruvian Amazon**

*Evgenia Fotiou*

# Yajé in Kamëntsá Healing



- **Preparation:** diet, avoid alcohol and sex
- Seek mental, physical, emotional, & spiritual balance
- **Context:** Nighttime with family, community
- **Techniques:** purging provoked by *yajé*
- Musical, songs, incantations & prayers
- **Visions/ASC:** Reveal cause of illness and changes necessary for cure
- **Integration:** No sex, alcohol, conflictive relationships and late-night activities
- Change behavior and relationships

# ***Merayabo: the Entheogenic Knowledge of the Shipibo-Konibo Nation***

*Pedro Favaron and Chonon Bensho*

- Preparation: sexual abstinence and diet, Cleanse negative emotions
- Context: Nighttime, only healer takes ayahuasca
- Techniques: Songs produce regenerative healing energy
- Vision/ASC: Obtain medicinal songs, visionary hermeneutics,  
Visions interpreted thru *Merayabo*'s dreams
- Integration: Spiritual help to re-align life course, calm the body
- Recover health thru faith and bond of trust and respect with healer
- Change behavior and ignorance that caused illnesses, amend faults

# Vegetalismo Healing in Peru

- Preparation: Fasting, no sex, purify with special plant diet
- Context: Overnight with group
- Techniques: Songs, and fans, purifications, blowing tobacco
- Visions/ASC: Strengthen body, protect from sorcery, reveal causes of illness, enhance intuition
- Integration: Sexual abstinence
- Dreams reveal lessons
- Change emotions, self-perceptions & relationships



# Traditional Entheogenic Practices Reveal Evolved Psychology of Set and Setting

## I: Comparative Analysis of Traditional Entheogenic Healing

- \* Preparation-Abstinence & Diet
- \* Nighttime Community Ritual
- \* Mimetic Ritual Techniques
- \* Vision/ASC Functions
- \* Integration Processes- sexual abstinence

## -> II: Evolved Psychology of Ritual Healing

- \* 5-HT<sub>2A</sub> & Hormone Priming
- \* Social Integration & Dreams
- \* Endorphins+ & Emotions
- \* Visions, Songs, & Dreamtime
- \* Endogenous Healing Processes
  - Abstinence stabilize inhibitory control
  - Dreams as diagnostic and integrative

Commonalities in Healing ->

Psychopharmacology of Innate Set & Setting

# Fasting & Abstinence

- Induction of ASC
- Chronic stressors stimulate serotonin 5HT<sub>2A</sub> activation
- Fasting induced hormone release- *Ghrelin*
  - Shift in autonomic regulation and balance to enhanced excitation and reduced inhibitory regulation
  - Increase interoceptive and motivational and excitatory signaling in hypothalamic–mesolimbic circuits
  - Greater emotional intensity and enhanced somatic responses
- Fasting -> Ghrelin potentiates psychedelic effects

# Hominid Ritualizations - “Maximal Display”

- Nighttime group chorusing and drumming in tree
- Elicits endogenous opioid responses and releases tension
- Positive emotional synchrony of group
- Dream incorporation from over-night ceremony
- Dreams as information integration and consolidation



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# Mimesis as Core of Human & Shamanic Evolution

- Mimesis--Imitation, music, song, dance, enactment
  - Expressive system and social modulation technology
- Mimesis as neuro-technology/bodily-kinesthetic intelligence
  - Evoke endogenous opioids and stimulate neurotransmitters dopamine, serotonin and norepinephrine
  - Evokes endogenous emotional states (love) and release of repressed emotions
- The mimetic self/ACS is pre-reflective primitive level of social and bodily self that expresses core affective

# Visions: “Hallucinations” vs Symbolic Cognition

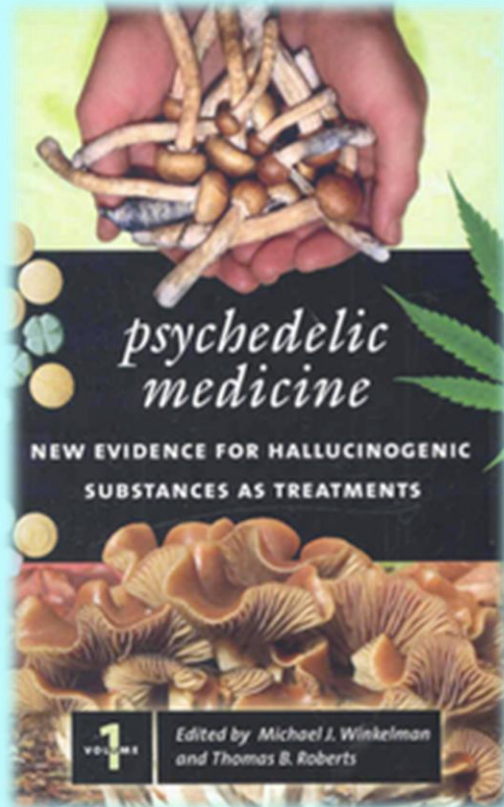
## Primary Process Visual Symbolism

- Engage innate symbolization process manifested in dreams
- Psychedelics induce ‘visual thinking’
- = Presentational (pre-verbal) symbolism
- “A picture is worth a thousand words”
- Intrinsic symbolic meaning making system providing image-based meta-cognitive system

# Sexual Abstinence as Inhibitory Control

- Abstinence reduces emotional discharge
  - Orgasm and related autonomic shifts
  - Rebound effects with low stability
- Abstinence promotes
  - Stable sustained, regulation
- Increased autonomic flexibility (PNS↑ & SNS↓)
  - Structured affective emergence
  - Coherent emotional processing
  - Non-reactive, Intentional, Integrated

# Optimize Psychedelic Healing by Adapting to the Evolved Psychology of Ritual Set and Setting



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## SHAMANIC GUIDELINES FOR PSYCHEDELIC MEDICINE

MICHAEL J. WINKELMAN

The use of psychedelic substances for medicinal and therapeutic purposes has been around for many thousands of years. These substances are closely related to the practices of shamanism, which has an antiquity of 40,000 years or more, stretching back to the dawn of modern human cultural capacities (Lewis-Williams 1997; Clottes and Lewis-Williams 1998; Ryan 1999; Winkelman 2002a, 2004a). Ritualized use of psychedelic substances likely has a similar antiquity because hunter-gatherer diets inevitably included such substances

# Current and Future Adaptations



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**Journal of Psychedelic  
Studies**

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## Psychedelics and the future evolution of humanity

MICHAEL J. WINKELMAN\* 

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### ABSTRACT

This paper examines possible future evolution through knowledge of how past human evolution constrains possibilities for the future. Uniquely human evolution-brain, ultrasociality, and cultural niche development-are examined to see what these suggest about future adaptations. Rapid brain evolution involves neuroplasticity, a re-use and rewiring of neural networks. Psychedelics are extraordinary plastogens stimulating neuroplasticity. This makes consideration of clinical evidence regarding their effects pertinent to inferences about their possible future roles through their ability to: enhance brain

# Can humans shape their own evolution?

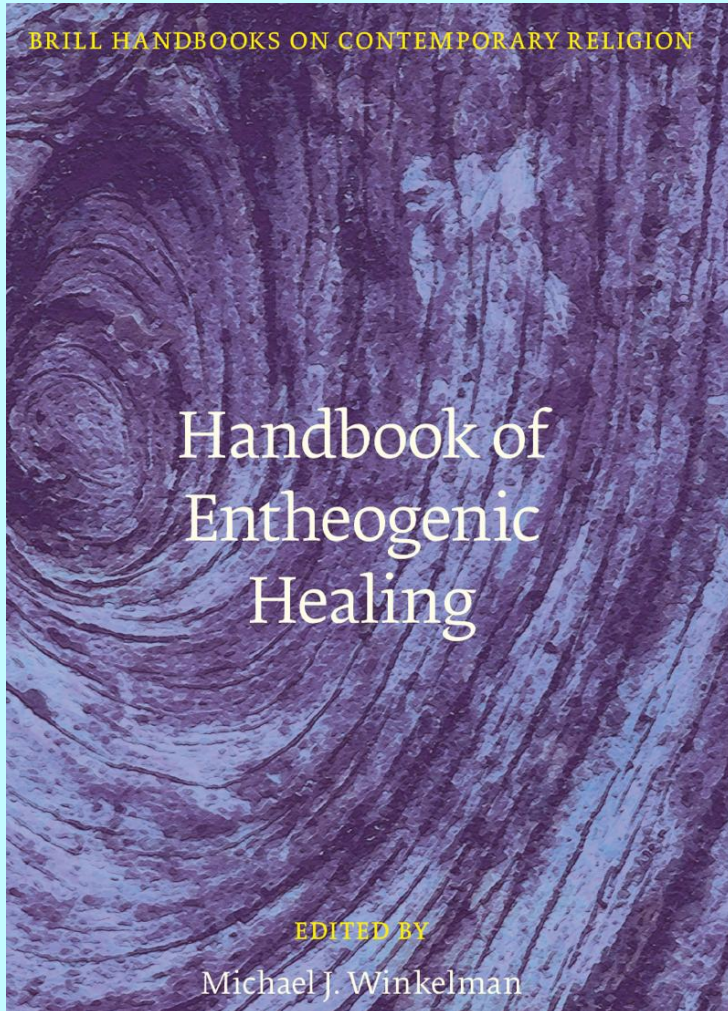
Past evolutionary mechanisms limit future possibilities—existing architecture modified

- Primary Forces in human evolution:
  - The brain
  - Ultrasociality
  - Cultural niche construction
- Neural reuse-- Psychedelic instrumentalization and neuroplasticity increases capacity to rewire brain

# Psychedelic Augmentation and Symbiosis

- **Technological Advances vs. Social Advances**
- **Interpersonal Symbiosis**
- Enhanced Extraversion, Openness, Prosociality
- **Moral Augmentation**
  - Reduce ethnocentrism and enhanced altruism
- **Cultural and Group-Level Symbiosis**
  - Traditional use for group bonding and ritual integration and inter-group conflict resolution
- **What is our future?**

# Entheogenic Practices Reveal Evolved Psychology of Set and Setting



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in Pharmacology

REVIEW  
published: 23 February 2021  
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## The Evolved Psychology of Psychedelic Set and Setting: Inferences Regarding the Roles of Shamanism and Entheogenic Ecopsychology

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# Future Uses Conclusions

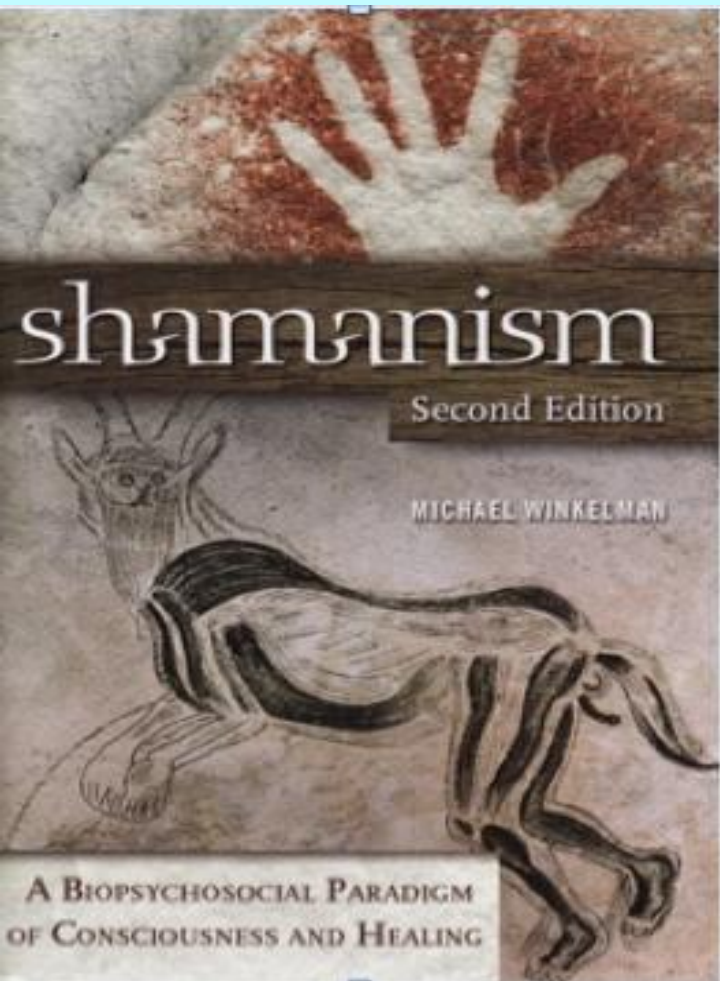
- Psychedelics may enhance potential for change
  - Psychedelics produce rare mystical experiences
  - Enhance Neuroplasticity, Sociality, Cognition, Altruism
- **Trans-nationalism and Universalism?**
  - Inclusion beyond ego identity, culture, in- vs out-group
- **Religious inventions-”Psychedelic Christianity”**



# HOW TO BEST USE PSYCHEDELICS?

- AS ENTHEOGENS??
- EMPOWER TRADITIONAL ENTHEOGENIC PRACTICES AS “BEST PRACTICES”
- RECOGNIZE AS CULTURAL HERITAGE





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