

The Therapeutic Use of Ayahuasca



Chamán Soplando [Shaman Blowing] by Clancy Cavnar, 2012

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The Therapeutic Use of Ayahuasca

 Springer

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*We dedicate this book to the healing
plants of the Amazon Forest*



Banisteriopsis caapi flowers. © Thais Rebello



Banisteriopsis caapi vine. © Thais Rebello

Foreword

Ancient Medicine and the Modern World

Ayahuasca, the “great medicine” of the Amazon rain forest, was, for millennia, entirely unknown to Western Euro-American civilization. While first scientifically identified, catalogued, and recorded in the mid-nineteenth century by the English botanist and explorer Richard Spruce, it had earlier been the object of brutal suppression by Spanish and Portuguese invaders of the New World who attempted to violently extinguish its ceremonial use by the indigenous people of the Amazon. Employing the harshest measures of the Inquisition, in 1616, the Catholic Church formally condemned the use of plant hallucinogens by the native people of the New World with punishment by extreme tortures and death. Use of powerful plants employed by native peoples for purposes of healing, divination, and cultural cohesion was virtually eliminated and forced deeply underground and, in the case of ayahuasca, into the remote regions of the forest, far from the reach of the marauding Europeans and their descendants. While occasional reports from traders and missionaries filtered out of indigenous use of ritual plants, it was not until Spruce obtained samples of the bark of *Banisteriopsis caapi*, a woody vine and one of the central plants used in the decoction ayahuasca, that the Western world took note.

In recent years, some controversy has arisen over the antiquity of ayahuasca. Given the climactic and soil conditions in the Amazon Basin, archeological finds have been limited, and suggestions have been made that the potent plant hallucinogen decoction may have existed only for a few hundred years. While definitive evidence does not exist, it seems highly unlikely that the indigenous people who traditionally made the region their home would have been ignorant of these powerful psychoactive plants that grew throughout the geographic region they knew so intimately. Rather, it is highly likely that traditional ayahuasca use, particularly in the Upper Amazon, dates long before the arrival of the first Europeans.

Lack of awareness of the existence of plant hallucinogens around the world by Euro-American culture has itself been endemic over time. In the classic *Plants of the Gods* by Richard Evans Schultes and Albert Hofmann, the very first sentence in the book states that “the use of hallucinogenic plants has been a part of human experience for many millennia, yet modern Western societies have only recently

become aware of the significance that these plants have had in shaping the history of primitive and even of advanced cultures.” A telling example was the collective ignorance, until the mid-twentieth century, of the existence of hallucinogenic mushrooms. It was not until R. Gordon Wasson’s “discovery” in June 1955 of indigenous Mazatec healers’ use of highly potent *Psilocybe cubensis* in a remote region of the state of Oaxaca in Mexico, that Western scientists accepted such powerful psychotropic fungi as something other than the products of myth. In the case of ayahuasca, the earliest known commentary on its existence came from Jesuit missionaries in the 1600s, who spoke of “diabolical potions” made from lianas growing in the Peruvian Amazon. Throughout the New World, and particularly South of the Equator, with its lush tropics and extraordinary plant diversity, the new European overlords, in the wake of their conquest of the native peoples, harshly condemned the use of sacred plants they observed as part of aboriginal religion and ritual. Hernando Ruiz de Alarcon, an early Spanish chronicler of native customs, described his observation of how the plants “when drunk deprive of the senses, because it is very powerful, and this means they communicate with the devil, because he talks with them when they are deprived of judgment with the said drink, and deceive them with different hallucinations, and they attribute it to a god they say is inside the seed.” With forced conversion to Christianity and the eradication of native cultures and traditions, the great secrets of the forest could not be tolerated openly, and, as was the case throughout Central and South America with the remarkable psychoactive plant pharmacopeia endemic to the region, the use and even knowledge of their existence faded from awareness. Not until the waning of the Inquisition and the end of forced imposition of Church decree, along with the advent of the Age of Enlightenment and the rise of Western scientific inquiry, did the very presence of these taboo plants begin to re-emerge.

In regard to ayahuasca, following isolated reports of native heresies from missionaries in remote forest outposts, the first notable subjective account of the effects of ayahuasca came from Manuel Villavicencio, an Ecuadoran geographer, who studied tribal groups in the Rio Napo area of Ecuador; he became intrigued by the use of *yagé* (another term for ayahuasca), and sought the opportunity to investigate first-hand the effects of this beverage. In a written account published in 1858, Villavicencio described how

In a few moments, it begins to produce the most rare phenomena. Its action appears to excite the nervous system; all the senses liven up and all faculties awaken; they feel vertigo and spinning in the head, followed by a sensation of being lifted into the air and beginning an aerial journey; the possessed begins in the first moments to see the most delicious apparitions, in conformity with his ideas and knowledge; the savages [apparently the Zaparo of eastern Ecuador] say that they see gorgeous lakes, forests covered with fruit, the prettiest birds who communicate to them, the nicest and the most favorable things they want to hear, and other beautiful things relating to their savage life... As for myself I can say for a fact that when I’ve taken ayahuasca, I’ve experienced dizziness, then an aerial journey in which I recall perceiving the most gorgeous views, great cities, lofty towers, beautiful parks, and other extremely attractive objects; then I imagined myself to be alone in a forest and assaulted by a number of terrible beings from which I defended myself; thereafter I had the strong sensation of sleep.

By the early twentieth century, increasingly sophisticated laboratory technology allowed scientists to isolate the principle biologically active alkaloids from psychotropic plants. Working from available samples of *Banisteriopsis*, Louis Lewin, later renowned as a principle founder of the field of modern psychopharmacology, identified a compound he called banisterine, later renamed harmine (and, for a time, telepathine, after ayahuasca's reputed capacity to induce telepathic phenomena, though this term did not gain traction in the West). For several years, harmine even entered the formal medical pharmacopeia, valued as a treatment for Parkinson's disease. Only with the discovery of L-Dopa by the pharmaceutical industry, and its promotion as a "modern" treatment of Parkinson's in the 1930s, did harmine fade from medical use and interest.

Ayahuasca did not come to the attention of Western science again until the explorations of the renowned Harvard ethnobotanist, R. E. Schultes, who, during the Second World War, had been tasked by the United States government to survey the prevalence of wild rubber trees in the remote Amazon. These had become a matter of strategic concern following the Japanese Army occupation of Malaysia, the only previous substantive source of rubber, deemed essential for the Allied war effort. Schultes, who had previously studied the ritual use of peyote by the indigenous people of the Southwestern United States, learned of the use of ayahuasca by tribal groups he encountered during his solo and often hazardous trek navigating and mapping the remote Amazon. Among other observations, Schultes identified the presence of a second critical plant necessary for ayahuasca's extraordinary psychoactive potency: the leaves of the dimethyltryptamine (DMT)-rich *Psychotria viridis*. Decades later, a new generation of scientists, including ethnopharmacologist Dennis McKenna at the University of British Columbia, established the biochemical mechanism for the central nervous system activation of DMT-containing *Psychotria*, a plant that, when taken orally and alone, is entirely inactivated in the gut by the monoamine oxidase (MAO) enzyme system, but, when brewed together with *Banisteriopsis*-containing monoamine oxidase inhibiting (MAOI) harmala alkaloids, induces a far-reaching range of profound psychoactive effects. The origins of this remarkably sophisticated plant pharmacology, seemingly discovered by indigenous people throughout the Amazon long before the arrival of the European invaders, remains a mystery. Whether through methodical, reductionist, trial-and-error sampling of the various plants in the geographical region or through some form of divine or spiritual intercession, as some have proposed, the actual process of the initial discovery of ayahuasca will likely never be known.

Since the early 1990s, ayahuasca has been subjected to rigorous clinical assessment utilizing state-of-the-art research methodologies. In 1993, along with my colleagues Dennis McKenna and Jace Callaway, I had the opportunity to travel to the capital of the Brazilian state of Amazonia, the city of Manaus, a large metropolis located at the confluence of the Rio Solimoes and Rio Negro, and the origins of the Rio Amazonas. Here, we conducted a study of a randomly selected group of volunteers who were members of the syncretic religion União do Vegetal (UDV), a church that had achieved formal government sanction to use ayahuasca

as a ceremonial sacrament in their religious ceremonies in the late 1980s. Beyond establishing vital safety standards and documenting that ayahuasca, when taken within the structure of the UDV, can be safely administered to well-prepared and carefully monitored subjects, we were also able to explore effects on neuropsychological function, personality characteristics, cardiovascular reactivity, and pharmacokinetic profiles of the four primary alkaloids involved in ayahuasca function (DMT, harmine, harmaline, and tetrahydroharmine), as well as apparent modulation of a primary central nervous system neurotransmitter, serotonin. Through our investigations, we were also able to discern that, when taken under optimal, culturally specific conditions, ingestion of ayahuasca had the capacity to facilitate impressive degrees of psychological healing, including mood stabilization and recovery from chronic alcoholism and other addictive behaviors.

While almost entirely unknown to mainstream Western culture until 20 years ago, beyond a few exotic and often fanciful accounts, such as the experiences of iconoclast bohemian writers Allen Ginsberg and William Burroughs during the 1950s, in recent decades, a growing movement of Brazilian syncretic churches has spread the use of ayahuasca from the Amazon to the urban centers of southern Brazil. In addition to the UDV, the Santo Daime and Barquinha churches have also established religions sanctioned to utilize ayahuasca ceremonially, though with markedly different structures and belief systems than the UDV. Legal status in Brazil through much of the twentieth century remained at issue and, in 1985, ayahuasca was formally, albeit briefly, classified as a dangerous drug of abuse. Nevertheless, legal sanction was achieved shortly thereafter, following extensive investigations by government commissions which were favorably impressed with the sincerity, ethical integrity, and psychological health of the ayahuasca religion members they interviewed. Full approval to use ayahuasca within religious contexts in Brazil was granted in 1987. This in itself was an extraordinary historical precedent. While some countries, including the United States, have allowed their indigenous populations the right to resume their tribal traditions (e.g., the use of peyote by Native Americans is protected by law), the removal of ayahuasca from legal strictures in Brazil was an important step. A further development over the last few decades has been the establishment of branches of the Brazilian ayahuasca churches in the United States and Europe. In 2006, a landmark decision was issued (unanimously) by the US Supreme Court authorizing the legal use of ayahuasca when taken within the UDV religious structure. More recently, efforts to restrict the sacramental use of ayahuasca by the Santo Daime were dismissed on the state court level in Oregon. Nevertheless, while use of ayahuasca within the context of established religion (e.g., UDV) may now be considered legal in the United States, other models and settings for its utilization remain in a legal gray area.

Traditionally, ayahuasca was used from coastal Panama and the Orinoco Basin and south of Bolivia; from coastal Brazil across the vast expanse of the Amazon Basin to the foothills of the Andes; as well as in Colombia and Ecuador. In the shamanic model, ayahuasca is seen as a magic intoxicant, which the indigenous people believe can free the soul from corporeal confinement. Above all, ayahuasca is considered a medicine: the great medicine. Practically, in today's world, the

shamanic model incorporates easily-transferable features, including group structure, attention to set and setting, import of intention, and proper preparation for and integration of the experience. For both safety and efficacy, any future clinical research with these compounds will need to seriously examine these aspects of the traditional shamanic model.

Beyond Brazil, other modern forms of ayahuasca use have evolved elsewhere in the Amazon Basin. Primarily in Peru, but also in Ecuador, Bolivia, and Colombia, a tradition of mestizo healing has existed for the past century. Until recently, this was an entirely local phenomenon, known only to the generally low socio-economic status inhabitants of the region. A tradition of healing has been cultivated over time, with the avocation of ayahuasquero (facilitators of ayahuasca ceremonies) often passed down in families from generation to generation. Generally used to diagnose and treat medical, psychological, and psychosomatic disorders, this form of healing was often perceived as a culturally acceptable alternative to the ministrations of conventional physicians and surgeons. Over the past two decades, however, increasing interest in ayahuasca by North Americans and Europeans has led to an influx of westerners seeking their own healing and spiritual transformation. The emergence of positive accounts in the mainstream press has encouraged increasing numbers of such seekers, some of whom fall prey to poorly trained facilitators lacking requisite knowledge, background, and ethical orientation, unfortunately leading to cases of psychological decompensation and at least a handful of deaths, the circumstances of which have sometimes remained obscure. While highly reputable ayahuasqueros have facilitated positive and often transformative experiences for the vast majority of Euro-Americans coming to the Amazon, the risks of exploitation and injury to naïve and vulnerable seekers is starting to receive more attention. The late anthropologist Marlene Dobkin de Rios, in particular, has called attention to this dark side of ayahuasca use, both in the region of its origins in the Amazon and as it has spread to North America and Europe.

With interest growing in the potential psychospiritual healing capacity of ayahuasca, it is becoming increasingly clear that efforts need to be undertaken to further rigorously investigate its range of effects, safety parameters, and potential to be utilized to treat individuals suffering from the psychological malaise endemic to the modern world. Important foundational studies have already been established, particularly at the Autonomous University of Barcelona in Spain, where pharmacology researcher Jordi Riba and neuropsychologist José Carlos Bouso have, for the past 15 years, conducted carefully designed explorations of the neuropsychological and physiological effects of freeze dried ayahuasca (necessary in the experimental context to ensure consistency of dose and concentration of alkaloids) with normal volunteers in a laboratory setting. More recently, in established and reputable medical institutions in Brazil, a series of exciting and potentially valuable research studies have been initiated by Draulio Araujo, Jaime Hallak, and others, exploring effects of ayahuasca on brain function.

One potentially promising approach now being actively pursued, particularly in Brazil, is the ayahuasca treatment model for individuals suffering from alcoholism

and other addictive disorders. Consistent with valuable, albeit long neglected, studies in the United States, Canada, and Europe, of synthetic hallucinogens for the treatment of alcohol and drug abuse in the 1950s and 1960s, which were regrettably terminated by the early 1970s because of political pressure emanating from the cultural wars of that era, the ayahuasca treatment model presents a new opportunity. Interestingly, encouraging signs of change have been in increasing evidence in recent years, particularly the authorization of clinical research of the classical hallucinogen psilocybin in the US, including a Heffter Research Institute-developed study treating alcoholics at the University of New Mexico, along with initial efforts by other investigators to conduct controlled addiction research with ayahuasca in South America. Further buttressing the growing interest and activity in this area has been a recently conducted study from northwest Canada using an ayahuasca treatment model (employing an imported traditional ayahuasquero from the Shipibo tradition of Peru) to treat long-term, refractory alcoholics of the First Nation people of Canada (indigenous tribal people of Canada) with highly promising preliminary results.

The growing use of ayahuasca for purposes of healing represents a particular challenge to mainstream medical orthodoxy. Examining traditional use of such visionary plants, it is clear that a consistent element of the experience is the awareness of alternative and unusual dimensions of consciousness, including the realm of spirits. Indeed, the translation of ayahuasca from the native Quechua language is “vine of the spirits,” or “vine of the dead.” Incorporating such phenomena into our consensus model of reality will test the limits of conventional thought. Nevertheless, awareness and validation of these unusual realms is integral to cultures that have used ayahuasca throughout time, up to the current awakening of interest by modernity. Reconciling such divergent belief systems and constructs of reality will certainly test the inherent cognitive flexibility of modern culture and science as we attempt to comprehend the implications of the emergence of these ancient mysteries of the forest into the modern world.

While it is essential to utilize standard and state-of-the-art scientific and medical methodologies when investigating the range of effects of ayahuasca, including its safety, efficacy, and mechanism of action, appreciation needs to also be accorded to traditional models and the knowledge and lessons accrued over time. In order to ensure safety and optimal outcome, careful attention needs to be given to structures employed by cultures remote in time and place from our own. Particular attention must be given to proper screening and preparation, whether it be for subjects in scientific and medical investigations or for those in less-structured settings seeking their own healing and personal transformation. Individual vulnerability, in regard to psychological stability and seriousness of purpose, needs to be taken into account and, when indicated, inappropriate candidates may have to be turned away. As a *mestre* (master) of the UDV told me during our research investigations in Manaus many years ago, the *vegetal* (a UDV term for ayahuasca) is for everyone, but not everyone is for the vegetal. Particularly, given the challenges of integrating the use of ayahuasca into the modern world, care must be taken to minimize the likelihood that individuals will suffer from serious adverse

consequences. Potentially dangerous drug and alcohol interactions with ayahuasca need to be avoided. Attentiveness to set and setting, including preparation and scrupulous examination of intention, must be emphasized. Particular elements of preparation emphasized among the earliest practitioners of ayahuasca use, including special diets (excluding salt, sugar, processed foods, etc.) and a period of sexual abstinence, may have a role in ensuring safety and determining outcome and need to be explored, in spite of the challenges such restrictions may pose within modern society. Careful attention to structures of ayahuasca use, including proper monitoring and opportunity for subsequent integration of the experience, should also be provided to increase the likelihood of optimal outcome.

We are faced with the challenge of how to incorporate these ancient technologies of consciousness exploration into our own modern healing paradigms. Although historically our culture was remarkably unaware of these plants and the profound effects they induce, this is no longer the case. The secret is out, and in this age of high-tech communication and ease of transport, the great mysteries of the remote forest are now being revealed. The implications for the modern age may indeed be profound. As we confront a world of widespread environmental destruction, and as we become increasingly aware of the growing menace of global climate change, it might be worthwhile to regard the traditional perspective of ayahuasca as communicator plants, representing a conduit between nature and humanity. Years ago, in the remote Amazon, I had an experience of hearing this call from Nature: that it was no accident that, after millennia of quiescence, these remarkable visionary plants are now revealing themselves. What I saw, or heard, or instinctively realized, was that it was no happenstance we were there; rather, we had been called to wake up, to pay attention, and to bring the message back to the modern world that our species is on the verge of destroying the earth, and with it the hopes and dreams of future generations.

The deep healing that the ayahuasca experience potentially offers, for both the individual and the collective, represents an extraordinary opportunity. Medical and psychiatric research into its myriad effects will provide an essential framework from which we may acquire a safe and practical structure to further explore these visionary plants and their potential to facilitate healing of our damaged planet as well as healing of the damaged people who inhabit the planet. There must be careful and scrupulous attention to safety parameters, with particular emphasis given to the knowledge and skills of those facilitating the experience. There is a great need to employ academic and ethical rigor in order to establish a strong and healthy foundation for the growing field of ayahuasca studies.

This volume of scientific explorations into the potential range of therapeutic effects of ayahuasca, ably edited by Beatriz Caiuby Labate and Clancy Cavnar, is a valuable contribution to this endeavor of establishing a rigorous field of ayahuasca studies. The range and mechanisms of ayahuasca and its putative capacity to facilitate states of both psychological and physical healing are explored. The potential of ayahuasca to be optimally employed as part of a treatment model for such difficult-to-treat clinical conditions as post-traumatic stress disorder, refractory mood, and anxiety disorders, and a variety of other psychiatric and even

medical conditions, are methodically examined. The potential mechanisms of action, neurobiological as well as psychological, and their apparent facility to promote healing, are carefully scrutinized. Valuable input from a traditional indigenous healer, Taita Juan Bautista Agreda Chindoy from the Sibundoy Valley in Colombia, is included, providing lessons from an extant practitioner of the ancient art of ayahuasca healing. The area receiving the greatest attention is the treatment of drug and alcohol abuse, clinical conditions for which modern medicine and psychiatry lack effective treatment models, and which exert enormous costs to society: a natural area in which to apply the ayahuasca treatment model. Preliminary indications, from a variety of investigators in South America, North America, and Europe, are consistently positive. The implications of such findings, as they are replicated and expanded upon in the future, are enormous. Ultimately, ayahuasca may represent an entirely new medical paradigm; a model created for us by the ancients and the elders of the native peoples, who provide the link to the traditions and heritage of the earth.

Los Angeles, July 2013

Charles S. Grob

Preface

This book is inspired by the 2013 Psychedelic Science Conference, held in Oakland, California. The Multidisciplinary Association for Psychedelic Studies (MAPS) promoted the conference in cooperation with the Heffter Research Institute, the Beckley Foundation, and the Council on Spiritual Practices. The event convened over 1,900 people from all over the world, including anthropologists, medical doctors, lawyers, psychiatrists, and psychologists, and members of the general public. It was wide ranging, with a focus on the scientific research into the medical use of psychedelics. Research topics included MDMA-assisted therapy for post-traumatic stress disorder (PTSD), ibogaine for opiate addiction, and LSD and psilocybin for end-of life anxiety, among others. The conference was composed of three tracks: (1) the Clinical Research Track; (2) an Interdisciplinary Track, with a mix of topics, including psychedelic psychotherapy, non-clinical research, arts and culture, and medical marijuana; and (3) the Ayahuasca Track. Beatriz Caiuby Labate was the organizer of the Ayahuasca Track. This volume brings together a select collection of six presentations from this track, and is complemented by seven additional relevant contributions.

Ayahuasca (generally composed of *Banisteriopsis caapi* and *Psychotria viridis*) is a psychoactive brew of Amazonian origin that, over the last few decades, has caught the attention of many patients, healers, and researchers. The beverage's transformation into an internationally known "medicine" for physical, psychological, and spiritual ills has stirred up controversy over its use, and whether it ought to be banned or revered. The ritual and therapeutic uses of ayahuasca vary greatly by country; whereas different forms of the religious use of ayahuasca have been recognized as legitimate in some parts of the world, the therapeutic use of ayahuasca has not gained official acceptance beyond the limits of the Amazon rainforest.

This interdisciplinary collection presents a series of perspectives on the therapeutic potential of the ritual and clinical use of ayahuasca in the treatment and management of various diseases and ailments especially, its role in psychological well being and substance dependence. Anthropological and biomedical data on the use of ayahuasca for treating depression, PTSD, and substance dependence in different settings, such as indigenous contexts, neo-shamanic rituals, contemporary therapeutic circles, and in the ayahuasca religions of Santo Daime and União do

Vegetal, in both South and North America, are presented and critiqued. The texts in this volume also discuss methodological, ethical, and political considerations for current and future research in this area.

With this work, we aim to bring the therapeutic use of ayahuasca to a new level of public examination and academic debate, as well as to fill in gaps in the current literature. Though multiple anecdotal reports on the therapeutic use of ayahuasca exist, there has been no systematic and dense reflection on the topic thus far. We hope this collection offers an important advancement in this discussion, and helps to inform international regulation on ayahuasca use based on the scientific study of this substance's relative benefits and harms. We also hope this book proves to be a source of inspiration for further research in this emergent field of studies.

We would like to thank the Center for Economic Research and Education—CIDE Región Centro in Aguascalientes, Mexico; MAPS in Santa Cruz, CA; and Anton Bilton, Tyringham, England, for their support. We would also like to express our gratitude to the contributors to the volume. Our colleagues Bob Jesse, Brian T. Anderson, Rafael Guimarães dos Santos, José Carlos Bouso, Michael Winkelman, and Mitchell B. Liester provided important help during the process of editing this collection. Finally, we are grateful to Springer for its openness to this frequently stigmatized topic.

Aguascalientes, October 2013
San Francisco

Beatriz Caiuby Labate
Clancy Cavnar

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Contributors



Taita Juan Bautista Agreda Chindoy is an indigenous Kametsa traditional healer from the Sibundoy Valley of the Alto Putumayo of Colombia. He is the son of Taita Martin, and comes from a recognized family of traditional yageceros. He is an established leader in his community and has over 25 years of experience working with Amazonian medicine, including yagé and other plants. He has been recognized by the Colombian Ministry of Health as a traditional healer and over the last few years has traveled abroad to share his knowledge and treat patients with various diseases.



Miguel Ángel Alcázar is a Doctor of Psychology at the Ministry of Justice of Spain in the Juvenile Court in Toledo (Spain) and Associate Professor in the Department of Biological and Health Psychology of the Autonomous University of Madrid (Spain). He has a special interest in neuropsychology, psychopharmacology, personality, and forensic psychology. He has had many papers published on those subjects.



João Carlos Alchieri received his Ph.D. in Developmental Psychology from the University Federal do Rio Grande do Sul in 2004, with post-doctoral studies at the University of Brasilia. He is an Associate Professor at the Federal University of Rio Grande do Norte (UFRN), where he currently participates in post-graduate programs in health sciences and psychology. His activities focus on psychological assessment in health.



Brian T. Anderson is currently an M.D. candidate at the Stanford University School of Medicine. He holds an M.Sc. in Medical Sociology from the BIOS Centre at the London School of Economics and a B.A. in Biochemistry from the University of Pennsylvania. He is a Researcher with the Núcleo de Estudos Interdisciplinares sobre Psicoativos (NEIP, <http://www.neip.info>) and he has conducted ethnographic studies of religious practices and drug use in Philadelphia (USA), Salvador (Brazil), and Mexico City (Mexico).



José Carlos Bouso is a Clinical Psychologist with a Ph.D. in Pharmacology. His current studies address preliminary data on the safety and efficacy of varying doses of MDMA administered in a psychotherapeutic setting to women with chronic post-traumatic stress disorder (PTSD) as a result of a sexual assault. He has also been conducting neuropsychological research into the long-term effects of drugs such as cocaine and cannabis. He

has undertaken transcultural research, extensively studying the long-term effects of ayahuasca use in different cultures and ecosystems, both in Spanish and in Brazilian communities. José Carlos Bouso is co-author of several scientific papers and book chapters. He currently combines his activity as a Clinical Researcher at the Institut Hospital del Mar d'Investigacions Mèdiques (IMIM) with his work as scientific projects manager at International Center for Ethnobotanical Education, Research and Service (ICEERS—<http://www.iceers.org>).



Clancy Cavnar is currently completing her post-doctoral hours in clinical psychology at the Marin Treatment Center, a methadone clinic in San Rafael, California. In 2011 she received a Doctorate in Clinical Psychology (PsyD) from John F. Kennedy University in Pleasant Hill, California, with a dissertation on gay and lesbian people's experiences with ayahuasca. She attended New College of the University of South Florida and completed an undergraduate degree in liberal arts in 1982. She attended the San Francisco Art Institute and graduated with a Master of Fine Art in painting in 1985. In 1993, she received a certificate in substance abuse counseling from the extension program of the University of California at Berkeley and, in 1997, she graduated with a Master's in Counseling from San Francisco State University. In that same year, she got in touch with the Santo Daime in the USA, and has traveled several times to Brazil since then. She is also co-editor, with Beatriz Caiuby Labate, of two books: *Ayahuasca Shamanism in the Amazon and Beyond* (Oxford University Press, in press), and *Prohibition, Religious Freedom, and Human Rights: Regulating Traditional Drug Use* (Springer, in press).



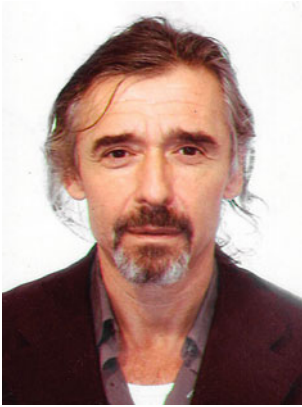
Marta Cutchet earned her Psychology degree in 2006 at Universidad Autónoma de Barcelona. In 2009, she earned a Clinical Psychopathology postgraduate degree at the same University. She collaborated in the project to assess addiction severity among ritual users of ayahuasca. Currently, she is working as a therapist in Centro de Investigación y Tratamiento de Adicciones (CITA).



Dráulio Barros de Araujo received his Ph.D. in Physics Applied to Medicine and Biology from the University of São Paulo in Ribeirão Preto in 2002, where he engaged in postdoctoral studies on functional neuroimaging, became Assistant Professor, and then received the title of “livre-docente” (Associate). In 2009, he joined the Brain Institute at the Federal University of Rio Grande do Norte (UFRN), where he is currently Coordinator of the Graduate Program in Neuroscience, and Full Professor of Neuroimaging. His research deals with several aspects of neuroscience, using the methods of functional magnetic resonance imaging (fMRI), magnetoencephalography (MEG), and electroencephalography (EEG). In the last few years, Dr. Araujo has focused on the investigation of the cognitive and neural substrates of the ayahuasca experience.



Celina M. De Leon is an independent researcher based in Oakland, California. She received a B.A. in Human Biology from Stanford University and was a US/India Fulbright Scholar in 2007. She is the co-founder of Posada Natura in Costa Rica, an interdisciplinary healing arts center dedicated to the practice and research of traditional medical systems (www.posadanatura.com). In 2009, she was initiated as a formal apprentice of Taita Juan Bautista Agreda Chindoy from the Cametsa indigenous lineage of the Sibundoy Valley, Alto Putumayo, Colombia.



Josep María Fábregas graduated from the Central University of Barcelona with a degree in Medicine, specializing in psychiatry. He completed his studies at New York Staten Island Psychiatric Hospital. He was a Resident Physician at the Marmottan Hospital under Claude Olivenstain. He has been the Director of CITA (Addiction Research and Treatment Center) since 1981 and, in 2000, he founded IDEAA (Amazonian Ethnopsychology Applied Institute). He has lectured extensively on drug addiction and altered states of consciousness.



Xavier Fernández (Ashirvad) was a Psychologist and Ph.D. student at Universidad Santiago de Compostela. He had worked as a Psychotherapist and Researcher in Instituto de Etnopsicología Amazónica Aplicada (IDEAA). He was also an independent Researcher, transpersonal facilitator, and writer. Xavier passed away in 2011.



Sabela Fondevila graduated from the Department of Psychology at the Universidad Autónoma de Madrid in 2005. She completed a Master's degree in Psychodrama Therapy management between 2002 and 2004. She has been performing research in the Amazon Basin, studying the long-term neuropsychological and psychopathological conditions among ritual users of ayahuasca in the Mapiá and Rio Branco communities. Currently, she is doing her thesis on the cognitive science of religion under the direction of Prof. Manuel Martín-Loeches at the Center UCM-ISCIII for Human Evolution and Behavior.



Nicole Galvao-Coelho received her Ph.D. in Psychobiology from the Federal University of Rio Grande do Norte (UFRN) in 2009, where she became Assistant Professor at the Department of Physiology. She has been developing research on neuroendocrinology of stress response and currently coordinates the Laboratory of Hormonal Measures and a Primate Center at UFRN, which houses around 200 common marmosets (*Callithrix jacchus*), a species that has been widely used as an animal model in neuroscience studies.



Débora González earned her Psychology degree in 2006 at Universidad Autónoma de Madrid. She published an article about the subjective effects of *Salvia divinorum* and collaborated on another project to assess addiction severity among ritual users of ayahuasca. Currently, she is doing doctoral work at Institut Municipal d'Investigació Mèdica (IMIM-Hospital del Mar), studying the human pharmacology and pattern of use of the so-called “research chemicals,” also known as “legal highs,” in Spain.



Charles S. Grob, M.D. is Director of the Division of Child and Adolescent Psychiatry at Harbor-UCLA Medical Center, and Professor of Psychiatry and Pediatrics at the UCLA School of Medicine. Prior to his appointment at UCLA, he held teaching and clinical positions at the University of California Irvine College of Medicine and the Johns Hopkins University School of Medicine, in the Departments of Psychiatry and Pediatrics. Dr. Grob conducted the first government-approved psychobiological research study of MDMA, and was the principal investigator of an international research project in the Brazilian Amazon studying the visionary plant

brew, ayahuasca. He has also completed and published the first approved research investigation in several decades on the safety and efficacy of psilocybin treatment in terminal cancer patients with anxiety. Dr. Grob is the Editor of *Hallucinogens: A Reader* (Tarcher/Putnam 2002) and co-editor of *Higher Wisdom: Eminent Elders Explore the Continuing Impact of Psychedelics* (SUNY Press 2005). He is also a founding board member of the Heffter Research Institute.



Jaime Hallak graduated with a degree in Medicine from the Federal University of Triangulo Mineiro in 1990, a Master of Medicine (mental health) from the University of São Paulo in 1998, a Ph.D. in Medicine (mental health) from the University of São Paulo in 2002, and then earned a postdoctoral degree from the University of Manchester in England in 2003. He is currently a Professor of Psychiatry, as a member of the Faculty of Medicine of Ribeirão Preto-University of São Paulo. His expertise is in psychiatry, with an emphasis on neuroimaging and psychopharmacology, particularly focusing on the following topics: schizophrenia, antipsychotics, temporal lobe epilepsy, and techniques of structural and functional neuroimaging.



Beatriz Caiuby Labate has a Ph.D. in social anthropology from the State University of Campinas (Universidade Estadual de Campinas, UNICAMP), Brazil. Her main areas of interest are the study of psychoactive substances, drug policies, shamanism, ritual, and religion. She is visiting professor at the Drug Policy Program of the Center for Economic Research and Education (Centro de Investigación y Docencia Económicas, CIDE) in Aguascalientes, Mexico. She is also a research associate at the Institute of Medical Psychology, Heidelberg University, co-founder of the Nucleus for Interdisciplinary Studies of Psychoactives (NEIP), and editor

of its site (<http://www.neip.info>). She is author, co-author, and co-editor of nine books, two with English translations, one journal special edition, and several peer-reviewed articles. For more information, see: <http://bialabate.net>.



Mitchell B. Liester received his M.D. from the University of Colorado School of Medicine in 1985. He then completed a Psychiatric Residency at the University of California, Irvine where he co-authored a study investigating the phenomenology and sequelae of MDMA. He went on to publish in the fields of transpersonal psychology, near-death studies, and psychedelic medicines. He has lectured at universities, medical schools, and international conferences on shamanism, visionary

experiences, near-death experiences, and the use of plant medicines in the treatment of addictions. He is a member of the Board of Directors of the International Association for Near-Death Studies (IANDS). For the last 24 years, Mitch has had a clinical psychiatric practice in Colorado. He currently resides in Monument, Colorado.



Anja Loizaga-Velder is a German–Mexican Clinical Psychologist who has been investigating the therapeutic potential of the ritual use of psychedelic plants for over 15 years. She is founding member and collaborating researcher of the Nierika, Multi-disciplinary Association for the Preservation of the Indigenous Traditions of Sacred Plants in Mexico. She holds an M.A. degree in Psychology from the University of Koblenz/Landau in Germany and is currently a doctoral candidate in medical psychology at Heidelberg University. The study she discusses in her text is part of the work of the special research group “Ritual Dynamics and Salutogenesis” (RISA, <http://www.risa.uni-hd.de>).



Gabor Maté M.D. is a Canadian physician, speaker, and the author of four bestselling books published in nearly 20 languages on five continents. His interests include the mind/body unity as manifested in health and illness, the effects of early childhood experiences in shaping brain and personality, the traumatic basis of addictions, and the attachment requirements for healthy child development. He has worked in family practice and palliative care, and for 12 years he worked in Vancouver’s Downtown Eastside, notorious as North America’s most concentrated area of drug use. Currently, he is Adjunct Professor in the Department of Criminology, Simon Fraser University, and teaches and leads seminars internationally. For more information, see: www.drgabormate.com.



Julie D. Megler is a board-certified nurse practitioner in Psychiatry and Family Practice. She received her Master's of Science in Nursing from the University of Miami, Florida. After graduating, she worked at an emergency room (E.R.) in Detroit, Michigan. Her E.R. experience illustrated for her the gap between medical and psychiatric care, and how the mind/body connection is often ignored. These gaps in care inspired Julie to pursue a psychiatric-mental health nurse practitioner certificate at the University of California, San

Francisco so that she could develop a practice that integrates medicine and mental health for the most effective treatment. Julie is now working with homeless veterans living in transitional housing. In addition to her work with veterans, Julie also has an integrative psychiatry practice in collaboration with therapists, an acupuncturist, a naturopath, a body worker, and a medical doctor.



Suely Mizumoto is a Clinical Psychologist who has worked in the mental health field since 1978. She has had training in psychoanalysis, and has worked in hospitals as a clinician and as a Clinical Supervisor of a Therapeutic Community, and also at the Milênio Institute—Ipe Project of the Institute of Psychology of the University of São Paulo. She received her Master's of Science in Social Psychology from the University of São Paulo (IPUSP); her dissertation was "Dissociation, Religiosity, and Mental Health: A Study in Santo Daime and Umbanda." Since 1992, her clinical work has emphasized integration of spiritual and psychological issues, particularly relative to the use of psychoactive substances such as ayahuasca and marijuana.

She is currently a member of the research team studying ayahuasca and psychoactive substances at the Psychiatry Department of the Federal University of São Paulo (UNIFESP) and of the Research Group on Mental Health, State University of Santa Cruz of Bahia (UESC-BA), also dedicated to studying ayahuasca.



Jessica Nielson Ph.D. received her B.S. in Biology from Cal Poly Pomona in 2003, and her Ph.D. in Anatomy and Neurobiology from the University of California, Irvine, in 2010. During her doctoral work, she resolved a century-old controversy regarding the fate of the corticospinal tract following spinal cord injury, demonstrating definitively that this important motor pathway survives injury and is available in chronic cases for therapeutic interventions to promote regeneration and functional recovery. She joined the Brain and Spinal Injury Center at the University of California, San Francisco, in 2011 as a postdoctoral scholar, where she has been developing a novel bioinformatics approach to characterize syndromic features of spinal cord injury, with future plans to apply this approach to traumatic brain injury and post-traumatic stress disorder.



João Paulo Maia de Oliveira graduated in Medicine from the Federal University of Rio Grande do Norte (2003). He is a Psychiatrist, and received his Master's degree in Medicine, focusing on mental health, from the University of São Paulo. Now he is a Ph.D. student at the University of São Paulo and an Assistant Professor of Psychiatry at the Federal University of Rio Grande do Norte. His main research interests are schizophrenia, depression, and translational research.

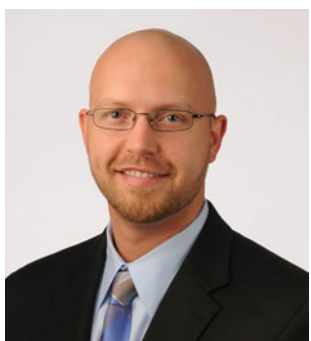


Fernanda Palhano-Fontes received her Master's degree in Neuroscience from the University of Rio Grande do Norte in 2012. She is currently a Ph.D. student at the Brain Institute at the Federal University of Rio Grande do Norte (UFRN), where she investigates, through functional magnetic resonance imaging (fMRI), cognitive, and therapeutic aspects of ayahuasca usage.



Armando Loizaga Pazzi is a Psychologist and certified chemical dependency counselor. He has worked in the substance abuse treatment and prevention field in Mexico since 1991. He has been Director and Coordinator of Diverse Clinical Addiction Treatment Programs and has also collaborated with traditional medicine associations in the study of transcultural treatments. He has been studying the therapeutic potential of ayahuasca-based treatment in this context since 1998. He is President of Nierika A.C., Multidisciplinary Association for Preservation of Sacred Plants. Currently, he is focusing his work

on advancing multidisciplinary clinical research protocols in Mexico to evaluate the therapeutic potential of psychedelic plants used in ritual contexts.



James Prickett, D.O., is a Resident Physician and a burgeoning Researcher at the University of Arizona Department of Psychiatry. He received his Doctor of Osteopathic Medicine degree from Des Moines University. Dr. Prickett's primary interests lie within psychopharmacology, traditional medicine, and the relationship between belief, spirituality, and mental health. He has been a guest speaker on topics including autism, psychedelic drugs, adolescent substance abuse, and addiction. He has traveled to Ecuador on several occasions to study traditional medicine in both the Andes and Amazon

Basin. His research regarding the possible mechanisms by which ayahuasca treats addictions has been published in *The Journal of Psychoactive Drugs*.



Jordi Riba received his Ph.D. in Pharmacology in 2003, at the Autonomous University of Barcelona (UAB), with a thesis on the human pharmacology of ayahuasca. He is currently an Associate Professor of Pharmacology at the UAB and Associate Researcher at the Drug Research Center of the Saint Pau Hospital in Barcelona, where he has conducted a series of clinical studies involving the administration of ayahuasca to experienced psychedelic users. These studies have assessed the pharmacokinetics and pharmacodynamics of ayahuasca, including alkaloid disposition, subjective effects, and electroencephalography and neuroimaging

measures of acute ayahuasca administration. The results of these studies have been published in various scientific journals such as *Psychopharmacology*, *The Journal of Pharmacology and Experimental Therapeutics*, *The British Journal of Clinical Pharmacology*, and *The Journal of Psychoactive Drugs*. He is currently the lead Researcher of a study assessing the effects of long-term ayahuasca use.



Rafael Guimarães dos Santos completed his undergraduate senior thesis in Biology at the Centro Universitário de Brasília—UniCEUB on the microbiology of ayahuasca and its effects on rat behavior and brain histomorphology. During his Master's in Psychology at the Universidade de Brasília (UnB), he investigated the acute effects of ayahuasca on regular ayahuasca users using psychometric measures of hopelessness, anxiety, and panic states. In his Ph.D. thesis in Pharmacology at Universidad Autónoma de Barcelona, he performed a comparison study of the acute subjective and physiological effects of ayahuasca and those produced by d-amphetamine, and also investigated the pharmacology of two consecutive doses of ayahuasca. Currently, he is member of the Advisory Board of the International Center for Ethnobotanical Education, Research and Service (ICEERS) in The Netherlands. For more information, see: <http://banisteria.blogspot.com>.



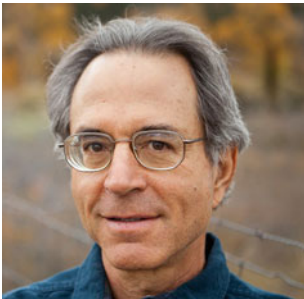
Janine Tatjana Schmid is a Psychologist currently working at a rehabilitation hospital supporting patients with chronic pain and cancer. She also gives lectures at the University of Heidelberg to medical students and training courses for patients, especially on rheumatic disorders and fibromyalgia. She earned a doctorate in Medical Psychology at the University of Heidelberg. Her doctoral thesis is entitled “Subjective Theories of Self Treatment with the Psychoactive Substance Ayahuasca.” A summary of this research was published in the journal *Anthropology of Consciousness* in 2010. She has also written several articles for peer-reviewed journals and book chapters. Her special interests are in shamanism, psychotherapeutic methods, and the psychology of consciousness.



Benny Shanon earned a Doctorate in Experimental Psychology at Stanford University. He has been a Professor of Cognitive Psychology at the Hebrew University of Jerusalem since 1976. He has taught in various universities and research institutes in the United States and Europe. His areas of specialization are: the phenomenology of human consciousness and the pragmatics of language, thought processes, and creativity. He is the Author of *The Representational and the Presentational* (Haverster/Wheatsheaf/Prentice Hall 1993) and the *Antipodes of the Mind* (Oxford University Press 2002).



Bruno Lobão Soares is a Veterinary Doctor, and has received a Ph.D. in Neuroscience from the University of São Paulo. At the present, he is an Assistant Professor at Federal University of Rio Grande do Norte (UFRN). His current research is related to dopaminergic regulation of sleep and memory, and to new neuropharmacological tools in humans and in animal models.



Rick Strassman graduated from Stanford University with a major in Biological Sciences, and received his Medical degree from the Albert Einstein College of Medicine of Yeshiva University in New York City. He did his internship and general psychiatry residency at the University of California, Davis, Medical Center in Sacramento, and a clinical psychopharmacology research fellowship at the University of California, San Diego. At the University of New Mexico in Albuquerque,

Dr. Strassman's studies of the pineal melatonin documented the first known role of this hormone in humans. Later at UNM, he performed the first new US government-approved and funded clinical research with psychedelic drugs in over 20 years. Before leaving the university in 1995, he attained the rank of Tenured Associate Professor of Psychiatry, and received the UNM General Clinical Research Center's Research Scientist Award. He is currently Clinical Associate Professor of Psychiatry at UNM and President and co-founder of the Cottonwood Research Foundation.



Michael Winkelman received his Ph.D. from the University of California-Irvine and a Master's in Public Health from the University of Arizona. He retired from the School of Human Evolution and Social Change at Arizona State University in 2009. He was President of the anthropology of consciousness and anthropology of religion sections of the American Anthropological Association. His cross-cultural and interdisciplinary research on shamanism and altered states of consciousness has focused on identifying the biological bases of religious experiences. His principal publications include *Shamans, Priests, and Witches* (1992), which provides a cross-cultural examination of shamanism; and *Shamanism: A Biopsychosocial Paradigm of Consciousness and Healing* (2nd edition 2010). This evolutionary approach to religion is expanded in his co-authored *Supernatural as Natural* (2008). Winkelman's work has shown that shamanism and psychedelics have a deep intersection in human evolution, and that these capacities for altering consciousness continue to be important today, as illustrated in his co-edited volumes *Psychedelic Medicine* (2007) and *Altering Consciousness* (2011). For more information, see: www.michaelwinkelman.com.