

Classifying Ayahuasca:
The Role of Subjective Experience in Psychiatric Research
with Psychedelics

Abstract

Ayahuasca is a psychedelic brew made from Amazonian plants. Recently, psychiatric studies with ayahuasca have been initiated by a small group of researchers in Brazil. Their research alternatively portrays the modified state of consciousness induced by ayahuasca as psychopathological, psychotherapeutic or spiritual. Using a para-ethnographic approach including interviews with the scientists doing this psychiatric research, I develop a case study of how these researchers' subjective experiences with ayahuasca, as well as the experiences of religious ayahuasca users, shape the researchers' classifications and representations of the ayahuasca experience. The inclusion of such subjective experiences in considerations about the nature of the ayahuasca experience lends itself to establishing a complex understanding of the brew's effects that is often at odds with conventional psychiatric understandings of psychedelic drugs, particularly the categorical delimitations between what is considered psychopathological, psychotherapeutic and spiritual.

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What state of mind is this?

It was January 2011 and I was lying on my back in an fMRI machine with my head in a plastic cage to prevent untoward movement, a heart monitor was strapped across my chest, and a plastic cannula led into a vein in my right arm. After some minutes of lying still, listening to the rumbling of the magnets rotating around my head, I felt a warm tingling sensation creeping up through my arm, followed by the onset of what for the next twenty minutes would be an intense and pleasurable series of undulating waves of color and arabesque patterns that I could *feel* sweeping up and down my body. My left leg would not stop twitching, I was smiling wildly, and I wanted to let out a strong, joyous laugh, but instead I restrained my laugh and I attempted to keep my body perfectly still because I knew that I had just been injected with the psychedelic drug psilocybin as part of an experiment to test what the neuropsychological effects of the drug are on healthy volunteers.

The reader may be wondering whether I or the other study volunteers could still be considered healthy while in such a drug-induced state of consciousness. And this is precisely the point of this vignette—to bring into question what could be healthy and harmful, normal and abnormal, about one's state of mind after having been administered a psychoactive drug like psilocybin in the context of psychiatric research. To complicate matters further, the research group running this study—led by Dr. Robin Carhart-Harris and Dr. David Nutt at Imperial College, London—is not only interested in learning what the effects of psilocybin on the healthy brain are, but ultimately they would like to investigate whether the same drug could help alleviate the suffering of depressed patients. This is why both times that I was in the fMRI scanner (once on psilocybin and once on placebo), the research team had me remember specific

happy memories from my life so they could compare the vividness and pleasantness of the memories, as well as my brain function, while under the influence of these two substances.

After the scan on psilocybin, I answered standardized questions that probed my subjective experience of the scan. I remember alternating between periods of having my eyes closed while deeply enjoying the images and thoughts that technicoloredly swirled up to my attention, and opening my eyes to stare at a screen whose words appeared to be swaying to and fro through a softly color-bespeckled space while they would instruct me to focus my attention on a particular happy memory or on an attention task. At no time did I lose consciousness or become overly anxious or disoriented, rather I felt very alert, lucid, and intensely *alive*.

For some people, the idea of giving anyone, let alone a psychiatric patient, a psychedelic or “hallucinogenic” drug is simply irrational and irresponsible. Whereas for a fair number of people around the world today, the idea of consuming a psychedelic drug—though they may refer to the substance by another name—is not only seen as natural and healthy, it is actually the idea of taking the drug in a hospital, and especially in an fMRI machine, that seems irrational and irresponsible, if not worse—perhaps even blasphemous.

It is this heterogeneity of views on what comprises normal and healthy psychotropic drug use and, by association, what is taken to be the ontological nature of such drug-induced states of consciousness that I analyze in this article. The modified states of consciousness examined here, however, are not induced by psilocybin, rather by another psychedelic substance, ayahuasca, which is a decoction usually made from two Amazonian plants, the liana *Banisteriopsis caapi* and the bush *Psicotria viridis*. *B. caapi* contains monoamine oxidase inhibitors (MAOIs), like harmine, which are thought to make orally active the psychedelic compound N,N-dimethyltryptamine (DMT), which is found in *P. viridis*. Descriptions of peoples’ experiences

with ayahuasca share a number of similarities with other psychedelic drugs, like psilocybin, including the intensification of emotions, sensations of increased novelty and heightened perception, changes in the sense of time and space, etc (for a systematic analyses of ayahuasca experiences, see Shanon 2002; for a more literary description, see Taussig 1987, among others). The anthropological literature on ayahuasca has traditionally focused on the use of the brew by indigenous and mestizo communities, but the last two decades have seen a growth in publications on largely urban, non-indigenous groups who combine the sacramental use of ayahuasca with forms of Brazilian folk religiosity: the Santo Daime, the União do Vegetal and the Barquinha (cf Labate, Rose & Santos 2008; Labate & MacRae 2010). These Brazilian ayahuasca religions are essential contributors to the psychiatric research at the center of this article.

Approaching the subject of modified states

Identifying and defining non-ordinary states of consciousness is a large part of what psychiatrists have done for the past couple centuries. Nevertheless, the classification of even psychiatry's hallmark epistemic objects, schizophrenia and the related psychotic disorders, continues to be hotly debated. Notably, at the center of this debate has been the issue of whether psychosis is dimensional in nature or not—that is, whether there exist categorical differences between pathological and non-pathological delusions and hallucinations (Luhmann 2011), or whether these phenomena exist on a continuum of severity and are present throughout the population (van Os *et al.* 2009). Psychiatry's main tool to answer questions like these and to understand better the nature of such abnormal mental phenomena has long been descriptive psychopathology—a method of empathically eliciting patients' phenomenological reports of their subjective experiences and then systematically describing them. It has been argued, however, that since the re-biologization and standardization of psychiatry heralded by the publication of the Diagnostic and Statistical Manual of Mental Disorders (DSM) III in 1980, psychiatric diagnosis has progressively relied more on check-list diagnostic criteria of questionable validity and reliability to the detriment of our understanding of non-ordinary states of consciousness (Taylor and Vaidya 2009).

The move toward universal, standardized criteria for psychiatric diagnosis facilitated the growth of psychiatric anthropology and cultural psychiatry as disciplines that could address the limits of 'context-free' classifications (Good 1992). Two topics commonly dealt with in these disciplines are the differentiation of religious and spiritual experiences from psychopathology; and culturally-related variations in psychotropic drug use and effects. The DSM first included religious and spiritual problems as a category distinct from psychopathology in 1994 with the

publication of DSM-IV (Lakoff, Lu and Young 2010). In Menezes and Moreira-Almeida's (2009) recent review of the criteria used to make this distinction, they found that the criterion most agreed upon across the literature is that non-pathological spiritual problems should not cause suffering. However, ethnographic studies—like Obeyeskere's (1985) classic work on depression in Sri Lanka—show that suffering can take on different meanings in different parts of the world and different religious communities. This confusion points to the importance of having an emic understanding of the content and context of spiritual experience in order to make a valid classification of the experience. Yet, while it is common for psychiatrists interested in the cultural aspects of their field to have had their own experiences with cultural difference (Wintrob 2011), those who have cultivated such emic understandings of spiritual traditions through their own participation in such traditions may still be seen by some as professionally problematic (Dein, Lewis and Loewenthal 2011).

Meanwhile, the controversy around the pathologization of spiritual experience often pales in comparison to the controversy stirred up by the international proliferation of psychopharmaceuticals—a phenomenon largely attributed to the marketing of the idea that contemporary psychotropics are efficient and safe medications because of the *specificity* with which they affect their neural targets (Lakoff 2005). Ethnographic and historical research that challenges this ideal of the specificity of modern psychotropic drugs—thereby suggesting that instead they actually produce undifferentiated modified states of consciousness (Moncrief 2008)—often focuses on the local cultural, political and economic forces shaping the drugs' uses and effects, but rarely do such studies explore psychiatric researchers' personal experiences of consuming these drugs as a factor of serious concern.

Such concerns about psychiatric researchers' personal spirituality, and concerns over how local socio-cultural factors influence the understanding of psychotropic drug effects, combine and compound in the case of psychedelic drugs. The use of psychedelic drugs in psychiatric research has long been accompanied by debate as to whether their effects could be best understood as psychopathologic, psychotherapeutic, and/or spiritual in nature. This debate was complicated by a parallel debate about whether those researchers who themselves used psychedelics could objectively classify the drug effects they were observing in themselves and others (Neill 1987). After human psychiatric research with psychedelics came to a de facto halt in North America and most of Europe in the 1970s, in many countries psychedelics became, by definition, substances of no medicinal value and of high abuse potential. Systematic psychiatric research with psychedelics in humans only recommenced in the 1990s, eventually culminating in a "Revival of Hallucinogen Science since the Decade of the Brain" due to a marriage of technological advances in the cognitive neurosciences with the fascination that psychedelics so often instill in those who partake of them (Langlitz 2007).

Whereas Langlitz' (2010) case study of psychopharmacologists in a laboratory in Zurich, Switzerland investigated the importance of scientists' subjective experiences with psychedelic drugs for how particular "human-kinds" are self-fashioned, this article presents a case study of how psychiatric researchers' personal experiences with the psychedelic drug ayahuasca, and of how the experiences of religious users of this brew, influence how the researchers classify the ayahuasca experience as different kinds of states of consciousness—be they psychopathological, psychotherapeutic, or spiritual.

The psychiatric researchers analyzed here are loosely linked institutionally as they or their current collaborators have all conducted research on ayahuasca at the Medical School of

Ribeirão Preto, University of São Paulo in Brazil. They are all Brazilians who live and work in Brazil, which makes this group rather unique because most psychiatric research with psychedelics has taken place in North America and Europe. Also, unlike most psychedelic researchers, the three investigators interviewed for this study work in a country where the substance of their investigations, ayahuasca, is regularly and legally consumed in ritual settings throughout the country.

Even though there is some opposition in the Brazilian psychiatric community to the current state of wide-spread ayahuasca use in Brazil (cf. ABP/ABEADE 2001), compared to most psychedelic research in the world today, these three researchers who form the focus of this study—Dr. Draulio Araújo, Dr. Joel Porfírio Pinto, and Dr. Sidarta Ribeiro—all enjoy the relative freedom to use and to study ayahuasca’s effects, both in the laboratory and in ritual settings.

This case study examines how personal experience with psychotropic drugs that are said to induce spiritual experiences relates to the classification of non-ordinary states of consciousness in psychiatric research. Bowker and Star propose that classification systems be studied by paying attention to “how these categories are made and kept invisible” (2000, p. 5). I follow this approach in a two-fold manner: First, I examine a category of scientific experience that is often kept invisible—psychiatric researchers’ personal experiments with the drugs they study. Second, I use what is discovered about these researchers’ personal drug experiences to question why it is that relative to one psychiatric category of psychedelic drug experience—the psychopathological—the two other categories—the psychotherapeutic and the spiritual—are so often kept invisible. As will become clear, the case of psychiatric research on ayahuasca provides

us with a good opportunity to critically question, à la Bowker and Star, “What happens to the cases that do not fit?” (*ibid.*, p. 9).

I have done ethnographic research on the ritual uses of ayahuasca on and off over the past five years, so although this study differs significantly from a traditional ethnography, it nevertheless draws on a deep familiarity with the relevant academic literature and on gradually-cultivated contacts with both ritual ayahuasca users and the scientists who investigate the brew. No ethnographic observations were made of the experiments analyzed here; instead the data collection primarily consisted of audio-recorded interviews conducted over the Internet. All interviewees gave oral consent to be interviewed as well as to have their real names be used in the text. Interviews were conducted in English, except for the interview with Dr. Pinto, the quotes from which are my translation. In the interviews, I attempted to get at the “materiality and texture” (*ibid.*, p. 39), or embodiedness, of the researchers’ experiences with ayahuasca, how they translated these into the physical practicalities of their scientific work, and how this was shaped by the collaboration of religious ayahuasca users who have far more personal experience with ayahuasca’s effects than the researchers do.

This study was conducted in accordance with the guidelines put forth in the Research Ethics Review Checklist of the London School of Economics and Political Science.

Ayahuasca as psychopathological: Model psychosis research

In 2010, the psychiatrist Dr. Joel Porfírio Pinto completed his masters thesis in mental health at the University of São Paulo-Riberão Preto. The title of the thesis was “Study of the Neurofunctional Alterations after Ingesting Ayahuasca,” and for this project Pinto and his colleagues administered 200mL of ayahuasca to ayahuasca-naïve volunteers whose brains were then imaged with single photon emission computed tomography (SPECT); they also gave 150mL of ayahuasca to members of the Santo Daime religion and had them perform a verbal fluency task while their brains were imaged with fMRI. Both groups showed results that suggest that the ayahuasca-induced state shares some behavioral phenomena and neurobiological changes with psychotic states. In this experiment, which portrays the ayahuasca experience as similar to psychopathology, we will see how Pinto’s own use of ayahuasca actually brings him to represent the experience in an unexpected way that gives phenomenology priority over biology and utilizes significant ontological flexibility to categorize the experience.

Currently, Pinto works in a hospital in the Northeast of Brazil where he sees patients and supervises psychiatric residents. When discussing his research on ayahuasca Pinto is quick to stress that the state of consciousness induced in his research subjects is significantly different from the psychoses seen in mental illnesses like schizophrenia for a number of reasons; the most important of which is that the research subjects did not suffer a frank break with reality—the definition of psychosis. He also took pains in both his masters thesis and our interview to clarify that his research found that similar patterns of neural activation were seen in his subjects as in some studies with schizophrenic patients, but that this does not necessarily indicate that the phenomenological experiences of ayahuasca and schizophrenia are equivalent. Rather, he argues that a “common pathway” of neurons could be used for different mental processes, one healthy,

one not. When asked to explain his insistence that when investigating the biological effects of ayahuasca, one cannot discard the religious perspective on the brew, and why he feels that the experiences of Santo Daime members are not in fact pathological, he resorts to his personal experience drinking ayahuasca. “It changed my opinion a lot; it was important. Without having drunk, maybe I would not have understood the difference—the line that cuts between illness and an altered state of consciousness. It was important... for example, one of the times I drank, I’m certain that it was a flight of ideas that I had... one thought led to another, to another, and another... I myself experienced that in a non-pathological situation, and I could understand that this was not pathological.”

Here Pinto is confident that, although he experienced a symptom that is classically associated with mania and psychosis, the experience was not actually pathological because of the situation in which he had the experience—a judgment he likely would not have made before he actually had the experience himself. Of course, not everyone who drinks ayahuasca or otherwise ingests its chemical components does so in a religious context, so their experiences could possibly be quite different. This is why it is even more interesting that Pinto’s insistence that a scientific interest in the biological effects of ayahuasca should not override the religious perspective is supported by accounts of studies in secular psychopharmacology laboratories where humans were administered DMT: In one study, subjects reported contact with otherworldly beings (Strassman 2001); while in a second study, an agnostic psychologist performed a self-experiment on DMT to pilot trial an attentional task, but ended up having a strongly religious experience wherein the cross-hairs in the center of the computer screen displaying the attentional task morphed into a large Christian crucifix (Anonymous, pers. comm. 2011).

These subjective reports from Pinto and the research subjects above highlight not only the complexity of the ayahuasca experience, but also the classificatory flexibility that such experiences allow one to have, and which enables one to see the experience as significantly different from what it was expected or intended to be. Moreover, whereas model psychosis researchers in Europe have focused their attention on the neurobiology of psychedelic experiences—instead of the phenomenology—to make their model seem a better fit for psychosis (Langlitz 2007, pp. 221), Pinto makes explicit from the start that the phenomenology is different and hence he interprets the neurobiology to be flexible; ayahuasca is capable of producing both spiritual states and psychosis via a neurological “common pathway.”

Such classificatory flexibility may also lead to seeing these experiences as not just pathologic or religious, but also possibly psychotherapeutic. The therapeutic potential of ayahuasca was evident to Pinto via the standardized psychometric scales that demonstrated an elevation of mood in his subjects. For him, this quantitative finding supports the hypotheses that ayahuasca could be used not only to model the neurobiology of psychosis, but also to model the neurobiology of mania, and perhaps even to treat depression.

Ayahuasca as psychotherapeutic: An antidepressant drug trial

A newspaper article was published in Brazil back in November 2008, indicating that a pilot trial of ayahuasca ‘tea’ to treat refractory depression had been conducted in the Medical School of Ribeirão Preto, University of São Paulo (Zaidan 2008). In the article, the trial’s lead investigator, Dr. Jaime Hallak, is quoted as saying that the ayahuasca had a “fabulous effect,” acting much faster than standard antidepressants, and that the patients reported being able to face life anew after having previously been failed by multiple trials of antidepressant medications. These preliminary results are now being used to support the development of a Phase II randomized controlled trial with depressed patients who will not be treated with ayahuasca tea but with capsules containing standardized doses of lyophilized (freeze-dried) ayahuasca. In the study, this encapsulated substance will not be referred to as ayahuasca, rather as “D-MAOI” (DMT + MAOI) “out of respect for what ayahuasca represents,” according to Dr. Draulio de Araújo, a neuroscientist at the Federal University of Rio Grande do Norte, and the up-coming trial’s lead investigator.

This trial of D-MAOI as an antidepressant provides us with a good opportunity to see how larger structural forces can influence the inclusion and exclusion of subjective experiences of ayahuasca’s psychedelic effects from research, and in turn can modify how psychiatry defines the psychotherapeutic potential of the ayahuasca experience. Whereas the legality of using ayahuasca in religious settings in Brazil makes a psychedelic experience relatively normative in that country, thereby allowing Araújo and his colleagues to amass institutional support for their research with ayahuasca, today’s dominant social imaginary around mental health and psychedelics may lead other researchers to suppress the association between ayahuasca’s psychedelic effects and any possible psychotherapeutic effects.

Araújo is a young Brazilian academic who trained in physics and now specializes in clinical neuroimaging. He worked for several years at Universidade São Paulo-Ribeirão Preto where he helped to spur his colleagues' interest in studying ayahuasca. He has since changed universities and has brought his ayahuasca research with him, expanding the research program along the way. When I interviewed him in July 2011, Araújo and his colleagues were still preparing their Phase II trial and enjoying an unusual degree of institutional support for their work. Since the 1990s when psychedelic therapy studies recommenced, researchers in the field have often struggled to obtain funding and have lacked collegial support when fellow physicians would refuse to refer patients to the studies or when hospitals would deny access to the infrastructure necessary to run a randomized controlled trial. An publicly-known example of this was when Dr. Michael Mithoefer chose to resign from his post as a lecturer at the Medical University of South Carolina in order to continue in private practice his MDMA-psychotherapy research sponsored by the Multidisciplinary Association for Psychedelic Studies (MAPS) (MAPS staff, pers. comm. 2011). The work of Araújo and his colleagues has run a very different course in this respect: "We have been getting all the support that we need from the institutional side," however, "at first, yes, some of our colleagues, they wouldn't really give us trouble as far as not having the project approved in the ethics committee... or access to the equipment that we need or access to the hospital installations that we needed to conduct the experiments... but of course, many of our colleagues would play around saying that they also want to get high and take part in these experiments..."

Corroboration of this story comes from Araújo's collaborator, Dr. Sidarta Ribeiro, also a neuroscientist at the Federal University of Rio Grande do Norte, and a well-known figure in Brazilian science today (cf. Miller 2011). Ribeiro thinks that studying ayahuasca in Brazil is

relatively socially acceptable due to the fact that many people have tried ayahuasca or know someone who has. And he adds (referring to a talk on a neuroimaging study described below), “when I gave this talk... I always mentioned it; if people don’t ask me, I usually tell them that I’ve tried [ayahuasca] a couple of times.” But he also admits that there are many health professionals who do not know about ayahuasca and do not want to know about it either. In summary, conducting this research in a country where many people openly and regularly have psychedelic experiences appears to make it possible for these scientists to benefit from institutional support and publically to discuss their own use of ayahuasca while creating few negative consequences for their work.

Notably, Araújo characterizes the supportive atmosphere his research group has found in Brazil as an “inner reality” that he was eventually surprised to find out contrasted so much with the “outer reality” they would encounter outside of Brazil. When they attempted to publish in North America-based journals a neuroimaging study of the effects of ayahuasca consumption in regular ritual users, their article was met with, according to Ribeiro, “covert opposition” due to the stigma against the whole field of psychedelic research. And interestingly so, such stigma appears to manifest itself even in the public discourse of a Brazilian colleague of Araújo and Ribeiro, specifically in how reluctant she is to associate ayahuasca’s psychotherapeutic potential with its psychedelic effects. For her Ph.D. in Biochemistry, Dr. Jucélia Fortunato administered harmine—an MAOI found in ayahuasca—to rodents to test for its antidepressant effects. In a television interview in which she describes her doctoral research (Reynaldo 2010), Fortunato refers to the psychedelic effects of the ayahuasca brew as “side effects,” but then goes on to explain that these same effects are actually welcomed in indigenous spiritual rituals. When speaking about ayahuasca’s uses outside of laboratory studies, Fortunato readily refers to

indigenous contexts, only eventually to mention that urban syncretic religions, like the Barquinha, also use ayahuasca as a sacrament. While what she says is true, the Barquinha is an odd example to give of these urban churches because the Barquinha is far less well known in Brazil compared to the Santo Daime or the União do Vegetal. What's more, it was a Santo Daime church that provided the ayahuasca used in both Pinto's study and Araújo's and Ribeiro's above-mentioned neuroimaging study—and both of these studies were conducted with the collaboration of scientists who were co-authors on the journal publications that resulted from Dr. Fortunato's Ph.D. dissertation (cf. Fortunato *et al.* 2010).

Fortunato's selective giving voice to different interpretations of the subjective experience of ayahuasca is notable for how it influences the representation of ayahuasca's effects in the biochemist's public discourse. Ayahuasca's consciousness-modifying effects beyond its directly antidepressant effects are depicted primarily as undesirable side effects, secondarily as of spiritual value to some indigenous peoples, and then eventually as of spiritual value to an obscure urban religious group. This relative rhetorical silencing of the perspective of the urban religious users is in line with the dominant tendency in psychiatry to associate mental health with rationality and near-continuous control of one's psychic world, and therefore, to see psychedelic experiences as pathological (Anderson, *in press*). To understand better what may have led Fortunato to formulate her descriptions of ayahuasca's "side effects," we can look to India for an analogous case of structural social influences on medical classification.

In Lawrence Cohen's *No Aging in India* (1998), he describes how an emerging biomedical discipline in a post-colonial context—gerontology in India—is forced to reconcile the ever-present narrative of how modernity has changed the local order of life—the traditional family structure is seen as eroding—with the introduction of modern technological medical

interventions for the elderly. In Cohen's account of the matter, the new high-tech medical interventions do not work for treating the type of patient who in the Indian social imaginary is the traditional figure in need of such care—the old disadvantaged woman. So Indian gerontologists cannot resort to high-tech Western medicine to treat their elderly, but because Indians so firmly believe that their traditional family structures have collapsed under the weight of modernity, neither can they turn to “local models and epistemologies” (*ibid.*, p. 106) of family care to provide for the figure of the old disadvantaged woman. Therefore, Cohen shows, the discipline of Indian gerontology undertakes a rhetorical move to allow itself to be seen as successful: It replaces the symbolic figure of the untreatable old disadvantaged woman with the figure of the “genderless” male pensioner, for whom such modern medical interventions are assumed to be effective.

The parallels with Fortunato's discourse are as follows: The emerging discipline of biopsychiatry in Brazil—a country that has until recently remained a bastion of psychodynamic and social psychiatric persuasions (Behague 2009)—has been growing alongside the expansion of Brazilian neuroscience whose modern narrative of molecular specificity and computational precision (Silveira 2004) promises to produce new rational treatments to restore health and order (a.k.a. an ordinary state of consciousness) to suffering minds. Now, in our case study, this move toward a molecular modernity for Brazilian psychiatry needs to be reconciled with the introduction of a low-tech medical intervention, ayahuasca, which contrary to the case in India, *does* seem to have the potential to relieve patients' suffering, but by causing “hallucinations”—a seemingly pre-modern and molecularly nonspecific therapeutic modality. So, possibly to reconcile these phenomena, perhaps to paint her research on ayahuasca as conforming with modern psychiatric expectations, while at the same time respecting ‘traditional’ uses of the brew,

Fortunato discusses two figures in the abstract—first, the modern hospital patient for whom psychedelic effects are side effects and the non-psychoactive biochemical effects are curative, and second, the clearly distinct indigenous person from whom the psychedelic effects are spiritual. But she suppresses the complicated figure of the urban religious ayahuasca user, the Santo Daime or União do Vegetal member, who makes up part of modern society, but who also reveres ayahuasca's effects as spiritual and healing.

Clearly, larger structural social forces can both contribute to and distract from the role that the subjective experience of psychedelic effects plays in defining the psychotherapeutic nature of the ayahuasca experience. To complicate matters further, ironically, if we look to Michael Taussig's work on ayahuasca and healing in modern-day Colombia, it might actually not be despite, but because of, post-colonial narratives of modernity that urban patients and psychiatrists may think that Fortunato's example of the ayahuasca-drinking indigenous figure could portend healing elements of the ayahuasca experience for themselves. Taussig writes:

There is a figure who provides the substantiality necessary to bind the flashing ephemera of attributions and counterattributions into a redemptive force. It is an imaginary figure of the wild woman and the wild man, pagan figures attributed with magic to kill and heal socially caused illness and misfortune by their thus-defined civilized superiors. These are the great artifacts: fetishized antiselves made by civilizing superiors. These are the great contradictory figure of the Primitive, less than human and more than human.

(1987, p. 240)

Ribeiro, however, sees society as making less of an association between ayahuasca's psychedelic effects and healing than he does between these effects and the exotic and treacherous—two semantic connections he actively seeks to quell: "This is a discussion with society... because you need to, basically, remove this whole idea that if there is a psychoactive

effect, this is something to get rid of.” Araújo agrees, and when asked about how he reconciles the concern of inducing hallucinations with using ayahuasca as a therapy, he makes use of the notion of “secure standards,” by which he means:

It’s like any kind of medical treatment; what you do is put on the scale the benefits and the risks of that substance. All our effort is basically devoted to trying to minimize risk and boost up the benefits... If we find markers that are encouraging that this substance is interesting to reduce depression symptoms, then we can go to a second step that is to find out what are the substances, what is the dose that you should use, and so on. So actually it’s a door that has just been opened.

For Araújo, when considering the psychotherapeutic potential of the ayahuasca experience, the psychedelic elements are not displaced—as a modern narrative of the importance of rationality and molecular specificity might prescribe—by neuroscientific mechanisms and automatically classified as side effects, rather they are a facet of the brew which can be explored with the tools of neuroscience. And it should be remembered just how much such scientific explorations of ayahuasca’s psychotherapeutic properties have been socially and politically facilitated by the fact that so many religious users in Brazil have devoted themselves to the exploration of the brew’s spiritual and healing effects. Allowing the dominant narratives of biopsychiatric science to push the religious perspectives on ayahuasca’s effects to the side would alter significantly how the potential therapeutic properties of the extra-ordinary ayahuasca experience is ultimately classified by psychiatric science.

Whereas in Brazil it is relatively uncontroversial for a scientist studying ayahuasca to admit that she has drunk the brew, in the US the idea that a scientist running a clinical trial with psychedelics might have used those drugs themselves is currently inadmissible. For instance, as part of a training protocol for therapists who will conduct MDMA-assisted therapy in clinical trials for post-traumatic stress disorder, MAPS requested government permission to administer MDMA to the therapists for them to become better acquainted with what the patients will experience when they take the drug. The request was denied. But another request to administer MDMA to “healthy volunteers” in a psychopharmacology study was later granted—it just so happens that these volunteers will be the therapists for the post-traumatic stress disorder trial (MAPS staff, pers. comm. 2011).

This demonstrates a clear refusal on the part of the US drug regulatory authorities to allow researchers studying psychedelics to study officially their effects on their own consciousness, even though there certainly are biomedical researchers studying other means of consciousness modification who openly promote intensively engaging in the consciousness-modifying practice one studies, including practices that are quite religious in nature. John Tresch shares an example of such scientific self-discipline from the Mind and Life Summer Research Institute, an annual, immersive, and elite meeting of psychologists, neuroscientists and theologians who study contemplative practice: There, young researchers are encouraged to take part in “a new generation of ‘contemplative researchers’ with a double training, spending equal time in intensive meditation and on a Ph.D. in neuroscience” (2011, p. 62). Tresch interprets this figure of the “contemplative researcher” as an example of Fischer’s “experimental forms of life”

that are created when contemporary sciences tend to “bring together diverse expertises in settings whose nature is open to debate” (*ibid.*, p. 51). Our case study of Brazilian psychiatric research on ayahuasca can be said to provide another example of an experimental form of life—one in which scientists and religious ayahuasca users collaborate and converge in the study of ayahuasca as, among other things, a sacrament that induces spiritual experiences.

Ayahuasca as spiritual: The neurobiology of *miração*

When describing what the experience of drinking ayahuasca is like, many religious users report that they will sometimes have spiritual revelations in the form of closed-eye, and even open-eye, visions; such a vision is known within the Brazilian ayahuasca religions as *miração* (a ‘seeing’). Reports of *miração* led Ribeiro to wonder if ayahuasca could increase visual imagery and what the metabolic activity levels of the brain would look like in that state. The question developed into an experiment designed specifically to study the ayahuasca experience—as neither a predominantly pathologic or psychotherapeutic experience, rather—as a spiritual state of consciousness. This experiment, examined here, illustrates how the subjective experiences of ayahuasca’s effects, of both researchers and their religious collaborators, can significantly affect both experimental practices (materials, experimenter behavior, and methods and ethics) as well as the formal representation of the data (with regards to respect and responsibility) in the psychiatric investigation of the ayahuasca state of consciousness. The experiment also shows how such research can make para-scientists out of religious users, and spiritual collaborators out of scientists.

In 2006, Ribeiro, Araújo and their colleagues started working on an experiment in which they would eventually have 10 Santo Daime members drink ayahuasca and then lie down in an fMRI scanner. While in the machine, the volunteers were shown images taken from the symbolic universe of the Santo Daime religion, such as a humming bird, a tree, and a portrait of their religion’s founder, Mestre Irineu. After the volunteers saw each image, they would close their eyes and pay attention to the visual scene unfolding before them in their mind’s eye. Their brain activity in these moments was measured and compared to the activity detected when the volunteers had been looking at the images with their eyes open. Of particular note, the

experiment's findings included that the volunteers' primary visual areas—the area of the brain that becomes highly active when one receives external visual stimuli—was as active when the volunteers' eyes were closed as when they were open—a pattern that does not happen when people are in an ordinary conscious state. So, in effect, the volunteers were “seeing with the eyes shut,” and hence the title of the article about the experiment (Araújo *et al. in press*).

Practice

Ribeiro describes this study as a pilot study that prepared them for the future work they hope to do with ayahuasca. Just as was the case with this first study, the research program they have planned relies upon the continued collaboration of the ayahuasca religions to provide them, at a minimum, with the ayahuasca that they will study. One early event that was key to establishing this trust was when Ribeiro and Araújo themselves traversed the quasi-obligatory passage point that is drinking ayahuasca.

Originally, the neuroimaging study was going to include both regular ayahuasca users from the Santo Daime religion as well as ayahuasca naïves—and Ribeiro was going to be one of those naïve volunteers. That is, until Araújo convinced him that he should drink the tea before running an experiment on it. And it was at the end of his first Santo Daime ritual, Ribeiro says, that the *padrinho* (Santo Daime priest) not only gave him and Araújo a large bottle of ayahuasca to use for their study, but he also gave them a spiritual “assignment”: “I came at the end to thank the padrinho, and then he looked at my eyes and said ‘No, but you didn’t go there; you’re thanking me for something that you don’t know yet... And now you guys are going to take it on your own, the two of you... and you’re going to drink a full glass.’”

This assignment to drink even more ayahuasca would actually lead him to modify his behavior as the experimenter, producing for Ribeiro a different flavor of an “experimental form of life” than he had expected. Ribeiro recalls this second experience drinking ayahuasca by saying, “I hallucinated for a good six hours, and in the end it became pretty, pretty unbearable, and then I puked my whole life, and then I was in ecstasy. And that was the last time I drank ayahuasca, since then it’s been years.” To which he added, “it’s interesting, the more I study those things, the less I want to be the subject myself. When I’m the subject myself, I don’t want to be under scrutiny, I want to just be on my own.” So while still qualifying as a “contemplative researcher” of sorts, Ribeiro’s choice to separate his scientific experiences from his spiritual ones suggests the internalization of a classificatory category of experience that transcends the aspirations of scientific observation and seems better defined by subjective exploration.

Another fruit of Ribeiro’s drinking assignment concerned the methodology of volunteer recruitment: not only did he discover that he did not want to take ayahuasca in an fMRI scanner himself, but the laboratory decided to exclude ayahuasca-naïve volunteers from future fMRI studies. “We decided this would be hard if you’ve never tripped if you take it in the scanner; they will puke in the scanner, they will shiver, and they will suffer too much, claustrophobic, and so we gave up on this and decided to focus on people we know who can take it; and even then...” he said. In his study of the role of subjectivity in the psychedelic experiments in Franz Vollenweider’s laboratory in Switzerland, Langlitz found that “care and method, ethics and epistemology intermingle” (2010 p. 48) in the self-experiment pilot studies conducted by the researchers before they would subject volunteers to neuropsychiatric tests while in a modified state of consciousness. This was certainly the case in Araújo and Ribeiro’s ayahuasca neuroimaging experiment as well. From an ethical perspective, they decided to exclude naïves

from future fMRI studies because of their own self-experimentation, but also because of what they learned from the subjective reports of the Santo Daime members who participated in the initial study. For one thing, the psychological experiences were incredibly variable: One subject reported having an out of body experience in which he left the scanner, looked back, and saw his own body in the scanner; the experience was apparently not difficult for him however. On the other hand, one of their most experienced volunteers, the wife of the padrinho who had donated the ayahuasca for the study, said that in the scanner she had one of the toughest ayahuasca experiences she had ever had because, per Araújo, she said that “All the difficulty she had was because she was in a hospital, so she was seeing all the suffering of that environment.” Araújo summarized the variability of experiences by saying:

We had everything, we had subjects who said, ‘Whenever you need, just let me know and I’ll come back however many times you wish,’ and some subjects said ‘I’ll never do that again.’ So then I believe that naïves would probably have the same experience... However, I would not feel comfortable having naïves in the scanner, having their first ayahuasca experience. So I don’t really plan to do any naïve studies in the MRI. Different studies like EEG, that you can have a different setting, in a room with music, you know, a little bit more comfortable, then I’d do it. But for the MRI, the subject would have to be really certain about what they’re getting into before I consider conducting this type of experiments with naïves.

So in Araújo’s eyes, his volunteers’ consent requires an experiential element to be considered truly informed when more intensive types of experiments are in question.

Clearly a number of Araújo and Ribeiro’s experimental practices, such as obtaining their study materials (the ayahuasca), experimenter behavior, and the delimitation of their methodologies and ethics, were directly influenced by their own experiences with the brew.

Representation

In choosing to describe the experience of *miração* as a spiritual experience—in line with the emic, religious users’ point of view—Araújo and Ribeiro did not think this would make their study less rigorous or more subjective, rather as Ribeiro recalls, “we said let’s be objective, let’s move towards culture.” This epistemological strategy was decisive for how their study was framed. When I asked Ribeiro why they chose to study ayahuasca visualizations in the context of religious experience and not of the visual hallucinations of psychotic illness, he responded:

We gave an anthropological spin because we are sympathetic to it, because we thought it would be a good way to *sell* the paper. I don’t like the spin that says, ‘This is a hallucinogenic drug, look what it does to the brain’; it’s more than that. It has a use, it was selected culturally for a certain effect, and I wanted to have this in the paper.

Ribeiro later admitted that “It’s a very risky way of framing it. If we had said it in a more conservative manner... maybe it would have been published in a better place... Maybe we paid the price... or maybe not, I don’t know.” They did in fact have trouble publishing their manuscript and had to submit to a number of journals before finally being accepted at *Human Brain Mapping*. By then, to improve their chances of publication, they had removed from the manuscript any examples of the images that they showed the subjects in the study—the hummingbird, Mestre Irineu, etc.—and any mention of the religious significance of those images. However, to get published in *Human Brain Mapping*, they were asked to include in the article at least one of the images they had shown the volunteers in the fMRI scanner. “This is when we decided we needed to pay homage to Mestre Irineu, we’ll put it there, and for those who understand, it will be great, they’ll understand what it means; for those that don’t, fine... it

doesn't matter," Ribeiro recalls, referring to the example image they selected to include in the article: A portrait of Mestre Irineu that is well-known within the Santo Daime religion. Moving towards culture in order to frame the study—as a neuroimaging investigation of the religious experience of *miração*, and not a psychotic hallucination—therefore culminated in not only the shaping of the object of their study, but it also made their publication into a covert votive object.

The desire to pay their respects to the Santo Daime tradition likely has strong roots in their own experiences with the tea. After hearing about the decision not to use naïve volunteers in the study, and about how little they understood the dose-response relationship for ayahuasca, Araújo's response surprised me when I asked him how much his personal experience drinking ayahuasca informed his methodological considerations for this research: "From the methodological point of view I'd say that it did not really contribute much," which he qualified with, "because the biggest contribution comes from the fact that by having used it, everything that I tried to do, I tried to do with a lot of respect for not only the ritual, but the tea, and the people who are using the tea, and everything." Moreover, he claimed, "So this experience helped me also to *believe* the kinds of results we are finding because I had the experience so I know on my own flesh that that exists."

His commentary on respect and beliefs does eventually bring Araújo to discuss methods, however:

If you have the chance to take part of the experience, you sort of don't criticize what other people are telling you that they have experienced. So your mind is much more open to understand and to believe that what these people are telling you that they have felt is probably true, although I did not have the chance to measure [laugh]... So it is something that language will not reach, and the scientific language that we use today will not reach the type of experience that I had or that everyone who tells me their experiences had. So in this sense I believe

the first aspect is the respect with the whole thing, the ritual, the tea, the cultural aspect, the religion, everything. That's the first thing; the second thing is that you are getting closer to what neuroscience methods have to change into if we want to understand a little bit more than we understand right now... So I believe that these are the two main ways that by having the ayahuasca experiences, that might have changed the way that I have been conducting research, not only on ayahuasca, but all the research I'm interested in.

Araújo's experiences with ayahuasca have influenced how he represents his research not just to others (with respect), but also to himself (as believable). His experiences also have the potential to change his future findings if he modifies his methods to better understand the phenomena that current scientific language "will not reach."

However, making statements like "your mind is much more open to understand and to believe that what these people are telling you" does expose him to critics like the physicians Laqueille and Martins whose observations of ayahuasca use in France brought them to claim that ayahuasca users become acritical of the "intuitions, perceptions and interpretations brought on by the toxin" (2008, p. 26). But then again, maybe their critique does not apply if for Araújo ayahuasca, at this moment, is not a toxin, nor a medicine, but a sacrament; or maybe it is all three? Araújo himself points us to a solution to this question: Just as, per his suggestion that the language of science has limits to understanding the ayahuasca experience, so too does it have limits for defining the identity and actions of its classificatory constructs once they leave the laboratory:

And just to conclude, and that is independent of having that as a model for psychosis. One thing that I truly understand and believe that scientists really need to take care is that how would you sell the idea that ayahuasca or another substance might serve as a model for a disease. That is a responsibility that I understand science has, because otherwise, depending on how you propose the

model, then you might be doing a very harmful effect on ayahuasca, on the tradition, on the ritual, on everything.

What becomes of a scientific representation, of a classificatory construct like ‘model psychosis’ once it is free in society is not controllable by the psychiatric researchers who proposed it, but they may still be responsible for it. This sort of duty to the ayahuasca religions, this sort of respect for ayahuasca itself, is just one of the things that Araújo has learned from the handful of times that he drank the tea.

What sort of classification is this?

It is a fair question—asking what the ayahuasca experience actually *is*. Is it like psychosis, even if only on a neurobiological level? Is it an antidepressant, with or without the psychedelic elements? Is it a spiritual experience, and how does one objectively measure that? One way to tackle these questions is to reflect instead on who it is that society grants the authority to decide their answers. Who works with these authorities, or against them, and what tools do they ply to build the disciplined and enduring answers that society demands?

Perhaps we would already have our answers about the nature of the ayahuasca experience if there were more agreement on who exactly has the authority to make such calls, but as this case study of a loosely-linked band of psychiatric researchers in Brazil has argued, how the effects of a substance like ayahuasca are classified can be significantly influenced by controversial issues like self experience with spiritual traditions and drug-taking. And such controversies are still far from being settled. But, perhaps, these controversies are actually overstated. Again, looking to South America for counterexamples to dominant European and North American psychiatric norms, we can see that the clamor over psychedelic self-experimentation among psychiatric researchers in Latin America did not reach the levels it did in the northern hemisphere, and seemingly as a result, ethnopsychiatric practices including participant-observation and self-experimentation with consciousness-modifying substances, in the form of schools like *Psiquiatría Folklorica* (Seguín 1979), continued on in places like Peru at least until the 1980s (Eduardo Gastelumendi, ex-President of the Peruvian Psychiatric Association, pers. comm. 2011). *Psiquiatría Folklórica* has much in common with today's discipline of cultural psychiatry, which, among other aims, seeks to recontextualize modern

psychiatry's classifications of mental experience, thereby reinserting into our nosological grid the taxonomic dimensions of etiology, thick phenomenology and even theology.

The practical consequences of this abound. For example, for decades spiritist religions in Brazil, like Candomblé, suffered persecution for exciting “spiritist madness” in their followers because the ritualistic trances that worshipers would undergo were labeled as pathological by psychiatrists (Moreira-Almeida, Almeida and Neto 2005). However, those psychiatrists who took more of an anthropological approach to this phenomenon and actually went to observe the spiritist rituals tended to have a much less pathological view of the trance state (Almeida, Oda and Dalgarrondo 2007).

This example should guide us to closely consider Dein's (2010) claim that the growing scholarly field of religion and mental health has focused on the relationships between religious community membership or religious coping, and mental health, but it has neglected the study of how religious *experiences* relate to psychiatric well-being. If, as Dein suggests, traditional Judeo-Christian religious experiences like hearing the voice of God are poorly understood from a psychiatric point of view, then conventional psychiatry must have even more to learn about the kinds of modified states of consciousness found in far less familiar traditions like Candomblé and the Brazilian ayahuasca religions. Unfortunately, situations demanding the practical application of such far-off knowledge are already upon us.

On 14 June 2011, the Santa Fe, New Mexico Board of County Commissioners held a hearing to decide whether to grant a building permit for a temple where the União do Vegetal could perform their ceremonies. Tai Bixby, president of the local branch of the União do Vegetal, prepared a statement for the hearing wherein he addressed some hyperbolic concerns of

the neighbors that the temple's stores of "hallucinogenic" *hoasca* (ayahuasca) tea could leak into and poison the local groundwater. In his statement he wrote:

The word hallucination connotes deviation or seeing things that are not there. I am serene in my conviction that the particular form of perception that is caused by the religious use of Hoasca tea must not be defined, unreflectively, as hallucination. Further, I want to be clear that the UDV does not agree that Hoasca tea is mildly hallucinogenic or that it is too weak to have an effect. Hoasca tea is not hallucinogenic and the effect of Hoasca tea is powerful and positive. These are the best words I can find to describe the effect of Hoasca tea in this public forum. To really know the effect of Hoasca tea, one must experience it directly.

(Pers. comm. 2011)

The complex question of self-experience and psychiatric classification has clearly left the laboratory, and can now even be found smoldering in the mundane debates of North American local land use deliberations. Such developments in the role that psychiatric classifications like "hallucinatory" now play in the public domain will hopefully inspire further inquiry into who has the authority to establish those categories as scientific fact, and how their personal experience of those categories of conscious states influences their research and subsequent fact-making.

Expanded states and closing statements

Just as with the use of ayahuasca in healing, self-experimentation with this brew or other psychoactive substances should not be mistaken for a panacea or as a straight-forward solution to one's questions. After my experience on psilocybin in the fMRI scanner, the investigators sat me down in front of a camcorder, and still feeling the effects of their injection from maybe an hour prior, they asked me what I thought about the idea of giving psilocybin to patients as a treatment for depression. I told them it seemed like it could be a good idea as long as they did not inject it into the patients. I was stunned when they responded that, actually, that was exactly what they intended to do.

At first I thought it would be too intense, too overwhelming, especially for someone who was psychedelic-naïve, but I eventually came around to the idea as they explained that it would be done with plenty of preparation and in a supportive environment. I, strangely, had forgotten to take into account that the experience I had just undergone, and was now comparing to their hypothetical clinical situation, had taken place in the cramped tunnel at the center of an fMRI machine with parts of my body immobilized and the magnets overhead whirring away. My consciousness may have still been slightly expanded, but my perspective was disappointingly narrow and decontextualized. It would be good to remember at all times that even seasoned contemplative researchers retain a context around each of ourselves that shapes our experience of the world down to its very core.

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