Science, Pseudo-Science, and Fiction

with Alexandra Prince, "Stirpiculture: Science-Guided Human Propagation and the Oneida Community"; Ismael Apud, "Science, Spirituality, and Ayahuasca: The Problem of Consciousness and Spiritual Ontologies in the Academy"; Ankur Barua, "Investigating the 'Science' in 'Eastern Religions': A Methodological Inquiry"; Stefano Bigliardi, "The 'Scientific Miracle of the Qur'ān,' Pseudoscience, and Conspiracism"; and E. Allen Jones III, "A Terminator, a Transformer, and Job Meet: Creator–Created Relations in Film and Scripture."

SCIENCE, SPIRITUALITY, AND AYAHUASCA: THE PROBLEM OF CONSCIOUSNESS AND SPIRITUAL ONTOLOGIES IN THE ACADEMY

by Ismael Apud

Abstract. Ayahuasca is a psychoactive brew from Amazonas, popularized in the last decades in part through transnational religious networks, but also due to interest in exploring spirituality through altered states of consciousness among academic schools and scientific researchers. In this article, the author analyzes the relation between science and religion proposing that the "demarcation problem" between the two arises from the relations among consciousness, intentionality, and spirituality. The analysis starts at the beginning of modern science, continues through the nineteenth century, and then examines the appearance of new schools in psychology and anthropology in the countercultural milieu of the 1960s. The author analyzes the case of ayahuasca against this historical background, first, in the general context of ayahuasca studies in the academic field. Second, he briefly describes three cases from Spain. Finally, he discusses the permeability of science to "spiritual ontologies" from an interdisciplinary perspective, using insights from social and cognitive sciences.

Keywords: ayahuasca; consciousness; philosophy of science; psychology of religion; science; scientific method; Spain; spiritual ontologies

---

Ayahuasca is a psychoactive brew traditionally used by the native population in Amazonas. The name comes from the Quechua, *aya*, meaning soul or dead person, and *waska*, meaning vine, usually translated as "vine of the spirits" or "vine of the dead." The name of the brew varies in each tradition

Ismael Apud is a doctoral student at the Medical Anthropology Research Center (MARC), Universitat Rovira i Virgili, Spain; a researcher at the National System of Researchers, Agencia Nacional de Investigación e Innovación (ANII), Uruguay; and an assistant professor at the Universidad de la República, Montevideo, Uruguay; and an assistant professor at the Universidad de la República, Montevideo, Uruguay; e-mail: ismaelapud@psico.edu.uy.

 ISSN 0591-2385

or region: in Colombia the Tukano name of *yagé* is used, in Ecuador the Shuar term *natém*, and in Brazil *Daime* and *hoasca*. The beverage is generally prepared by mixing two plants: *Banisteriopsis caapi* (a vine containing beta-carbolines such as harmine, harmaline, and tetrahydroharmine) and *Psychotria viridis* (a shrub containing N, N-dimethyltryptamine, commonly known as DMT, an alkaloid similar to serotonin). The popularization of the brew in Western societies started in recent decades with the spread of shamanic ceremonies in urban contexts and the expansion of Brazilian churches across the world. However, international interest in ayahuasca would not have occurred without academic interest in the brew, which began as an intellectual interest, related to the properties of the psychoactive and its ethnographic background. Later, with the emergence of new academic perspectives, ayahuasca started to be used in spiritual and/or therapeutic settings.

This article proposes to analyze the relationship between science, spiritualties, and ayahuasca, using insights from the history of science, social studies of science and religion, and cognitive science of religion. I start by defining consciousness and "spiritual ontologies," explaining why these concepts are important in the debate between science and religion. I then use these definitions to analyze the origins of modern science and the confrontation with scholastic medieval thought, in the dichotomy between "effective causes" and "final causes." I continue the debate through the nineteenth century, in the new scientific disciplines—biology, psychology, and the social sciences—and in the intersection between academic and spiritual practices. My analysis continues into the twentieth century with the emergence of new schools in psychology and anthropology that are closely related to "spiritual ontologies." Against this historical background, I situate ayahuasca practices at the intersection between science and religion, with a brief analysis of three paradigmatic examples for the case of Spain. Finally, I briefly rethink concepts such as cultural systems, networks, social agents, and cultural translations, in light of the exposed crossroads between science and religion, and from an interdisciplinary perspective, integrating insight from social and cognitive sciences.

Consciousness, Science, and Spiritual Ontology

Defining consciousness is a difficult task. In anthropology, the definition is not easy to operationalize cross-culturally, because the term is used in different ways according to culture and language. For example, in Spanish, *conciencia* connotes awareness, conscience, and social consciousness, and most non–Indo-European languages have no word at all, or the terms do not fit well (Throop and Laughlin 2007). In philosophy and the social sciences there is no standard use of the term. But consensus over use is also lacking in "hard" disciplines such as neuroscience, and some authors suggest avoiding a precise definition until further progress has been made (Crick

and Koch 1998). In this article, I consider consciousness in a wide sense, as the cognitive capacity of humans to perceive, feel, and think about their external and internal world, and establish—to a greater or lesser extent—a syncretic unity of knowledge and experience. Following Immanuel Kant (2003), consciousness involves both logical and aesthetical faculties, and supposes an individual to be capable of binding—*Verbindung*—the multiplicity of experience in an "apperceptive synthesis." Although I will not address the limitations of this definition, it is important to mention recent critical perspectives; for example, the inclusion of nonhuman animals as conscious beings, and its ethical derivations (Cavalieri 2014), or the problem of agency in objects in the "new materialism" and actor-network theory (Coole and Frost 2010; Latour 2008).

My proposal is that one of the demarcation criteria between science and religion is related to the problem of what consciousness is, and how it must be used to achieve valid and reliable knowledge. We will see how, because the "orthodox view of science" depends on the strict refinement and confinement of conscious extensional faculties, its intentional properties have to be expelled because they are considered to be too metaphysical. This "demarcation criterion" has allowed the formal separation of science from the religious scholastic perspective, but caused different problems with some disciplines—social sciences, psychology, and biology—and with spiritual beliefs within the scientific community.

In this article, I propose a specific view of religion and spirituality. I will use the two terms interchangeably as I believe that, at a cognitive core level, they can be considered as the same phenomenon, characterized by the intuitive belief of an "ontology of spirituality" (Apud 2013). This characteristic goes beyond the classical distinction between substantive/formal/dogmatic religion, and functional/informal/mystical spirituality (Hervieu-Léger 2005). I propose that the notion of an "ontology of spirituality" implies the following:

(1) The belief not only in spirits but also in consciousness as ontologically independent of the extended world, including body and brain, and interacting in a spiritual realm with other supernatural and/or spiritual agents. The belief in supernatural agents is an intuitive assumption present in all the world's religions and spiritualities, as the cognitive science of religion has suggested since the publication of Stewart Guthrie's article *A Cognitive Theory of Religion* in 1980.

(2) A close relationship between this intuitive belief and altered states of consciousness (henceforth ASCs), because these phenomenological experiences give factuality to such beliefs. Note that ASCs occur in a large proportion of the population, usually through techniques of trance and/or possession, which are present in more than ninety percent of

the world's cultures (Bourguignon 1980), or through using certain substances named "psychedelics" or "entheogens" (including ayahuasca), the effects of which in the nervous systems produce a wide variety of mystical experiences (Cole-Turner 2014).

(3) Modern science's reaction against the particular "spiritual ontology" of the scholastic worldview, grounded on the Aristotelian "final causes." This reaction led to the rejection of other mystical traditions, but also to a deep conflict with scientific disciplines that deal with intentional causes, and an invisibility of theistic beliefs within the scientific community.

(4) The use of "intentional causes" which I propose, following the cognitive science of religion, is deeply rooted in the natural ability of human beings to recognize "intentional agents," an important evolutionary predisposition that allows humans to identify other living creatures in order to avoid danger (in the case of predators) and socialize (in the case of social peers) (Boyer 1994). I propose that the expulsion of "final causes" from the scientific project was unattainable because the human brain cannot avoid the use of this natural predisposition, and because it is indispensable to understand consciousness, the mind, society, culture, and religion.

The Crossroads of Science and Religion

Final Causes versus Effective Causes. One of the first obstacles modern science had to deal with was the need to distance itself from the teleological explanations (from the Greek, *telos*, end, purpose) of Aristotelian scholastic thought. In Aristotle's cosmology, the universe is comprised of five elements—earth, fire, water, air, and *aether*—arranged like layers of an onion. In this "onion universe" each element has its natural place, according to its essence. Earth, for example, is always at the center, while *aether*, the quintessential element, belongs in sidereal space (Aristotle 2007).

The distinction between essential and accidental attributes is a central concern in Aristotle's *Metaphysics* (1999). The essence of things involves an intrinsic tendency to seek their natural place in the universe. For example, a stone falls to the ground to find its natural place in the cosmos, which is the Earth as a center. Aristotle called this "final causes" a *telos* residing within things. For Aristotle and the scholastics, final causes explain the nature of things, while "effective causes"—those which explain movement in cause-and-effect relationships—are accidental phenomena, involving an external change in the object, but not concerned with its true essence. But with the arrival of modern science, the balance tilted to efficient causes. For Galileo, the goal was clear: scientific knowledge had to be forged through an experimental method, measuring the properties of objects—expressed as efficient causes—in order to arrive at a mathematical formula—expressed in

laws (Galilei 2008). Natural sciences kept only the efficient causes because they can be objectively observed and measured. By contrast, final causes were considered too metaphysical and subjective.

Galileo put experience at the forefront in what he called *sensate esperienze* ("sense experience"). For Aristotle, experience was not immediate knowledge, but a process with a singular and personal history, in a chain that connects sensation, memory, and experience. So sensorial experience was not reliable on its own for constructing premises in syllogistic reasoning. This aspect of Aristotelian thought was taken by the scholastics to establish the biblical dogmas as the ultimate truth. In medieval thought, experience and hypothesis were considered useful, but always to serve the eternal truths of the Bible. In contrast, Galileo considered experience as the origin of knowledge—not any kind of experience, however, but one explicitly controlled by an observational method, and exposed by the criticism of scientific peers; that is, observable events that anyone could measure and test with the correct standardized method.

The foundation of science as knowledge dedicated to "effective causes" was a necessary step to escape from certain religious and dogmatic worldviews. It was also necessary to highlight a method based on the dialogue between hypotheses and empirical data. But this distinction was also somewhat artificial, and the notion of a radical paradigm shift between medieval thought and the Renaissance has been relativized by some authors (e. g., Duhem 1985). The "Whig history of science" (Mayr 1990) usually considers the scientific revolution as the conflict between scientific mechanism and scholastic organism, but the contexts seem to be more complex than a two-rival scenario. According to Guillermo Boido (1996), there was at least one more tradition, neoplatonism, that had a significant influence on Kepler, Galileo, and Paracelsus. However, none of these three traditions abandoned the idea of God: in organism, God was the *prima causa* of planetary motion; in mechanism, the universe was a machine and God the engineer; in neoplatonism, God was the great mathematician behind the laws of the universe. The idea of God as an intentional agent, with a "divine program," was present in all three paradigms. These different perspectives on the relation between human rationality and "divine revelation" produced different "historiographies of the truth" (Hanegraaff 2012).

The Problem of the New Sciences in the Nineteenth Century. In the nineteenth century, the new disciplines concerned with both human and living beings had to deal with the dichotomy between final and efficient causes. While disciplines like chemistry could adapt to the new mechanism paradigm, others like biology had the problem of studying living organisms, with behaviors and attitudes for which simple cause-and-effect explanations were not valid. The contradictions between biology and mainstream science were not fully resolved until the discovery of the cell—and the general idea

that living creatures have an internal organization—and were finally laid to rest with the discovery of DNA by Francis Crick and James Watson (Monod 2000). Meanwhile, biology was treated as a "soft science," and biologists had to work on various hypotheses about the principle that differentiates life from inorganic matter (Jacob 1973). Vitalism was one explanation, as an enigmatic force within every live being, considered in different approaches from materialistic (electricity, magnetism) to philosophical (e.g., Bergson 2007). Finally, vitalism did not survive as a scientific theory, and the idea of intentional behavior as an emerging product of life evolution was the final solution that conciliated causal and intentional explanations (Wuketits 1984; Monod 2000).

In the social sciences, the difficulties were related to the "qualitative-quantitative debate" (Guba and Lincoln 2005). The social sciences followed two main paths to gain recognition as reliable scientific disciplines. The first of these was to emulate the experimental method as conceived by the natural sciences, by adapting the scientific experimental method to the quantitative study of social and cultural phenomena. The second path was to follow the humanities through the ideas of the German neo-Kantian school and its distinction between natural sciences—concerned with cause-and-effect explanations—and human sciences—concerned with understanding representations. The idea was to develop a comprehensive science of human meaning and experience, the first step toward the birth of qualitative methods in sociology and anthropology (Hamilton 1994). In the course of the twentieth century, both paths—but especially qualitative research methods—would be questioned by the orthodox scientific view.

In psychology, the causal-versus-final-explanations dichotomy varied according to academic school. In experimental psychology the tension was addressed by Wilhelm Wundt, who made the distinction between physiological psychology, studying the elemental sensations of consciousness through experimental methods, and folk psychology, studying superior psychic functions like language and culture through a descriptive method (Cole and Engeström 1993). In behaviorism, opposition to the use of introspection and the denial of "mind" as a scientific concept led to the one-way road of mechanistic explanations. In psychoanalysis, Sigmund Freud followed the path of interpretation—*Deutung*—as a tool for exploring the psyche and its symbols, but not in contradiction with mechanism explanations (Moizeszowicz 2000). However, all these alternatives came from a secular psychology, where consciousness was understood as emerging from the organism (Freud, Wundt) or as a nonexistent phenomenon (behaviorism). There were also other ways of explaining consciousness; for example, as an autonomous entity, relatively independent from organic matter, and with its own ontological foundations. The idea of a spiritual realm or force was popular among scientists from all disciplines, although this notion was not always proclaimed in public.

The Spiritual World in Nineteenth Century Science. The existence of a spiritual world was not an alien idea in nineteenth century scientific circles. One example was the "discovery" of magnetism in the late eighteenth century by Friedrich Mesmer, at a time when psychological science did not yet exist. For Mesmer, magnetism represented an effort to unify spiritual and mechanic ontologies in a common materialistic world, assuming the existence of a subtle physical fluid that fills the universe and connects people, earth, and heavenly bodies. Disease was conceived as an unequal distribution of this fluid in the human body, and healing was understood as achieving a new equilibrium (Ellenberger 1994). This conception of magnetism had a great impact in academic circles, and chairs on mesmerism were instituted in the German universities of Berlin and Bonn. However, in the decade of 1850 Mesmer's work was discredited, and the therapeutic effects of magnetism were dismissed as products of the "imagination."

But immediately after the fall of "animal magnetism," a new movement, spiritualism, was on the rise in the United States. This movement dates back to 1847 in Hydesville, a small village in upstate New York, when the Fox sisters began hearing rappings and noises, which they decided to answer by establishing a communication method with strokes and movements. After a few years, spiritualist sessions had become common practice in social gatherings in Europe and the United States. These events spread the belief in consciousness as a spiritual and "natural" mysterious energy (Albanese 2005).

Spiritualism had a strong impact in all social environments and countries around the world. Some of the most renowned scientists and philosophers of the time supported these ideas, including William Crookes, Henri Bergson, William James, Alfred Wallace, Charles Richet, and Max Planck. In 1882, the Society for Psychical Research was founded in London, with members such as Crookes, James, and Bergson. In Germany, the term *Parapsychologie* was first introduced by the philosopher Max Dessoir in 1889 in the occultist journal *Sphinx*, while in France the term *Métapsychique* was mentioned by Richet in 1905, after years of studying psychic phenomena (Asprem 2014). In the twentieth century, the psychologist John Coover studied paranormal phenomena in laboratory settings at Stanford University, and Joseph Rhine founded the first laboratory of parapsychology at Duke University, using the term "parapsychology" for the discipline, and "extra sensorial perception" for the phenomena studied (Kreiman 1994; Asprem 2014). According to Egil Asprem (2014), although the founders of psychical research struggled for the creation of an academic discipline on its own right it was not until the creation of the laboratory at Duke in 1930s that parapsychology became a university discipline. But even in this promising period, this new discipline could not solve the methodological problems and theoretical fragmentation that haunted its predecessors.

Spiritual Ontologies and ASCs: Psychology and Anthropology in the Twentieth Century. Catherine Albanese (2005) points out the interest in the spiritual realm as part of the common worldview of "nature religions," which include theosophy, spiritualism, transcendentalism, and a special interest in oriental mysticism. This interest in mysticism and spirituality was an important antecedent for the emergence in the second half of the twentieth century of new academic schools, concerned with spiritual experiences and ASCs. Disciplines such as anthropology and psychology (and also other disciplines dedicated to the study of religion) attributed new meanings to religion, producing the emergence of new forms of religious practices (von Stuckrad 2014). In psychology, the first steps came from Carl Gustav Jung and his ideas of the psychological value of mystical experiences, and Abraham Maslow and the foundation of humanistic psychology, conceived as an alternative to behaviorism and psychoanalysis. These perspectives gave rise to several schools with a concern for the existential, humanistic, and spiritual dimensions of human experience, such as Alexander Lowen's bioenergetic school, Fritz Perls's Gestalt psychotherapy, and transpersonal psychology.

Perhaps transpersonal psychology takes the closest interest in the human spiritual dimension. Maslow introduced it in 1967 as "transhumanist psychology," recognizing the spiritual realm of the psyche, and proposing the use of Western and Eastern ASC techniques to access this realm (Walsh and Grob 2005). The other founder of this school is Stanislav Grof, a pioneer in the clinical study of lysergic acid diethylamide (LSD), who believed that transpersonal psychology challenged the mechanism paradigm of Western societies by introducing a spiritual dimension of consciousness (Grof 1994). Transpersonal psychology also posited a new kind of evolution, not biological, but an evolution of consciousness, as part of the spiritual development of humankind, and against Western scientific materialism (Walsh 1994). The general idea was not to ignore scientific knowledge, but to transform it in a spiritual way, as though it were a kind of "paradigm shift" in Thomas Kuhn's terms (Tart 1977).

The emergence of these new perspectives must be considered within a post–World War II and Cold War context, with the crisis of the modern Western paradigm of progress, and the rise of countercultural movements in the 1960s. The crisis of modernity had a variety of causes: irresolvable social inequalities, an increasingly competitive and individualistic culture, the growth of environmental problems related to modern technologies, extended bellicose conflicts around the world, the menace of new weapons of mass destruction, and cyclical economic crises. All these problems created a social disenchantment with modern Western culture and its promises of social emancipation, in what Jean-François Lyotard (1993) called "postmodernity." As a reaction, countercultural movements appeared in the form of the hippy movement, feminism, ecologist organizations, and antiwar

movements. This general criticism of the Western model of emancipation included a critique of the mainstream scientific materialistic worldview. Scientific commitment to social emancipation was regarded with suspicion, a reasonable attitude if we consider science's involvement with the arms industry, environmental crisis, medical mercantilism, and other social problems.

The biomedical scientific model, for example, was harshly criticized for its commercial nature, as well as its inefficiency and iatrogenic effects. In the search for new alternative medicines, the holistic movement emerged with a range of alternative practices aimed at "getting back to nature," introducing humanistic medicine, developing a spiritual conception of well-being, and recovering Eastern and Western heterodox medical practices (Baer 2003). In the academy, this disenchantment with the "standard view of science" materialized in what Anthony Giddens (1976) called the demise of scientific "orthodox consensus." In the philosophy of science, the vision of science as neutral, objective knowledge was challenged by Thomas Kuhn in his *The Structure of Scientific Revolutions*, and in the social sciences qualitative methods, taking different critical approaches, began to gain popularity.

At the same time, the positivistic tradition in anthropology was being displaced by symbolic anthropology as a criticism of the objectivity criteria of modern anthropology, and the discipline's association with colonialism and imperialism. With this criticism came a growing appreciation of non-Western symbolic worldviews, including an increasing interest in shamanism. Previous interest in this subject had been purely intellectual, when Claude Lévi-Strauss ([1949] 1997) and Mircea Eliade (2009) explained the shamanic ritual as an ethno-psychotherapeutic practice. Both authors transformed the prior understanding of shamans as people who were either mentally ill or quacks into specialists in ethno-psychotherapy. But in the 1960s anthropologists themselves started to become shamans. In Carlos Castaneda's *The Teachings of Don Juan* in 1968, a story emerged of the naïve rational Western scientist who is initiated into an ancestral practice and learns of a superior wisdom from an exotic shaman. Later, after his fieldwork in the Amazon rainforest, Michael Harner founded the Center for Shamanic Studies. These initiatives also had a major impact on society, with the emergence of neoshamanic practices in networks of spiritual seekers and psychonauts.

First-hand ethnographic exploration of ASCs contributed to the discussion about the existence of paranormal phenomena, and anthropologists' accounts of these experiences started to appear. A classic example is Edith Turner's fieldwork in Africa, where she witnessed spiritual beings (Turner 1994) and paranormal phenomena (Turner 1992). Michael Winkelman (1982) addressed the controversy, stating that paranormal phenomena exist and that, although anthropologists frequently witness them, they do

not usually publish their experiences out of fear of being discredited by their peers. The comments and replies to the article reflected a range of postures in the anthropological community, from the most critical (e.g., Erika Bourguignon) to supporters like Marlene Dobkin de Rios. More recently, Jeremy Narby and Francis Huxley (2005) highlighted the problem of ethnographers ignoring paranormal phenomena. Harold Ellens (2008) wrote along similar lines about journals devoted to religion, spirituality, and theology, and David Luke (2012) observed the same problem in clinical and anthropological reports on psychoactive substances.

Ayahuasca, Science, and Religion

The Popularization of the Brew. Psychedelics cannot be separated from this history that combines science and spirituality. They have played an important role, mainly after the discovery of LSD by Albert Hofmann, and together with neoshamanism and the new schools of psychology mentioned earlier. In the countercultural milieu, psychedelics were initially conceived as a privileged door to access spiritual realms, and as an important tool for the "revolution of consciousness" (Méndez López 2013). Since their prohibition in the 1970s, their revolutionary connotations have become less important, but recreational, psychonautical, and spiritual uses have continued against the less controversial background of "new age networks" (Rothstein 2001).

Although ayahuasca had been recognized in the nineteenth century by Richard Spruce and Manuel Villavicencio, academic interest in the beverage became fashionable after its description by the father of modern ethnobotany Richard Evans Schultes, in the second half of the twentieth century (Williams 2015), at the same time the first studies on psychedelics were published. However, the chemical compounds of ayahuasca had not yet been clearly identified, and psychedelic laboratory research focused on other more well-known substances, such as LSD, psilocybin, and mescaline. In anthropology, the first ethnographic studies into ayahuasca came from Gerardo Reichel Dolmatoff (1969) in Colombia, Michael Harner (1972), who explored its use by the *jivaros* of Ecuador, and Marlene Dobkin de Rios (1973), who wrote on the use of ayahuasca in healing practice in Peru. In the 1970s the brothers Terence and Dennis McKenna ([1975] 1994) developed an interest in the brew, and Luis Eduardo Luna (1986) studied the Peruvian *vegetalismo*. But it was not until the 1990s that ayahuasca captured international attention. Stephan Beyer (2009) identifies the exact moment in 1991 with the publication of Luna's book *Ayahuasca Visions,* with paintings of the visions by the Peruvian *curandero* Pablo Amaringo (Luna and Amaringo [1991] 1999).

The Brazilian churches Santo Daime and União do Vegetal (UDV) started to spread abroad in the 1990s. These churches related to ayahuasca

are syncretic religions influenced in different ways by Umbanda, Spiritism (Allan Kardec´s systematization of spiritualism), popular Catholicism, and/or Amazonian shamanism. For example, the UDV is more rationalistic, allowing spoken questions between participants and "masters" during the session, and denying the possibility of mediumistic possession. Santo Daime forbids the spoken word, but uses dance, hymns, and accepts the incorporation of spirits (Goulart 2008). As formal and institutionalized religions, they have their own network organizations, with their own centers and pilgrimage sites. But they also interact with therapists and holistic centers, and participate in the scientific community in a variety of ways. In Brazil, many academic researchers are also members of the Santo Daime and UDV churches, and numerous dissertations and scientific articles have been published on the subject of ayahuasca. The UDV church also has an institutional interest in promoting scientific research, and has its own medical department and scientific commission, conceived within the idea of convergence between spiritual knowledge—the science of Solomon—and academic knowledge (Labate and Melo 2014).

Ayahuasca in Spain. Spain played an important role when ayahuasca first arrived in Europe, perhaps due to aspects of its cultural background that eased the reception of ayahuasca in the country. This background was prepared by the early psychedelic influence, and the posterior arrival of alternative medicines, spiritual practices, and new schools of psychology. The psychedelic movement had an early influence in Spain, both in social and academic circles. Spanish psychiatrists started to study the therapeutic applications of LSD and other psychoactive substances in the early 1950s (Usó 2001). However, only a few years lapsed before the same researchers who had spoken of their possible therapeutic effects began to alert the population about their toxic and dangerous effects. According to Juan Carlos Usó (2001), this switch in the message was due to strong political pressure from the United States in the international context, and the commitment of Francisco Franco's dictatorship to policies designed to halt any countercultural initiatives. As in the rest of the world, the psychedelic research agenda was suspended, but recreational and social uses could not be stopped, and places like Ibiza and Formentera became popular points on international psychedelic routes.

Whereas psychedelics arrived earlier, alternative medicines came somewhat late to Spain, at the end of the 1970s (Perdiguero 2004). The new schools of psychology mentioned previously also began to appear in this period: in 1976 Luis Pelayo founded the Instituto de Terapia Bioenergética Anthos (Anthos Institute of Bioenergetic Therapy); in the 1980s several Gestalt associations were created, such as the Asocación Española de Terapia Gestalt (Spanish Association of Gestalt Therapy) in Madrid and the

Institut Gestalt (Gestalt Institute) in Barcelona; in the 1990s transpersonal psychology was introduced by Manuel Almendro.

Ayahuasca arrived in Spain in the 1990s through three major initiatives: the psychology school of Claudio Naranjo, the anthropologist Josep Maria Fericgla, and an addiction treatment center founded by the psychiatrist Josep Maria Fábregas. The three cases are paradigms of how scholars redefine spiritual practices in academic terms: Naranjo as the classical example of the use of psychedelics in the "perennial" background of new spiritual psychologies; Fericgla as the anthropological reformulation of shamanic practices; Fábregas as an example of the dialogue and syncretism between biomedical practices and traditional healing systems. The three cases represent specific ways of integrating alternative medicines, spiritual ontologies, Western academic health practices, and the use of psychedelics.

The life of the Chilean psychiatrist Claudio Naranjo is a perfect example of the intersection between psychology and spirituality in the second half of the twentieth century. His biography combines all the aspects discussed in this article: his training in new psychologies such as Gestalt (in which he is one of the most renowned successors of Perls); his interest in east Asian meditation (Naranjo 1976); his critique of Western culture and the need for a radical shift of consciousness (Naranjo 2005); his holistic and syncretic perspective through the Seekers After Truth program; and the idea of altering consciousness with psychedelics to facilitate spiritual self-healing (Naranjo 1973). Naranjo's first contact with ayahuasca was in the 1960s, through Schultes and Harner, whose advice guided him to the Putumayo department of Colombia, where he came into contact with the brew and published a pioneering study about its effects (Naranjo 1967). But it was years later that Naranjo placed greater emphasis on ayahuasca's psychotherapeutic applications, as a result of a profound mystical experience (Naranjo 2012, 28–29). Ayahuasca first appeared in Spain in the late 1980s, after Naranjo met the church of Santo Daime in Rio de Janeiro, and decided to arrange a meeting with the church in Spain as part of the Seekers After Truth program (López-Pavillard 2008). He would later decide not to continue working with Santo Daime, mainly because of the formal aspects of the doctrine and sessions. Naranjo's design of the ritual was much more eclectic and flexible than the structured setting of the church. This separation did not stop Naranjo from organizing more ceremonies in Spain and other parts of the world.

The second case is not from psychology but from cultural anthropology. Born in Barcelona, Josep Maria Fericgla grew up at a time when psychedelics were not difficult to find. In anthropology and related disciplines, there was already an intellectual curiosity about the relationship between psychedelics and culture, so it is not unusual to find that one of Fericgla's first papers was about the psychedelic mushroom *Amanita muscaria*, and its relation with the creation of symbols, myths, and culture

(Fericgla 1985). In the early 1990s Fericgla went to Ecuador to study the use of *natem* by the Shuar (Fericgla 1994). On his return to Spain, he founded the Societat d'Etnopsicologia Aplicada i Estudis Cognitius (Society of Applied Ethnopsychology and Cognitive Studies) and organized international conferences about entheogens, bringing together notable scientists in the field such as Albert Hofmann and Jonathan Ott.

Fericgla currently works on a range of activities related to the development of the inner world; these include workshops on holorenic breathwork, awareness of life through the experience of death, learning to love and say goodbye to things and people, and courses on meditation and on psychotherapeutic applications of ayahuasca. His interpretation of the mystical experiences of ayahuasca revolves around the vitalist-like idea of an energy expressed in every being, conceived as a transcultural human faculty, and articulated in different cultures, for instance in the Chinese idea of *chi*, and in the ineffable world of shamanism. Through his workshops and courses, Fericgla teaches how to express and let this vital energy flow in order to connect with the inner self and integrate existential values. Fericgla remains strongly critical of Western society, stressing the need to find alternative ways of spiritual and existential self-awareness.

The third illustration is the Instituto de Etnopsicología Amazónica Aplicada (Institute of Applied Amazonian Ethnopsychology or IDEAA) founded by the psychiatrist Josep Maria Fábregas as a pilot project in the year 2000. Initially located in Belo Horizonte (Mina Gerais, Brazil), it was strategically moved to Prato Raso, a site near Céu do Mapia, the headquarters of Santo Daime/CEFLURIS (Fernández and Fábregas 2013). IDEAA focused on the use of ayahuasca to treat cases of addiction that proved to be more resistant to conventional therapies. Most of its patients were from Spain, so the isolation and the remoteness of the center were important factors in the therapeutic setting. The center is no longer operating, but a significant number of therapists and professionals learned from this experience, and now continue working with ayahuasca on their own initiative.

The first contact Fábregas had with ayahuasca was in malaria eradication programs in Amazonas. In these programs, interaction with shamans as social authorities was an important factor in gaining better access to communities. In the dialogue between Western medicine and folk healing traditions, some of the substances the shamans used proved effective in the treatment of certain diseases. One of these substances was ayahuasca, and Fábregas started to assess whether it could be used in some resistant cases of addiction. The idea was already being applied in Tarapoto, Peru, by French psychiatrist Jacques Mabit, who founded the Takiwasi center in the late 1980s (Cárcamo and Obreque 2008). Similarly to Fábregas, Mabit witnessed the usefulness of traditional medicine when working in a hospital in Peru. In a later trip to the upper Amazon, he discovered that the

local population used *curanderos* for addiction problems. This ethnomedical use of the brew inspired him to found Takiwasi (Mabit Bonicard and González Mariscal 2013). Mabit's initiative was a strong influence in the creation of IDEAA, integrating alternative medicines, east Asian practices, and psychological techniques from the gestalt, bioenergetic, and transpersonal schools. There are also differences, however; while there is a strong presence of the Peruvian Amazon *vegetalismo* in Takiwasi—not only in the use of ayahuasca, but in the variety of plants found in its herbalist tradition—IDEAA borrowed elements from Santo Daime (Fernández and Fábregas 2014).

At the present time the uses of ayahuasca in Spain are heterogenic, and come through different routes, people, and organizations. But considering the crossroads between spirituality and science, and also the beginnings of ayahuasca use in Spain, the three cases presented are the most important ones. Claudio Naranjo was the first to bring ayahuasca to the country, and has also had an intellectual influence in psychological and therapeutic circles. Fericgla and Fábregas were perhaps more important, because under their supervision a number of therapists were trained who now lead groups related to ayahuasca. They also had an impact in Spain's contribution to the renaissance of psychedelic studies, promoting a new generation of researchers and studies in the field.

Discussion: Some Brief Insights from Social and Cognitive Perspectives

Cultural Translations. In all the cases described there is "cultural translation" from the original ayahuasca practices to the Spanish context. Original elements, such as the hymns of Santo Daime, or the classic chants and instruments of the Amazonian native healers, are usually combined with elements from other traditions, such as east Asian meditation, ethnic and/or new age music, and psychotherapeutic moments of "integration" after the ceremony. These changes are explicitly made by the professionals because the functions and goals of the ritual are different from the original contexts. Whereas in Santo Daime the ritual is related to a formal and communal religious/mystical/healing practices (cf. Barnard 2014), and in the *mestizo* Amazonian culture the *curanderos* use ayahuasca to treat folk illnesses and witchcraft, in Western ceremonies ayahuasca is used in a psychotherapeutic setting, with a focus on existential and personal conflicts. The elements in the ritual are redefined within the idea of a redefinition of the ritual according to psychotherapeutic goals and our own Western cultural matrix.

These changes involve a "cultural translation" from the original culture to the Spanish context. The translation of symbols and practices is an inevitable part of every intercultural exchange, and is never unilateral. For example, as I described in a previous article, in the exchange between urban

holistic centers and Peruvian ayahuasca *curanderos* the translations go both ways, in a process I called "double assimilation":

> (1) On the Western side, the adaptation of Amazonian *vegetalismo* to mystic-esoteric practices reformulated under the therapeutic notions of the New Age and the redesign of the ayahuasca ceremonies to meet the needs and demands of an urban population with existential problems, using insight as a therapeutic tool; and (2) in the case of the Peruvian traditions, the assimilation of the *curanderos* to a transnational spiritual market system, adapting their practices to the needs of the gringo (white Western people), in a supply–demand relationship that offers good economic returns, and in which the *curanderos* recruit their public through travels around the world, the creation of healing centers adapted to a Western public, and participation in transnational ayahuasca networks and the world market of beliefs, increasing day by day thanks to globalization and information and communication technologies like the Internet. (Apud 2015, 8)

In fact, the idea of two cultures exchanging is an oversimplification. The *mestizo* cultural background of the healers of the upper Amazon has included many elements of Western culture since the times of the conquest (MacRae 1992). For example, in the case of shamanism and other healing traditions, there is a strong influence from Spanish traditional medicine, with practices like *baños de limpieza* (cleaning baths), and different folk diseases. Moreover, the shamanic practices of the upper Amazon are neither monolithic nor isolated traditions. As Beyer (2009) points out, shamans from different geographic and cultural areas have had fluid contact since pre-Columbian times through an extensive interethnic navigation network along the Amazon river. Thus the diffusion of knowledge—with its respective cultural translations—is the rule, not the exception (Fotiou 2010).

Systems, Fields, and Networks. Some authors have proposed that the cultural background of Amazonian shamanism can be better explained in terms of networks rather than the classic idea of "cultural systems" (Langdon 2006; Beyer 2009). The idea of culture as a network is used to illustrate the less systematic and formal nature of symbolic knowledge and cultural practices. In the study of religions, it usually describes those traditions which do not have the formal organization of traditional religions, for example "new age networks" (Rothstein 2001). But it would be useful to consider whether more formal and structured religions such as Catholicism, Buddhism, Islam, or Judaism could also be described as networks, despite their hierarchical structures and authorities. This question is related to the general debate of what a cultural system is, and whether cultural and social phenomena can be explained in systemic terms.

In classical sociology, the idea of an underlying system can be traced to authors such as Émile Durkheim and Talcott Parsons, who proposed a systematic order in both society and culture. The latter, culture, was

considered in terms of its social functions, as a "symbolic order" capable of establishing consensus, and maintaining commitment to social structures. But in the 1960s, constructionist sociology questioned the idea of a social order, focusing on the micro-social dialectics between society and individuals, and introducing the idea that rules are also broken and redefined by the reflexivity of the social agents. For the case of religion, the sacralization of the world was considered as a "nomic battle" between social actors in the construction of social reality (Berger 1999). Another alternative was Pierre Bourdieu's concept of social field, as a game with certain rules and agents competing for the legitimacy of their practices and beliefs. Bourdieu applied this idea in both scientific (Bourdieu 2001) and religious fields (Bourdieu 2006).

In anthropology, the idea of culture as an organized system is strongly rooted, perhaps because of the German heritance of Wilhelm Dilthey's concept of "worldview"—*Weltanshauung*—and its influence on the foundation of cultural anthropology since Franz Boas (Stocking 1989). There is also the influence of sociology—for example, the French tradition from Durkheim to Lévi-Strauss; or from Parsons to Clifford Geertz in the case of the United States—in that in symbolic anthropology culture acquired autonomy from social systems (e.g., Geertz 1973). In the 1980s and with postmodern anthropology, the culture system model was criticized and replaced by the conception of culture as a heterogeneous phenomenon. This change was the result of a general criticism of classical ethnographies and their use of monolithic cultural descriptions, considered as ethnocentric and colonialist ways of understanding other societies. To escape from this vision, anthropology started to experiment with new forms of doing ethnography, which included the description of culture as a polyphonic and fragmentary phenomenon. The idea was also reaffirmed with globalization and the interest of anthropology in urban societies, where syncretism and heteroglossia are strikingly evident.

Finally, and more recently, Bruno Latour's (2008) actor-network theory uses the term "network" in a different sense, strongly influenced by the conception of "rhizome" devised by Gilles Deleuze and Félix Guattari. In a critique of what the author considers "metalanguage," categories such as society and culture are discarded. For Latour, there are only translations between mediators, and traceable associations that can be studied as networks. But networks are nothing more that the track the researcher has constructed, and not a real phenomenon *per se*. Furthermore, actors are the sum of their agencies and not an autonomous ego (Latour 2008).

All these alternatives to system theories have their strong and weak points. In the case of sociology, Bourdieu's notion of field allows us to analyze both science and religion in political terms. But the problem of this notion is that while it can manage the diversity of agents inside a specific field relatively well, it gives the idea of a certain impermeability

from one field to another (Hervieu-Léger 2005). And in our specific case, the category "ayahuasca" is in itself a product of the permeability between science and religion, in what Tupper and Labate (2014) call the "ontology of ayahuasca." On the one hand, in recent decades academic studies have been constructing a scientific object of study known as "ayahuasca," a category that includes not only different variations of traditional recipes, but also lyophilized powders for experimental research. On the other hand, Brazilian churches have also intervened in the definition, in a bid for political legitimation:

> Currently, the extended meaning of "ayahuasca" in global public discourses is somewhat ontologically stabilized as a brew composed exclusively of *B. caapi, P. viridis* and water. The sacraments of the international Brazilian churches, daime (Santo Daime) and hoasca tea (UDV), have helped fix the meaning of "ayahuasca" to this simple recipe. The UDV's traditions at one time allowed for the use of admixture plants with its hoasca sacrament, but for strategic reasons associated with securing political legitimacy for its religious practices, it ultimately institutionalized the more standardized "pure" brew of *B. caapi* and *P. viridis*. However, outside these church settings, a wide range of preparations may be dispensed as "ayahuasca" in contemporary indigenous, mestizo, or hybridized ceremonies, sometimes unwittingly and sometimes knowingly. On the other hand, *yage*, which is usually made of *B. caapi* and *D. cabrerana* in Colombia, or *natem*, which is made with *B. caapi* but not necessarily *P. viridis* in Ecuador, are frequently represented homogeneously as "ayahuasca". Thus, people reporting on their use of "ayahuasca" consumed in settings other than the Brazilian ayahuasca churches may have encountered a diverse range of brews and assorted admixture constituents. (Tupper and Labate 2014, 73)

So "ayahuasca" can be considered as a conceptual generalization of a heterogenic compound related to different sociocultural practices, including scientific research. In this construction not only academic agents intervene, but also religious institutions such as Santo Daime and UDV. All these social agents constructed the category "ayahuasca" as an abstraction that serves in disputes, negotiations, and legitimations in the drug policies arena.

The Individual as a Node. One main weakness of sociologic perspectives such as Bourdieu's notion of field is the reduction of religious phenomena to social relationships of legitimation. By contrast, in cultural anthropology the postmodern idea of culture as a plural and polyphonic phenomenon introduced the individual's meanings and narratives as an essential part of the ethnographic accounts. However, anthropology also became reductionist in terms of culture as a "self-contained phenomenon" (Bloch 2012), where the subjects end up being prisoners of an "exhaustive cultural transmission" that explains everything (Boyer 1994). Their autonomy is not saved at all, despite the idea of their

reflexivity and the polyphony of their voices. Actor-network theory is not an exception but a paradigmatic example: agents became a product of their multiple agencies and translations, and their characteristics could only be explained in their agencies with other actors in a network *ad infinitum*. They are paradoxically singular and active, but also extremely passive and produced by their associations.

In contrast to an epistemological tradition which considers authors and subjects as an effect of epistemic, cultural, and social agencies, I want to mention the importance of the individual as a creative and communicative node, situated in and between networks. Individuals are heterogenic social agents, but this heterogeneity happens in the subject as a psychological unit. And although individuals are "fragmented" in different social roles, they also try to cogently synthesize their own experiences and commitments in their various roles as scientists, therapists, and/or religious/spiritual practitioners. The three cases from Spain could be considered as examples of this: they belong to certain academic traditions and practices, but they also have their own biographic trajectories. Although their activities could be related to certain cultural traditions, their own personal traits are also related to individual psychological characteristics such as their particular charismatic personalities, and their personal spiritual experiences. This statement may sound obvious, but it is neglected not just by a few academic streams, a consequence of their rejection of "psychologism."

Spiritual Ontologies as Natural Psychological Phenomena. The rejection of "psychologism" also produced a disavowal of explanations in terms of psychological "innate predispositions," that is, cross-cultural cognitive phenomena that cannot be explained solely by cultural transmission. The phenomenon implies universal features of the human mind-brain, and their direct effect on the spread of ideas (Bloch 2012). One of these features is the ontological assumption of the existence of "intentional agents," an evolutionary acquisition of great importance for the recognition of other living beings, and for socialization among other human individuals (Boyer 1994). The recognition of intentional agents is a necessary condition for animistic and religious beliefs (Guthrie 1980; Barrett 2000), so "spiritual ontologies" primarily depend on this ability. In science, the expulsion of "final causes" led to the devaluation of "intentional explanations," suspected of being metaphysical explanations. It also led to the reduction in the variety of religious, spiritual, and theistic beliefs in terms of dogmatism, within a "Whig" history of science versus medieval thought. But despite these conceptions, the presence of spiritual ontologies continued and will continue in science, expressed public or privately, sustained by individual scientists or by schools and currents of thought.

As I mentioned in the first section, the presence of "ontologies of spirituality" in the scientific field is related to four main issues: (1) the belief in

spirituality in a wide sense of the term, including different perspectives and cosmologies; (2) a recurrent relation between these beliefs and ASCs, the last ones giving certain "sense factuality" to the first ones; (3) a scientific reaction against these kind of beliefs since the foundation of modern science; and (4) the persistence of these beliefs in the academic field, despite the mainstream scientific rejection. All of these points can be considered for the case of different academic traditions, including those related to ayahuasca.

First, and considering the history of science over the centuries, renowned scientists and philosophers supported religious ideas such as the belief in spirits, or the existence of vital forces. As we have seen for Spain, the case of ayahuasca could be considered as a novel paradigmatic example, but also with roots in previous academic traditions. Second, ASCs produced by ayahuasca have given factuality to such beliefs, in the same way as different spiritual "methods" and "rituals" gave a sense of factuality to spiritualism in the nineteenth century and neoshamanism in the twentieth century. Third, while it is true that modern science reacted against "final causes," this could not halt completely the emergence of different "ontologies of spirituality." Among these ontologies, I have considered certain spiritual perspectives related to ayahuasca, nurtured by previous academic perspectives related to the new psychologies and the anthropological neoshamanic reformulations described in the previous section. The permanence of these perspectives is related to the persistence of "spiritual experiences" and "intuitional beliefs" as natural predispositions of human cognition.

Conclusions

At the beginning of the article, I proposed that the initial problem of science can address the question of what is consciousness, and how it must be used to construct valid and reliable knowledge. The "standard method of science" relies on the formalization of conscious experience in terms of measuring its extensional properties, and the expulsion of intentional properties from the program of investigation. This was a necessary step to escape from scholastic dogmatism, but it had the negative effect of devaluing intentional explanations. This also brought about a "Whig" history of science, with the two-rival scenario of science versus religion, ignoring that the idea of God, and also spiritual ontologies, had not been totally expelled, even in the mechanism paradigm. I described how the basic religious idea of consciousness as ontologically independent of the extended world was sustained by some nineteenth-century scientists, under the influences of spiritualism and oriental mysticism, and later in the twentieth century, in a countercultural milieu. Ayahuasca history is one chapter in these intersections, from the first studies about the brew to its popularity in the 1990s. In the case of Spain, I briefly

described three cases, analyzing them in light of the crossroads of science and spirituality.

I also briefly proposed a theoretical framework to understand this permeability of science and spirituality, integrating a psychological level of analysis that is generally excluded by cultural and social perspectives. With these remarks I do not want to give the wrong idea that the above-mentioned theories are not useful in any way. Each one sheds light on certain aspects in studies of both science and religion, but they are also too bounded to their own disciplines and their definitions of what the phenomena are (cultural, social, associations). I think that the problem is not the categories used—system, networks, fields—but rather, difficulties arise (1) if the categories are conceived as heuristic explanatory models with their benefits and flaws; (2) if the descriptions of a cultural system/network include how dynamic changes occur in a system, and how they interact with different networks (Czachesz 2014), for example, how religious networks produce changes in scientific disciplines, and vice versa; and (3) if the model is open to an interdisciplinary dialogue with other noncultural explanations in order to escape from the overdetermination of "the social" and/or "the cultural."

The permeability between science and religion is possible because spiritual ontologies can always find their place in the scientific community, both in scientists' private beliefs and in schools of thought, producing different "trajectories of reflection of science and religion" (cf. Hefner 2009). This permeability should not be conceived as a necessary obstacle to scientific development. In fact, when used properly it can be considered as a positive characteristic for the avoidance of homogeneity, and for the production of new ideas, if we consider the importance of metaphor, analogy, and abductive thinking in the scientific "context of discovery" (Peirce 1988; Samaja 1998). Religion, art, and other social phenomena can inspire scientific thought, and play a major role in new theories and inventions. Furthermore, faith should not be considered as synonymous with dogmatism, and there are many scientists whose faith does not come into conflict with their scientific performance.

References

Albanese, Catherine. 2005. "Introduction." In *Encyclopedia of Religion and Nature*, edited by Bron Taylor, 1175–85. New York, NY: Continuum. http://encyclopediastorm.webs.com/documents/EncyclopediaofReligionandNature.pdf

Apud, Ismael. 2013. "Ceremonias de Ayahuasca: Entre un Centro Holístico Uruguayo y el Curanderismo Amazónico Peruano." Universidad Nacional de Lanús. http://neip.info/novo/wp-content/uploads/2015/04/Apud_Ayahuasca_Uruguay1.pdf

———. 2015. "Ayahuasca from Peru to Uruguay: Ritual Design and Redesign through a Distributed Cognition Approach." *Anthropology of Consciousness* 26:1–27. doi:10.1111/anoc.12023

Aristotle. 1999. *Metaphysics*. Santa Fe, NM: Green Lion Press.

———. 2007. *On the Heavens*. Charleston, SC: Forgotten Books.

Asprem, Egil. 2014. *The Problem of Disenchantment: Scientific Naturalism and Esoteric Discourse, 1900–1939*. Leiden, The Netherlands: Brill.

Baer, Hans A. 2003. "The Work of Andrew Weil and Deepak Chopra: Two Holistic Health/New Age Gurus: A Critique of the Holistic Health/New Age Movements." *Medical Anthropology Quarterly* 17:233–50.

Barnard, G. William. 2014. "Entheogens in a Religious Context: The Case of the Santo Daime Religious Tradition." *Zygon: Journal of Religion and Science* 49:666–84.

Barrett, Justin L. 2000. "Exploring the Natural Foundations of Religion." *Trends in Cognitive Sciences* 4:29–34. doi:10.1016/S1364-6613(99)01419-9

Berger, Peter. 1999. *El Dosel Sagrado. Para una Teoría Sociológica de la Religión*. Barcelona, Spain: Editorial Kairós.

Bergson, Henri. 2007. *La Evolución Creadora*. Buenos Aires, Argentina: Editorial Cactus.

Beyer, Stephan V. 2009. *Singing to the Plants: A Guide to Mestizo Shamanism in the Upper Amazon*. Albuquerque: University of New Mexico Press.

Bloch, Maurice. 2012. *Anthropology and the Cognitive Challenge*. Cambridge, UK: Cambridge University Press. doi:10.1017/CBO9781139020008

Boido, Guillermo. 1996. *Noticias del Planeta Tierra. Galileo Galilei y la Revolución Científica*. Buenos Aires, Argentina: A-Z Editora.

Bourdieu, Pierre. 2001. *El Oficio de Científico. Ciencia de la Ciencia y Reflexividad*. Barcelona, Spain: Editorial Anagrama. doi:10.3989/arbor.2001.i665.878

———. 2006. "Génesis y Estructura del Campo Religioso." *Relaciones* 27:28–83. http://www.colmich.edu.mx/files/relaciones/108/pdf/PierreBourdieu.pdf

Bourguignon, Erika. 1980. "Spirit Possession and Altered States of Consciousness: The Evolution of an Inquiry." In *The Making of Psychological Anthropology*, edited by G. D. Splinder, 477–515. Berkeley: University of California Press.

Boyer, Pascal. 1994. *The Naturalness of Religious Ideas*. Berkeley: University of California Press.

Cárcamo, Álvaro, and Mónica Obreque. 2008. *Aproximaciones Antropológicas al Modelo Terapéutico del Centro Takiwasi*. Tarapoto, Peru: Takiwasi.

Cavalieri, Paola. 2014. *The Animal Question: Why Nonhuman Animals Deserve Human Rights*. Oxford, UK: Oxford University Press.

Cole, Michael, and Yrjö Engeström. 1993. "Enfoque Histórico-Cultural de la Cognición Distribuída." In *Cogniciones Distribuidas*, edited by Gavriel Salomon, 23–74. Buenos Aires, Argentina: Amorrortu Editores.

Cole-Turner, Ron. 2014. "Entheogens, Mysticism, and Neuroscience." *Zygon: Journal of Religion and Science* 49: 642–51.

Coole, Diana, and Samantha Frost. 2010. *New Materialisms: Ontology, Agency, and Politics*. Durham, NC: Duke University Press.

Crick, Francis, and Christof Koch. 1998. "Consciousness and Neuroscience." *Cerebral Cortex* 8:97–107. doi:10.1093/cercor/8.2.97

Czachesz, István. 2014. "The Evolutionary Dynamics of Religious Systems Laying the Foundations of a Network Model." In *Origin of Religion, Cognition and Culture*, edited by A. Geertz and J. Sinding Jensen, 1–25. London, UK: Equinox.

Dobkin de Rios, Marlene. 1973. "Curing with Ayahuasca in an Urban Slum." In *Hallucinogens and Shamanism*, edited by Michael Harner, 67–85. New York, NY: Oxford University Press.

Dolmatoff, Gerardo Reichel. 1969. "El Contexto Cultural de Un Alucinógeno Aborígen: *Banisteriopsis Caapi*." *Revista de La Academia Colombiana de Ciencias Exactas, Físicas Y Naturales* 14:14–19.

Duhem, Pierre. 1985. *Medieval Cosmology*. Chicago, IL: University of Chicago Press.

Eliade, Mircea. 2009. *El Chamanismo y las Técnicas Arcaicas del Éxtasis*. México D.F., México: Fondo de Cultura Económica.

Ellenberger, Henri. 1994. *The Discovery of the Unconscious: The History and Evolution of Dynamic Psychiatry*. London, UK: Fontana.

Ellens, J. Harold. 2008. "Conclusion." In *Miracles, God, Science, and Psychology*. Volume I, edited by J. Harold Ellens, 301–03. Westport, CT: Praeger.

Fericgla, Josep Maria. 1985. *El Bolet i la Gènesi de les Cultures: Gnoms i Follets, Àmbits Culturals Forjats per l'Amanita Muscaria*. Barcelona, Spain: Ediciones Altafulla.

———. 1994. *Diario de un Antropólogo entre los Shuar. Experimentos con la Ayahuasca*. Barcelona, Spain: Edicions La Campana.

Fernández, Xavier, and Josep Maria Fábregas. 2013. "Experiencia de un Tratamiento de Ayahuasca para las Drogodependencias en la Amazonia Brasileña." In *Ayahuasca y Salud*, edited by Beatriz Caiuby Labate and José Carlos Bouso, 392–423. Barcelona, Spain: La Liebre de Marzo.

———. 2014. "Experience of Treatment with Ayahuasca for Drug Addiction in the Brazilian Amazon." In *The Therapeutic Use of Ayahuasca*, edited by Beatriz Caiuby Labate and Clancy Cavnar, 161–82. Berlin, Germany: Springer.

Fotiou, Evgenia. 2010. "*From Medicine Men to Day Trippers: Shamanic Tourism in Iquitos, Peru*." PhD Dissertation. University of Wisconsin-Madison.

Galilei, Galileo. 2008. *The Essential Galileo*. Indianapolis, IN: Hackett.

Geertz, Clifford. 1973. *The Interpretation of Culture*. New York, NY: Basic Books.

Giddens, Anthony. 1976. *New Rules of Sociological Method: A Positive Critique of Interpretative Sociologies*. London, UK: Hutchinson.

Goulart, Sandra L. 2008. "Estigmas de Grupos Ayahuasqueros." In *Drogas e Cultura: Novas Perspectivas*, edited by Beatriz Caiuby Labate, Sandra L. Goulart, Edward MacRae, and Henrique Carneiro, 251–87. Salvador, Brazil: Editora da Universidade Federal da Bahia.

Grof, Stanislav. 1994. "Investigación Actual Sobre la Conciencia Y Supervivencia Humana." In *La Evolución de la Conciencia*, edited by Stanislav Grof, 91–120. Barcelona, Spain: Editorial Kairós.

Guba, Egon, and Yvonna Lincoln. 2005. "Paradigmatic Controversies, Contradictions, and Emerging Confluences." In *The Sage Handbook of Qualitative Research*, edited by Norman Denzin and Yvonna Lincoln, 191–216. Thousand Oaks, CA: Sage.

Guthrie, Stewart. 1980. "A Cognitive Theory of Religion." *Current Anthropology* 21:181–203.

Hamilton, David. 1994. "Traditions, Preferences, and Postures in Applied Qualitative Research." In *Handbook of Qualitative Research*, edited by Norman Denzin and Yvonna Lincoln, 60–69. Thousand Oaks, CA: Sage.

Hanegraaff, Wouter J. 2012. *Esotericism and the Academy: Rejected Knowledge in Western Culture*. Cambridge, UK: Cambridge University Press.

Harner, Michael. 1972. *Hallucinogens and Shamanism*. New York, NY: Oxford University Press.

Hefner, Philip. 2009. "The Science–Religion Relation: Controversy, Convergence , and Search for Meaning." *International Journal for the Psychology of Religion* 7(3):37–41. doi:10.1207/s15327582ijpr0703

Hervieu-Léger, Danièle. 2005. *La Religión, Hilo de Memoria*. Barcelona, Spain: Herder.

Jacob, François. 1973. *The Logic of Life: A History of Heredity*. New York, NY: Pantheon Books. doi:10.1007/BF00933730

Kant, Immanuel. 2003. *Crítica de La Razón Pura*. Buenos Aires, Argentina: Editorial Losada.

Kreiman, Naum. 1994. *Curso de Parapsicología*. Buenos Aires, Argentina: Kier.

Labate, Beatriz Caiuby, and Rosa Melo. 2014. "The UDV Religion, Science, and Academic Research." In *Seeking the Sacred with Psychoactive Substances: Chemical Paths to Spirituality and to God*. Volume I, edited by J. Harold Ellens, 101–14. Santa Barbara, CA: Praeger.

Langdon, Esther Jean. 2006. "Shamans and Shamanisms: Reflections on Anthropological Dilemmas of Modernity." *Antropologia Em Primeria Mao* 92:5–34.

Latour, Bruno. 2008. *Reensamblar lo Social. Una Introducción a la Teoría del Actor-Red*. Buenos Aires, Argentina: Manantial.

Lévi-Strauss, Claude. [1949] 1997. *Antropología Estructural*. Barcelona, Spain: Ediciones Altaza.

López-Pavillard, Santiago. 2008. *Recepción de la Ayahuasca en España*. Madrid, Spain: Universidad Complutense de Madrid.

Luke, David. 2012. "Psychoactive Substances and Paranormal Phenomena: A Comprehensive Review." *International Journal of Transpersonal Studies* 31:97–156.

Luna, Luis Eduardo. 1986. *Vegetalismo: Shamanism among the Mestizo Population of the Peruvian Amazon*. Stockholm, Sweden: Almqvist & Wiksell International. http://cat.inist.fr/?aModele=afficheN&cpsidt=12078701

Luna, Luis Eduardo, and Pablo Amaringo. [1991] 1999. *Ayahuasca Visions*. Berkeley, CA: North Atlantic Books. doi:10.1525/aa.1993.95.2.02a00580

Lyotard, Jean-François. 1993. *La Condición Posmoderna*. Barcelona, Spain: Editorial Planeta.

Mabit Bonicard, Jacques, and Jesús M. González Mariscal. 2013. "Hacia una Medicina Transcultural: Reflexiones y Propuestas a Partir de la Experiencia en Takiwasi." *Journal of Transpersonal Research* 5:49–76.
MacRae, Edward. 1992. *Guided by the Moon: Shamanism and the Ritual Use of Ayahuasca in the Santo Daime Religion in Brazil*. São Paulo, Brazil: Brasiliense.
Mayr, Ernst. 1990. "When Is Historiography Whiggish?" *Journal of the History of Ideas* 51:301–09.
McKenna, Terence, and Dennis J. McKenna. [1975] 1994. *The Invisible Landscape: Mind, Hallucinogens, and the I-Ching*. New York, NY: HarperCollins.
Méndez López, Matías. 2013. "Psicofármacos y Espiritualidad: La Investigación con Sustancias Psicodélicas y el Surgimiento del Paradigma Transpersonal." *Journal of Transpersonal Research* 5:36–57. http://www.transpersonaljournal.com/pdf/vol5-issue1/MatiasMendez.pdf
Moizeszowicz, J. 2000. *Psicofarmacología Dinámica IV. Estrategias Terapéuticas y Psiconeurobiológicas*. Buenos Aires, Argentina: Paidós.
Monod, Jacques. 2000. *El Azar y la Necesidad*. Barcelona: Tusquets Editores.
Naranjo, Claudio. 1967. "Psychotropic Properties of the Harmala Alkaloids." In *The Ethnopharmacological Search for Psychoactive Drugs*, edited by Daniel F. Efron, 385–91. Washington, DC: U. S. Government Printing Office.
———. 1973. *The Healing Journey*. New York, NY: Pantheon Books.
———. 1976. *On the Psychology of Meditation*. New York, NY: Penguin Books.
———. 2005. *Cosas Que Vengo Diciendo. Sobre el Amor, la Conciencia, lo Terapéutico y la Solución al Problema del Mundo*. Buenos Aires, Argentina: Kier.
———. 2012. *Ayahuasca, la Enredadera del Río Celestial*. Barcelona, Spain: Ediciones La Llave.
Narby, Jeremy, and Francis Huxley. 2005. *Chamanes a Través de los Tiempos*. Barcelona, Spain: Editorial Kairós.
Peirce, Charles Sanders. 1988. *El Hombre, un Signo*. Barcelona, Spain: Editorial Crítica.
Perdiguero, Enrique. 2004. "El Fenómeno del Pluralismo Asistencial: Una Realidad por Investigar." *Gaceta Sanitaria* 18 (Supl.1):140–45. doi:10.1157/13062263
Rothstein, M. 2001. *New Age, Religion and Globalization*. Aarhus, Denmark: Aarhus University Press.
Samaja, Juan. 1998. *Epistemología y Metodología*. Buenos Aires, Argentina: Eudeba.
Stocking, George W. 1989. *A Franz Boas Reader: The Shaping of American Anthropology*. Chicago, IL: University of Chicago Press.
Tart, Charles T. 1977. *Transpersonal Psychologies*. New York, NY: Harper.
Throop, C. Jason, and Charles D. Laughlin. 2007. "Anthropology of Consciousness." In *The Cambridge Handbook of Consciousness*, edited by Philip David Zelazo, Marris Moscovitch, and Evan Thompson, 631–69. New York, NY: Cambridge University Press.
Tupper, Kenneth W., and Beatriz C. Labate. 2014. "Ayahuasca, Psychedelic Studies, and Health Sciences: The Politics of Knowledge and Inquiry into an Amazonian Plant Brew." *Current Drug Abuse Reviews* 7:71–80.
Turner, Edith. 1992. "The Reality of Spirits: A Tabooed or Permitted Field of Study?" *Anthropology of Consciousness* 3:9–12.
———. 1994. "A Visible Spirit Form in Zambia." In *Being Changed by Cross-Cultural Encounters: The Anthropology of Extraordinary Experience*, edited by David E. Young, and Jean–Guy Goulet 71–95. Peterborough, Canada: Broadview Press.
Usó, Juan Carlos. 2001. *Spanish Trip: La Aventura Psiquedélica en España*. Barcelona, Spain: La Liebre de Marzo.
von Stuckrad, Kocku. 2014. *The Scientification of Religion: An Historical Study of Discursive Change, 1800–2000*. Berlin, Germany: De Gruyter.
Walsh, Roger. 1994. "La Supervivencia Humana: Un Análisis Psicoevolutivo." In *La Evolución de la Conciencia*, edited by Stanislav Grof, 15–25. Barcelona, Spain: Editorial Kairós.
Walsh, Roger, and Charles S. Grob. 2005. *Higher Wisdom: Eminent Elders Explore the Continuing Impact of Psychedelics*. Albany: State: University of New York Press.
Williams, Justin. 2015. "Investigating a Century-Long Hole in History: The Untold Story of Ayahuasca from 1755–1865." Undergraduate Honors Theses Paper 802. University of Colorado at Boulder.

Winkelman, Michael. 1982. "Magic: A Theoretical Reassessment [and Comments and Replies]." *Current Anthropology* 23:37–66. http://www.jstor.org/stable/2742551

Wuketits, Franz. 1984. "Evolutionary Epistemology. A Challenge to Science and Philosophy." In *Concepts and Approaches in Evolutionary Epistemology*, edited by Franz Wuketits, 1–34. Dordrecht, The Netherlands: Reidel Publishing Company.