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Identifying Spiritual Content in Reports From Ayahuasca Sessions

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There has been little rigorous research on the spiritual content of *ayahuasca* sessions, despite the tribal use of this herbal concoction and the existence of three Brazilian churches in which *ayahuasca* is considered a sacrament. The Casto Spirituality Scoring System, a reliable measure designed to identify spiritual content in dream reports, was utilized to answer the following question: "Is it possible to identify spiritual content in *ayahuasca* reports?" This system was found to be feasible in identifying "spiritual objects," "spiritual characters," "spiritual settings," "spiritual activities," "spiritual emotions," and "spiritual experiences" in *ayahuasca* reports taken from pertinent literature. The Casto system defines "spiritual" as one's focus on, and/or reverence, openness, and connectedness to something of significance believed to be beyond one's full understanding and/or individual existence.

FOR MILLENNIA, indigenous cultures have used plant preparations in their spiritual ceremonies¹ to communicate with otherworldly spirits as well as to maintain their linkage with the natural world. Western culture severed this connection when Zoroaster banned the Haoma plant, when the Eleusinian rituals in Greece fell into disrepute, and when witches were persecuted by the Inquisition, in part because of their utilization of mind-altering substances. Western theologians and philosophers spoke of the necessity of humankind to dominate and manipulate nature; this "modern" worldview supplanted the "premodern" worldview with the latter's position that human beings were part of nature, and separated from it at their peril.

What philosophers refer to as the "modern" worldview is responsible for impressive advances in technology, industry, and scientific discovery. However, it has not prevented (and may even have been partially responsible for) unprecedented fragmentation, nihilism, and devastation. As Berman (1984) states: "Western life seems to be

drifting toward increasing entropy, economic and technological chaos, ecological disaster, and ultimately, psychic dismemberment and disintegration" (p. 1). However, the epoch of "modernity" may be in the process of being supplanted by the era of "postmodernity." Some writers (e.g., Gergen, 1994) see "postmodernism" as a welcome corrective to the excesses of modernism, replacing its mechanistic and reductionistic assumptions and activities with those that are more organic and holistic in nature.

Metzner (1999b) calls for an "ecological postmodernism" that would include the ecological context of human life in psychology and other areas of contemporary inquiry. Drawing on such diverse sources as Native American rituals, the goddess cultures of pagan Europe, and the visions of Hildegard von Bingen, Metzner holds that human beings must find their rightful place not as rulers, but as participants in the integral and interdependent community of all life (p. 166). Metzner sees modern Western civilization's "war on Nature" as an exteriorization of intrapsychic

conflicts, the “shadow side” of its preoccupation with its own imbalance and separation. For Metzner, human overpopulation, addiction to fossil fuels, preoccupation with material goods, and the resulting environmental degradation are psychopathological symptoms of a dissociation from the natural world. He sees the spread of religious rituals based on sacred plants as an aspect of “ecological postmodernism” that would contribute to sustainability, symbiosis, and the preservation of all life forms.

Reich, Oser, and Scarlett (1999) correctly point out that in postmodern times the concept of spiritual development has come to mean something different than religious development. Indeed, several research studies have indicated a relationship between waking spiritual incidents and positive outcomes in individuals’ lives, such as psychological well-being and improved psychological attitudes (e.g., Hood, 1974; Kaas, Friedman, Lesserman, Zuttermeister, & Benson, 1991; Pollner, 1989) as well as individuals’ relationship to the world, for example, investigating the purpose of life and their place in that purpose (e.g., Grof, 1988, p. 265; James, 1902/1958, p. 389).

Contributing to this literature have been varied reports of purported spiritual experiences triggered by mind-altering brews and concoctions derived from plants. These experiences have been described in the literature through first person accounts, historical anecdotes, and ethnographic accounts.

~ ~ Ayahuasca ~ ~

FURST (1976) suggests that the ritual use of mind-altering substances in the upper Amazon dates back to at least 3000 B.C.E. Serious Western research into the nature of these preparations began with the expeditions of Richard Spruce, an ethnobotanist who explored the Amazon and the Andes between 1849 and 1864; among the species he discovered was the *Banisteriopsis caapi* jungle vine (Rudgley, 1993, p. 64). In 1855, he observed that concoctions containing elements of this vine were ingested ritually. Reichel-Dolmatoff’s (1972,

pp. 97-102) informants told him that concoctions containing this plant are used to “travel” to “other worlds” to visit their tribal divinities. In addition to the term *ayahuasca*, the brew is called *yagé*, *caapi*, *kahpi*, *cadana*, *pinde*, *natem*, *natena*, *rami*, and a variety of other names, depending on the tribe that uses it (Rudgley, 1993, p. 65; Schinzingler, 1999, p. 8). The term *hoasca* has been introduced not only to describe the sacred brew used by one of the *ayahuasca*-based religious groups in Brazil, but also as a descriptor in the ethnopharmacological literature (e.g., Callaway et al., 1999). Artifacts from Ecuador indicate that *ayahuasca* was known and used by indigenous groups there as far back as 2000 B.C.E.

The universal ingredient in all of these concoctions is *Banisteriopsis caapi*, often called the “vine of the souls,” but other plants such as *Psychotria viridis*, a leafy bush, must be added to potentiate its effect (Figure 1). However, some formulae are unique to one group of Indians residing in the Amazon and Orinoco River Basins, or even to a single shaman. An-

other factor compounding the accounting of the brews is the diversity in methods of preparation. The most commonly recorded processes involve either infusing *Banisteriopsis* bark in cold water or boiling the bark and/or the stems for long periods of time, adding other ingredients as is deemed appropriate (Dobkin de Rios, 1975).

The chemical *N, N*-dimethyltryptamine (DMT) is found in several Amazonian plants (including *Psychotria viridis*), but it has no psychotropic effects when taken orally. This is due to the monoamine oxidase enzyme found in human saliva, which breaks down the chemical, rendering it inactive. The *Banisteriopsis* vine contains a variety of harmala alkaloids, type-A monoamine oxidase (MAO-A) inhibitors that are found throughout the body and counteract the effects of this enzyme, allowing DMT (and other substances normally inactive) to flow freely, binding to serotonergic sites in the brain. In addition to conferring activity on DMT, MAO-A

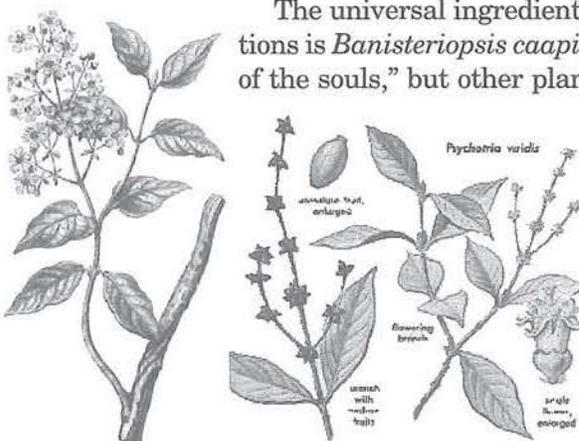


Figure 1. *Banisteriopsis caapi* & *Psychotria viridis* (Courtesy of D. McKenna)

inhibition may contribute to actions of other psychoactive substances sometimes found in the beverages (Callaway et al., 1999). For these reasons, thousands of plants have been used to produce *ayahuasca* brews with various effects.

For example, Rudgley (1993) has described the use of an *ayahuasca*-based concoction, *caapi*, by the Tukano Indians of the Colombian northwest Amazon. Consumption is restricted to males, and for specific ceremonies such as funerals, the diagnosis of ailments, and shamanic vision quests (p. 67). Several pieces of the fresh ingredients are cut and then mashed to a pulp in a wooden trough to which cold water is then added. The mixture is strained and transferred to a specially decorated ceramic vessel, ideally made by an elderly woman, polished by a phallic-shaped stone, "purified" by tobacco smoke, and used exclusively for the drink by participants who have prepared themselves by a prescribed diet and a period of sexual abstinence. Ingestion is preceded by a recitation of creation myths and genealogies, accompanied by the sounds of a rattle and, later, flutes, whistles, singing, and dancing. The experient's report usually begins with a description of phosphenes (circles, triangles, spirals, and other neurologically-based images) and later of such culturally-conditioned imagery as jaguars, snakes, and mythical landscapes (Reichel-Dolmatoff, 1987). The resulting condition is considered superior to one's ordinary state of consciousness, and is reflected in artistic decorations, architectural designs, and the decorations found on Tukano pottery and musical instruments. Rudgley (1993) observes that the imagery reinforces key concepts and values in the Tukano cultural belief system.

Luna (1992), while conducting field work in the Peruvian Amazon in 1985, met don Pablo Amaringo, a former mestizo shamanic healer who showed him a series of exquisitely detailed landscapes he had painted. When asked how he had learned to paint, don Pablo replied that under the influence of *ayahuasca* he had been shown by the spirits how to combine colors to produce a panoply of hues. Luna was familiar with artwork stimulated by similar brews, and asked don Pablo if he would paint some of his *ayahuasca* visualizations. A few days later, don Pablo completed the first two such paintings, most of which related to Amazonian shamanism. Eventually, the two men collaborated on a book, *Ayahuasca Visions* (Luna & Amaringo, 1991), which

explores the iconography of forty-nine paintings which present hundreds of animals, plants, spirits, and mythological beings. A comparison of don Pablo's work with that produced by the Takano (Reichel-Dolmatoff, 1978), the Siona (Langdon, 1992), the Canelos Quicha (Whitten, 1981), and the Shipibo (Gebhardt-Sayer, 1984) demonstrates that the images are influenced by the individual's cultural background. As such, they provide a great deal of relevant information about the artist's culture and its guiding mythology (Luna & Amaringo, 1991, pp. 43-44).

Dobkin de Rios (1992) has chronicled the ritual use of *ayahuasca* by an urban shaman, Hildebrando, better known as don Hilde. During her field work, Dobkin de Rios interviewed each of the ninety-seven men and women seen by don Hilde in Pucallpa, Peru, the site of his office. She observed that the client plays an active role in the *ayahuasca* ritual:

Intrinsic to the drug effect is the power of the plant to evoke expressive experiences equal in force and drama to the best theatre available anywhere. The *ayahuasca* client's particular experience during the healing ritual is multifold—he [or she] is actor, playwright, stage director, costumier, make-up artist and even musician. A fast-moving, brilliant kaleidoscope of colours, forms, geometric patterns, movement and counterpoint provides the most unique experience most individuals ever encounter in normal waking consciousness. This effect is produced entirely from within the individual's own psyche. The stage manager throughout this is the healer. Through music, chants, whistling, or even percussion sounds, he [or she] evokes patterned visions which are important to the client. (p. 158)

Again, these visions have been canalized by the client's culture. From his earliest years, the Amazonian city resident or farmer hears discussions of *ayahuasca* use, listens while people who have partaken in these sessions analyze them in retrospect, and determines whether there has been an appropriate response to the drug. Dobkin de Rios (1992) concludes that "the stereotyping of drug visions is not unusual" because there are specific expectations surrounding the session (p. 156).

In Peru it is common for allopathic physicians to refer some of their patients to *ayahuasceros* (i.e., shamans who use *ayahuasca*) when they are

unable to make a diagnosis, identify a problem, or find a cure. The *ayahuasceros* sing sacred songs or *icaros*, which call forth spirits who, in turn, are thought to attempt healing (Dobkin de Rios, 1992). In addition to the use of *ayahuasca* by Indian tribes in the Amazon (Schultes & Hofmann, 1980), the brew is utilized in at least three organized religious groups that consider it a sacrament: Santo Daime, União do Vegetal, and Barquinha. Apart from the indigenous population, it has been estimated that there are at least 15,000 monthly users of *ayahuasca* within the urban populations of South America (Callaway et al., 1999). In 1987, the use of such beverages within a religious context was officially recognized and protected by law in Brazil, after lengthy investigations into its alleged threats to national security and public health (Ott, 1994). This was the first time in 1,600 years that a government had granted permission to its nonindigenous citizens to use a mind-altering substance in a religious context (McKenna, Callaway, & Grob, 1998).

Santo Daime traces its origins to Raimundo Irineu Serra, a 7-foot-tall Brazilian rubber tapper of African-Brazilian descent, who was born in the state of Maranhao in 1882. At the age of 20, Serra traveled to Acre, Brazil, to participate in the booming rubber trade. En route, he encountered several native tribes that allowed him to witness the manufacture of the *ayahuasca* brew. In one of his sessions with the natives, a woman calling herself the "Queen of the Forest" appeared to him. Irineu, who came from a Christian background, identified her with the Virgin Mary. The woman told him to enter the rainforest alone to prepare and drink the *ayahuasca* brew for eight days. Subsequent instructions were to spread her message throughout the world. *Ayahuasca* was to be called *daime* (i.e., "give me," as in "give me love, give me light, give me strength"), because the woman insisted that this beverage was the sacred blood of Jesus Christ and that it would give light, love, and strength to all who would use it.

When Irineu left the rainforest, he brought with him a complete structure for a Daime ceremony that consisted of a syncretic mixture of Amazonian, African, and esoteric Christian elements. The central focus for these Santo Daime ceremonies was the singing of hymns, which he claimed to have "received" while within the "force" of the Daime. In the 1930s, Irineu assembled a congregation in Rio Branco, in the Brazilian state of Acre. He could not read, write, or transcribe music but his hymns were soon put into written form by his followers. He became known as "Master Irineu," the first great leader of the Santo Daime movement.

Initially, Santo Daime was a rural phenomenon (Richman, 1990-1991, p. 39). In recent decades, however, Santo Daime has maintained its centers in the rainforests and has established new assemblies in Brazilian urban areas (Larsen, 2000).

One of us (JS) has spent several months in Céu do Mapia, a Daime community of several hundred people located in the southwest Amazon, on a tributary of the Purus River. Céu do Mapia is equipped with a small hospital, a school, and a bevy of small wooden houses; rice, beans, and manioc are grown locally, chickens are bred, and a few cows are raised for their milk, while bananas, cashew fruits, and lemons can be found in the nearby village. A large star-shaped church has been built at the village's center, but small, focused healing takes place in a smaller building called the "Star House." *Feito*, the ritualistic preparation of Daime, is a communal event; month-long festivals are held twice a year, while healing ceremonies are scheduled when needed.

The Star House is not the only place where spirit guides are incorporated or "channeled." "White Table" works are held twice monthly (on the 7th and 27th of each month) at the church. There are several *terrerros* where Umbanda works occur, and



Figure 2. Umbanda ceremony, Céu do Mapia, Brazil

(Courtesy of J. Sullá)

a "Santa Casa" (or "Holy House") has been built where a great deal of healing through mediumship occurs. The spirits incorporated are not always

benign; often, suffering, rebellious, or malignant spirits appear. A unique element of UmbaDaime (the synthesis of Umbanda and Santo Daime) is that these spirits are “illuminated” by giving them *ayahuasca* (Figure 2).

There are an estimated 5,000 Daime members in Brazil (as well as another 2,000-3,000 overseas members). There are several doctrinal groups, and many types of Santo Daime ceremonies. Typically, the ceremonies take place in church settings with a six-pointed table in the center. The ceremonies are typically called “works,” because participants attempt to work on their own spiritual evolution during each session. “Celebration works” are differentiated from “concentration works” and “healing works.” Each “celebration work” involves a period of highly structured singing and dancing, followed by an hour intermission, and concludes with another period of singing and dancing. Maracas, drums, guitars, and other instruments may be heard during the ceremonies (Figure 3).



Figure 3. Alex P. de Alverga (right) and Santo Daime church members singing hymns. (Courtesy of D. McKenna)

The songs and musical rhythms are designed to help participants focus on their “inner work,” aided by such symbols as the sun, moon, stars, the Star of David, and pictures of the Christian saints and Daime founders. In some centers, elements of other African-Brazilian religions such as Umbanda, as well as such spiritistic beliefs as those based on the writings of the French spiritualist Allan Kardec, have found their way into the ceremonies. Every few hours, participants have the opportunity to imbibe the *ayahuasca* brew.

Master Irineu’s group grew steadily; many people followed him because he developed a reputation as a great healer. In the early 1950s, one of his most avid followers claimed to have

received another series of visions from the Queen of the Forest, ordering him to establish a new branch of the Daime doctrine which incorporated more elements of Umbanda. This man became known as Master Daniel and his church was named Barquinha (or “Little Boat”).

In Barquinha, ceremonies center around a table shaped like a cross. Participants usually sit in contemplation for the first half of the ceremony, then began to dance with “spirits” summoned through *carimbas* and *pontos* (sacred songs). The spirits summoned are also found in Umbanda—*encontados* (nature spirits), *crianças* (spirits of children), *caboclos* (spirits of those who descended from unions of Native Amazonians and Africans), *pretos velhos* (spirits of Africans sold into slavery or their descendants), and mermaids (representations of Iemanjá, the African “Goddess of the Oceans” who protected the slaves on their hazardous journey to Brazil). *Ayahuasca* is served periodically during the ceremonies.

The União do Vegetal (“Union of the Vegetable” or UDV) was founded in 1961 by another rubber tapper, Jose Gabriel Da Costa, who had been trained in the manufacture of *ayahuasca* by the natives of the rainforest, and who later became known as Master Gabriel. When Gabriel first drank the *cha misterioso* (the mysterious tea), he knew of it as the *cinema do Indio* or Indian cinema, a term used by his fellow rubber tappers, many of whom had ingested the substance themselves. Gabriel was introduced to the tea by a rubber tapper who had a reputation of drinking the tea with one hand, sugar cane liquor with the other hand, and using the tea to seduce women (Schinzinger, 1999, p. 11).

During his first *burracheira* (i.e., the altered state of consciousness induced by *ayahuasca*), Gabriel was taken to the forest and shown how to identify the two plants used to prepare the tea. On the very next day, he and his son gathered the plants, prepared the tea, and drank it again with his wife. Over the next few years, Gabriel established the teachings given to him in the *burracheira*, combining them with his Portuguese Catholic roots and the years he spent as a leader of Umbanda. He was also exposed to the writings of Allan Kardec and the teachings of the Bolivian and Brazilian Indians with whom he tapped rubber and drank *ayahuasca*. Presently, UDV claims some 6,000 members who are distributed among

at least 60 *nucleos* throughout Brazil (Luna & White, 2000; Metzner, 1999b) (Figures 4,5,6,7).

UDV ceremonies focus around a table, with the *Mestres* (Masters) sitting in the middle. A series of *chamadas* or "calls" open the ceremony. Sacred readings from the writings of the church founders are read; often the *Mestres* will give their reflections on these texts. A large portion of *ayahuasca* is served at the beginning of the ceremony, and then participants sit in silent meditation, sometimes with recorded music played in the background. Some *Mestres* sing hymns from the church repertoire. In the second half of the ceremony, participants share their reactions or ask the *Mestres* questions about the session. Men and women were separated until the mid-1980s, and this practice persists in some congregations or *nucleos*. UDV sponsored the International Conference of Hoasca Studies in Rio de Janeiro in 1995, an event that attracted an international audience and received wide media coverage.

Master Irineu and Master Gabriel both died in 1971; they both tapped rubber in the same region but apparently never met. In 1996 we met an associate of Master Daniel, a *Padrinho* (or "godfather") of Barquinha in Manaus, at the 15th conference of the International Transpersonal Association. The theme of the conference was "Technologies of the Sacred," and all three *ayahuasca*-based religions were discussed by several of the participants.

Grob et al. (1996) conducted a study of 15 male UDV church members, 11 of whom had diagnoses of alcohol abuse disorders and phobic disorders, with such symptoms as binge drinking and violent behavior before regular use of the tea. These subjects were interviewed three times over a two-week period, and compared with 15 members of an age-matched control group of non-UDV members. No harmful sequelae were observed and the 11 UDV members with pathological diagnoses had all remitted. A pharmacokinetic study of the same 15 União do Vegetal church members by Callaway et al. (1999) found "no signs of physical or psychological deterioration," and concluded that "the regular use of hoasca in a ceremonial context seems to increase one's ability to psychologically adapt to the larger process of life" (p. 255) (Figures 8,9,10).

In the summer of 1993, a group of biomedical researchers from the United States, Finland, and Brazil met in the Amazonian city of Manaus to

investigate the psychological and biomedical effects of *ayahuasca*. They conducted their study with members of the UDV church in Manaus who had used the substance regularly for at least ten years. No negative effects were observed, but an increased density of serotonin uptake sites in blood platelets was detected (Callaway et al., 1994). The latter result was paradoxical because most psychotropic substances decrease serotonin. However, it provides a clue as to the therapeutic effects of *ayahuasca* because the serotonin system is deficient in violent alcoholics (Grob et al., 1996). Psychologically, the team found their subjects to be "more relaxed" than non-UDV members, and demonstrated "more purpose and direction in their lives," and a greater concern for the preservation of the natural environment. A "hallucinogenic rating scale" was constructed which placed *ayahuasca* on the mild end of the spectrum in contrast to intravenous DMT which was on the opposite pole.

However, this scale did not address the phenomenological contents of the *ayahuasca* sessions. What was needed was a different kind of research procedure that would make such a contribution. We decided upon content analysis to accomplish this objective because this method has been developed to systematically and objectively identify characteristics and themes of communications or documents and the relative extent to which these characteristics and themes pervade a given communication or document (Berg, 1989, p. 106; Holsti, 1968, pp. 597, 601; Weber, 1990, p. 9).

⌘ Research Question ⌘

AS THERE has been little rigorous research on the spiritual content of *ayahuasca* sessions, this research study was designed to answer the following question: "Is it possible to identify spiritual content in *ayahuasca* reports, and if so, how?"

⌘ Definition of Terms ⌘

SEVERAL DEFINITIONS were employed in this research study and guided its focus: "Transpersonal studies" can be defined as disciplined inquiries into those observed or reported human behaviors and experiences in which one's sense of identity appears to extend beyond its ordinary limits to encompass wider,

Preparation of *Ayahuasca* by a União do Vegetal Temple, Brazil



Figure 4. (Courtesy of D. McKenna)



Figure 5. (Courtesy of D. McKenna)



Figure 6. (Courtesy of D. McKenna)



Figure 7. (Courtesy of D. McKenna)

Research Study of União do Vegetal Members



Figure 8.

(Courtesy of D. McKenna)



Figure 9.

(Courtesy of D. McKenna)

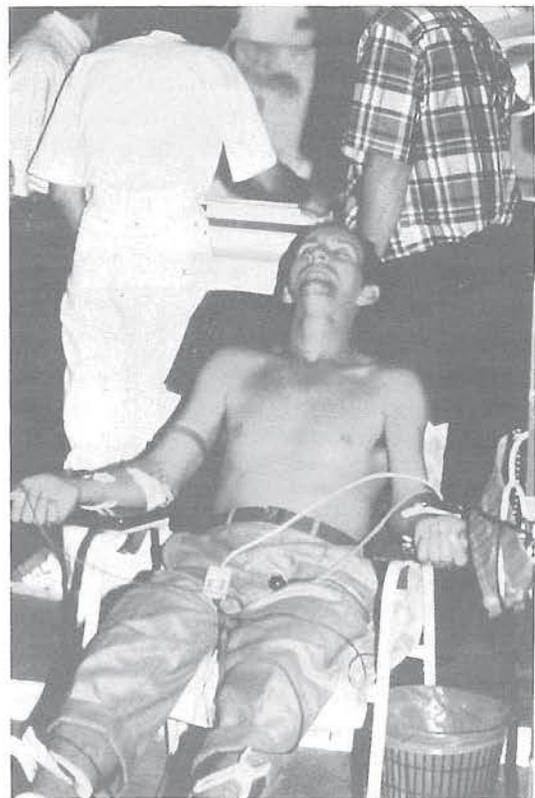


Figure 10.

(Courtesy of D. McKenna)

broader, or deeper aspects of human life and/or the cosmos, including purported divine elements of creation (Krippner, 1997).

The "divine" was defined as that which is regarded as holy (belonging to, derived from, or associated with religious or spiritual powers) and sacred (that which is dedicated to or worthy of veneration or worship) (*American Heritage Dictionary*, 1993), thus deserving the highest respect. The locus of the divine can be either outside of oneself, as when it has the nature of a superhuman entity or a deity, or within oneself, as when it is thought to reside within one's "inner," "deeper," and/or "higher" self. "Reverence," in this research, was defined as an attitude or feeling of profound awe and respect (*American Heritage Dictionary*, 1993).

Achterberg and Lawlis (1980) define "imagery" as "the internal experience of a perceptual event in the absence of the actual external stimuli" (p. 27). Therefore, imagery in *ayahuasca* experiences does not have to be visual, but can be auditory, olfactory, gustatory, or kinesthetic as well.

"Spiritual" was defined as one's focus on, and/or reverence, openness, and connectedness to something of significance believed to be beyond one's full understanding and/or individual existence (*American Heritage Dictionary*, 1993; Elkins, Hedstrom, Hughes, Leaf, & Saunders, 1988; Krippner & Welch, 1992, pp. 5, 122; Shafranske & Gorsuch, 1984, p. 233). There is an overlap between "spiritual" experiences and those referred to as "transpersonal," "mystical," or "religious," but these are not regarded as synonyms. In "transpersonal" experiences, one's sense of identity appears to extend beyond its ordinary limits; in "mystical" experiences, this extension appears to unite with something considered "divine," "sacred," or "holy"; in other words, all "mystical" experiences are "transpersonal," but not all "transpersonal" experiences are "mystical." In "religious" experiences there is a reported contact with something that an organized body of believers considers to be "divine," "sacred," or "holy."

Definitions of "spiritual" and "religious," and of "spirituality" and "religion" are often similar. For example, William James (1902/1958) defines "religion" as "feelings, acts, and experiences of individual men [and women] in their solitude, so far as they apprehend themselves to stand in relation to whatever they may consider divine" (p. 42). However, this definition is very much like the definition of "spiritual" as given above, especially in its implied

link between beliefs and action. Therefore, for clarity's sake, "religion" or "religious" was distinguished in this research from "spiritual" as pertaining to, and adherence to, an organized system of beliefs about the divine, and the observance by a body of believers of rituals, rites, and requirements of that organized system of beliefs (*American Heritage Dictionary*, 1993).

"Shamans" can be defined as socially-sanctioned practitioners who deliberately alter their conscious functioning to obtain information not ordinarily available to their peers, using this information in the service of their community (Krippner & Welch, 1992).

The term "entheogenic" has come into use to describe substances that purport to release one's "inner divinity" (Roberts, 1999, p. 24). As such, the term is considered by many to be more precise than the terms "psychedelic" (i.e., "mind-manifesting") and "hallucinogenic" (i.e., "mind-wandering"). Many writers claim that the latter term is not appropriate for *ayahuasca* sessions, few of which produce full-blown hallucinations. However, "psychedelic" can be viewed as an umbrella term that encompasses substances that evoke "entheogenic" experiences as well as the "sensory-perceptual," "psychological-recollective/analytic," and "symbolic-mythic," levels of experience described by Masters and Houston (1966), and the "biographical-recollective" and "perinatal" levels of experience described by Grof (1985). Masters and Houston's "religious-integral" and Grof's "transpersonal" levels of experience could be regarded as "entheogenic," but not everyone who ingests *ayahuasca* reaches those levels. In the meantime, a case can be made for using such terms as "entheogenic" to describe experiences rather than substances, because not everyone ingesting *ayahuasca* and similar plant concoctions will have an "entheogenic," "transpersonal," or "spiritual" experience.²

• Instrumentation •

HALL AND VAN DE CASTLE'S (1966) system of dream content analysis, with its predetermined categories and subcategories, is frequently used to detect common and recurring elements in dreams. While Hall and Van de Castle's categories do not include spiritual categories per se, they do include categories that sometimes contain spiritual content items, e.g., physical surroundings, characters, social interactions, activities, achievement outcomes, environmental press, emotions,

descriptive elements. The reliability of scoring, or consistency of measurement, was found by Hall and Van de Castle to be 73% for physical surroundings, 76% for characters, 70% for social interactions, 85% for activities, and 63% for emotions. Hall and Van de Castle's original normative data has been replicated in other studies; for example, Hall, Domhoff, Blick, and Weesner (1982) found few differences between the normative data of Hall and Van de Castle's original research and their own participants.

Kira Lynn Casto developed a "spirituality scoring system" to supplement Hall and Van de Castle's work (Casto, 1995). Named the "Casto Spirituality Scoring System" (CSSS), she modified several categories in Hall and Van de Castle's (1966) system to identify spiritual content (Figure 11). Their "objects" category was altered to "spiritual objects"; their "characters" category was altered to "spiritual characters"; their "settings" category was altered to "spiritual settings"; their "activities" category was altered to "spiritual activities"; their "emotions" category was altered to "spiritual emotions."

Hood's (1975) Mysticism Scale was used to develop a "spiritual experiences" category yielding several possibilities, that is, experiences in which there is a sense of direct contact, communion, or union with something considered to be ultimate reality, God, or the divine; experiences in which one's sense of identity temporarily reaches beyond or extends past his or her ordinary personal identity to include an expanded perspective of humanity and/or the universe; experiences where one appears to enter a sacred realm or condition that goes beyond the ordinary boundaries of space and linear time.

The difference between "activities" and "experiences" is similar to the psychological differentiation between behavior (i.e., externally observable actions, including verbal behavior) and experience (i.e., lived events that are phenomenological reports). The phrase, "I was angry at God" would be scored for "spiritual emotion." The phrase, "I told God that I was angry," would be scored for both "spiritual emotion" and "spiritual activity." The phrase, "I was angry at God, and this reaction produced a red glow in my heart that sent intense heat throughout my body," would be scored for "spiritual emotion" and "spiritual experience." The phrase, "I told God that I was angry, and this reaction produced a red glow in my heart that sent

intense heat throughout my body," would be scored for "spiritual emotion," "spiritual activity," and "spiritual experience."

Some dreams contain religious content but not spiritual content. A Brazilian woman reported that in her dream:

I found a place with perfumes and soaps. There were some gifts that I had received from my older brother. Someone gave me a little car and a doll. Someone else showed me a chain made of sandalwood which was very sweet-smelling. I received two blue envelopes that were sealed. Then I designed a chapel, a little church in a unique style which would be used only for weddings.

This dream could be scored for "religious content" because of its references to a chapel, church, and weddings. However, none of these meet the criteria for "spiritual content" as outlined in the CSSS.

Figure 11.

Casto Spirituality Scoring System

Spiritual Objects: Objects used for focus, and reverence, to open and connect one to something of significance that is believed to be beyond one's full understanding and/or individual existence.

Spiritual Characters: People, animals, or beings that are meaningfully connected to something of significance that is believed to be beyond one's full understanding and/or individual existence and that one associates with a sense of reverence.

Spiritual Settings: Places where one feels meaningfully connected to something of significance believed to be beyond one's full understanding and/or individual existence and that are associated with a sense of reverence.

Spiritual Activities: Activities used to open and connect one to something of significance believed to be beyond one's full understanding and/or individual existence and that are associated with a sense of reverence.

Spiritual Emotions: Felt emotions that are regarded as meaningfully related to something of significance which is believed to be beyond one's full understanding and/or individual existence, associated with a sense of reverence.

Spiritual Experiences: Experiences in which a sense of direct contact, communion, or union

with something that is considered to be ultimate reality, God or the divine; and/or experiences in which one's sense of identity temporarily reaches beyond or extends past his or her ordinary personal identity to include an expanded perspective of humanity and/or the universe; and/or experiences where one appears to enter a sacred realm or condition that goes beyond the ordinary boundaries of space and linear time.

We felt that Casto's system might be applied to *ayahuasca* sessions reported by individuals representing a wide variety of spiritual backgrounds. One person might report experiencing "intense ecstasy accompanied by white light conveying a blessing by Jesus Christ," another might report an experience of peace accompanied by white light felt to be a precursor to "the Nirvana described by the Buddha," and still another might report an experience accompanied by white light that represents the arrival of Oxala, the African-Brazilian *orisha* (i.e., deity) of purity. All three reports would be scored for "spiritual experience," for "spiritual activity" (e.g., the blessing, the description, the arrival), for "spiritual object" (e.g., the white light), and "spiritual character" (e.g., Jesus Christ, the Buddha, Oxala), despite the disparate traditions represented.

• Reliability •

THE SCORES of two judges using the CSSS had been compared before this study was initiated (Casto, Krippner, & Tartz, 1999). A content item was not judged to be "spiritual" unless it had received scores from both judges. Each dream was compared for presence or absence of each content category. Kappas (correlations) reported by the two judges using the CSSS were .946 for "spiritual objects," .943 for "spiritual characters," .918 for "spiritual settings," .946 for "spiritual activities," .993 for "spiritual emotions," and .929 for "spiritual experiences." The reliability of the CSSS as a whole was .946, which indicates high reliability between scorers. An agreement between raters was counted if either both raters scored a spiritual dream element for a particular dream or both raters did not score a spiritual dream element for a particular dream.

• Procedure •

FOR THIS pilot study, we collected a small sample of *ayahuasca* session reports, subjecting them to analysis with the CSSS. Both indigenous accounts and those obtained from *ayahuasca* church services were included. Some of the reports were extremely lengthy, so we selected excerpts from the reports that would illustrate each of the CSSS categories to determine their utility in studying spiritual elements of *ayahuasca* sessions.

• Limitations and Delimitations •

THIS STUDY was limited in that the session reports were not selected from a random selection of experients. Furthermore, like all experiential reports, they are vulnerable to faulty memory, distortion, or outright fabrication.

This study was delimited to experiential reports available in English, and to those which occurred in a spiritual setting, either with shamans in South America, in one of the *ayahuasca* churches, or in a location organized by an ethnobotanist or *ayahuascero* familiar with the "set" and "setting" required for something meaningful to occur (see Metzner, 1999b, p. 162).

• Results •

WE APPLIED the CSSS to ten phenomenological accounts, beginning with the original report of Master Irineu that dates back to the 1920s. His report of the "Queen of the Forest" was scored for "spiritual character," her command to him to drink *ayahuasca* for eight days was scored for "spiritual activity," and his conviction that he must follow these orders was scored for "spiritual experience." There might have been additional spiritual elements involved in Master Irineu's experience, but they are not apparent from the information available.

The CSSS defines "spiritual objects" as those "used for focus, and reverence, to open and connect one to something of significance that is believed to be beyond one's full understanding and/or individual existence." An example is given by Luna and Amaringo (1991) in an excerpt of their description of one of Amaringo's paintings, "Curandera Transformed Into a Boa":

A great *vegetalista curandera* has become a beautiful queen wearing a golden crown, with

the body of a blue serpent with disc-shaped marks...The blue glasses that appear under the queen's throat are purified glasses from which the genies of the trees drink when they are invited to have liquor or the *ayahuasca* brew. (p. 60)

In this report, the "purified glasses" was scored as a "spiritual object." In addition, the queen was scored as a "spiritual character."

The CSSS defines "spiritual characters" as "people, animals, or beings that are meaningfully connected to something of significance that is believed to be beyond one's full understanding and/or individual existence and that one associates with a sense of reverence." An example of a "spiritual character" can be found in an excerpt from an American psychologist's self-described "initiation to *ayahuasca*" under the direction of an ethnobotanist:

As the images of forms and objects recede back into the swaying fabric of visions, I realize that I am seeing them as if projected on the twisting coils of an enormous serpent, with glittering silvery and green designs of its skin...My emotional response is one of awe and humility at the magnificence of this being and its spiritual power... (in Metzner, 1999a, p. 160)

This excerpt also was scored for "spiritual emotion" (i.e., "awe and humility").

The CSSS defines "spiritual settings" as "places where one feels meaningfully connected to something of significance believed to be beyond one's full understanding and/or individual existence and that are associated with a sense of reverence." An example can be found in an account by a college philosophy professor's first *ayahuasca* experience in the Peruvian highlands with 14 other participants:

I found myself in a *psychomanteum*, a place specially constructed for divination and communication with deceased relatives. There was a large mirror on the wall, in which a face took shape and became three-dimensional. This face and the eyes told that...that I, as Robert Dudley, had previously worked under the tutelage of the Elizabethan magus Dr. John Dee...I saw the machinations of the ego-personality and its subtle deceit of the Self...I realized that intellectual success is not the end-all, but rather love and compassion wisely applied. (in Metzner, 1999a, pp. 94-95)

The *psychomanteum* was scored as a "spiritual setting," Robert Dudley was scored as a "spiritual

character," and the realizations as a "spiritual experience."

The CSSS defines "spiritual activities" as those "used to open and connect one to something of significance believed to be beyond one's full understanding and/or individual existence and that are associated with a sense of reverence." Narby's (1998) first *ayahuasca* experience took place in the Peruvian Amazon; he recalled:

These enormous snakes are there, my eyes are closed and I see a spectacular world of brilliant lights, and in the middle of these hazy thoughts, the snakes start talking to me without words. They explain that I am just a human being. I feel my mind crack, and in the fissures, I see the bottomless arrogance of my presuppositions. It is profoundly true that I am just a human being and, most of the time, I have the impression of understanding everything, whereas here I find myself in a more powerful reality that I do not understand at all and that, in my arrogance, I did not even suspect existed. I feel like crying in view of the enormity of these revelations. Then it dawns on me that this self-pity is a part of my arrogance. I feel so ashamed that I no longer dare feel ashamed. Nevertheless, I have to throw up. (pp. 6-7)

The snakes' conversation "without words" was scored as a "spiritual activity." This excerpt also contains "spiritual characters" (the snakes), "spiritual emotions" (the self-pity, arrogance, and shame), and "spiritual experiences" ("I find myself in a more powerful reality that I do not understand at all" and "these revelations").

The CSSS defines "spiritual emotions" as "felt emotions that are regarded as meaningfully related to something of significance which is believed to be beyond one's full understanding and/or individual existence, associated with a sense of reverence." One of the authors (SK) recalls:

In 1992, I was invited to participate in an *ayahuasca* ritual held by a Santo Daime congregation in coastal Brazil. Although that particular church was quite Christian-oriented, I observed several references to African-Brazilian deities in the songs we sung while waiting for the opportunity to imbibe the sacrament. The church's *trabalhos* ("ritual works") were highly structured; to the beat of rattles, church officials taught the rhythmic right-to-left dances to newcomers, and gently corrected them if they made mistakes. After a

preparatory period of about two hours, the singing and dancing stopped and glasses of a dark green fluid were offered. Once the congregation had imbibed, there was additional music—drums and guitars supplemented the maracas—followed by a period of silent reflection. This cycle was repeated four times, and participants could consume the brew once, twice, three times, four times, or not at all. For me, the Daime experience was associated with few alterations in consciousness. There were no remarkable changes in perception, input-processing, memory, subconscious processing, sense of identity, or motor output. My major shifts were in emotions. I have seldom felt such complete peace of mind or one-pointedness; I rarely have had such a complete immersion in the here and the now. People on all sides of me were having very different experiences. A friend of mine shifted his identity remarkably, believing that he had turned into a huge emerald. Another friend of mine was escorted to the back room for individual counseling when she became overwhelmed with grief after retrieving a painful memory. A few members of the congregation had visceral reactions and went outside to vomit (and were assured that their nausea was a positive “cleansing” rather than anything negative). It was clear that the *ayahuasca* ritual produced different experiences for everyone; in my case the experience remained stable for about two hours. My cares and worries dropped away, as I found my spiritual center, and was able to maintain this feeling of equanimity for several months.

This report was scored for “spiritual emotion” (the “peace of mind”) as well as for “spiritual experience” (the “immersion in the here and now”).

The CSSS defines “spiritual experiences” as those “in which a sense of direct contact, communion, or union with something that is considered to be ultimate reality, God or the divine; and/or experiences in which one’s sense of identity temporarily reaches beyond or extends past his or her ordinary personal identity to include an expanded perspective of humanity and/or the universe; and/or experiences where one appears to enter a sacred realm or condition that goes beyond the ordinary boundaries of space and linear time.” The anthropologist Wade Davis (1998) took *ayahuasca* in the Colombian Amazon, reporting:

Reality was not distorted, it was dissolved, as the terror of another dimension swept over the senses...Then the terror grew stronger, as did my sense of hopeless fragility...My thoughts themselves turned into visions...This was the

actual world, and what I had known until then was a crude and opaque facsimile. (pp. 160-161)

This excerpt was scored as a “spiritual experience” but the reported “terror” also was scored as a “spiritual emotion.”

A Buddhist meditator known as “Renata” reported:

I felt totally alive, open, responsive, and fearless! Accepting the fleeting nature of all, it was so simple to be fully present for every moment. Perhaps for the first time ever, I felt an implicit trust in my capacity to guide myself through the incredible labyrinth of dark and light. It is this experience of trust which is perhaps what I value most from my journey. (in Metzner, 1999a, p. 133)

This report was also scored as a “spiritual experience” as well as containing “spiritual emotions.”

Peter Gorman (1992) has written a lengthy description of his *ayahuasca* sessions. In one of them, he recalled:

I watched the bird from a great distance, then I felt myself merging with it. Soon, I was looking down from the bird’s perspective, my sharp eyesight picking out minute details of the landscape below. I flew over a mountain range and peered into a stream. I saw fish moving about, and watched rich hues of blue and green sparkling from their scales. Unexpectedly, I tilted off the horizon and plummeted toward them. I felt no fear, only hunger; I wanted a fish. I split the water with hardly a splash and in an instant was racing skyward again with a fish in my beak. A piece of it slipped into my stomach unchewed. I remember thinking I didn’t eat food that way. (p. 51)

This excerpt does not meet the qualifications for spiritual content because it does not suggest an encounter with “ultimate reality” or “the divine.” However, it could be regarded as an example of a transpersonal experience in which “one’s sense of identity appears to extend beyond its ordinary limits to encompass wider, broader, or deeper aspects of human, life, and/or the cosmos.” Wade Davis’ (1998) sense of “dissolving” could also be regarded as transpersonal content in his *ayahuasca* session. In other words, the CSSS allows investigators to differentiate among spiritual, religious, and transpersonal content of entheogenic reports; often there will be an overlap,

but these terms are not synonyms, and the overlap should not be taken for granted.

In working with dream reports, the same phenomenon occurred; a dreamer reported feeling "temptation" to "take one of the icons" on the wall of a church; this dream was considered to have had religious content but not spiritual content. Another dream report mentioned "the Sacred Heart of Jesus and Hebrew candelabrum" and the dreamer's comment, "How impotent is religion in stopping the war." This dream's religious content was not scored as "spiritual" because a sense of reverence was lacking, an indispensable criterion for dreams scored for spiritual content.

On the other hand, there are many *ayahuasca* reports that contain what União do Vegetal *Mestres* refer to as *peia* and *cacete*, the torment that results from the thoughts and actions that have caused lack of attention to spiritual growth. Annelise Schinzinger (1999) recollected:

One of my *peias* came in the form of feeling I had wasted four hours of a session, because I had let my mind be taken on "monkey-mind" rides. When I returned my attention to what was going on in the session, I realized how much of the session I had missed because of my lack of will to concentrate...Experiences like this motivated me to focus my attention more: on the spoken word, on the music being played, and on the flow of energy. (p. 43)

In this report, spiritual growth is revered, and lack of attention to this growth has produced torment; hence this report was scored for "spiritual experience." In addition, it demonstrates the link between belief and action that Reese (1997) considers the operational marker of spirituality.

In summary, we would give a positive answer to our question: "Is it possible to identify spiritual content in *ayahuasca* reports, and if so, how?" Using our definition of the word, "spiritual," we were able to find several reports of *ayahuasca* sessions where spiritual content could be readily identified, using the Casto Spirituality Scoring System.

✻ Discussion ✻

PRACTITIONERS OF what Karasu (1999) has called "spiritual psychotherapy" will recognize the potential therapeutic value of the CSSS. According to Karasu, "this type of therapy has its own tenets, not as principles of therapy but as principles of

existence" (p. 143). Both spiritually-oriented psychotherapists and native shamans have commented on "loss of soul" as a contemporary malady (Moore, 1994; Krippner & Welch, 1992). Spiritual psychotherapy, whether native or modern, is concerned with human anguish, isolation, alienation, meaninglessness, and with existential guilt over not living up to one's potentials (Karasu, 1999, p. 155). Many therapeutic schools underplay their clients' spiritual dimensions, but Jungian, existential, humanistic, and transpersonal psychotherapists are among the exceptions.

Karasu (1999) insists that "spiritual therapy is not religious counseling" (p. 158). Religious counselors typically represent organized and structured forms of spirituality with specific traditions, proscriptions, and required rituals. By contrast, spiritual psychotherapy rejects strict formality, substituting flexibility and freedom (p. 159). Kovel (1991) adds that everyone has the potential for transcendent experiences. Spirituality is a path of contemplation in which the divine is found in the given world and within ourselves (pp. 319, 546). Kovel's description of "transcendent experiences" offers a term that might encompass spiritual, religious, and transpersonal experiences. Subsuming the best of spiritual, religious, and transpersonal perspectives, Karasu (1999) states:

Spiritual therapy seeks the self beyond itself, in order *not* to be self-preoccupied; in short it is egoless. It is geared toward self-transcendence, the love of others in a universal, timeless, and spaceless field. Spiritual therapists help their recipients to relinquish self-serving actions, to express compassion and forgiveness. (p. 161)

Within this framework, a spiritual psychotherapist could utilize material from *ayahuasca* sessions to assist clients, using as analogues the practices of traditional shamans in the Amazon throughout the millennia.

Adele brought a dream to one of us (SK) that had originally recurred for about three years when she was a child, and now had returned. The setting of the dream was a hilly countryside, and the dreamer was seated outside a cave that seemed to be sacred. As she waited expectantly, a faceless monk in a black robe entered the sacred cave, chanting, "In time I come for everyone." Adele's feelings were fear, respect, and reverence. This

dream report was pivotal in allowing Adele to examine the existential issues surrounding death, as it occurred at a time in her life when the realization that she might lose family members became acute. Eventually, Adele resolved these fears by focusing on the feelings of respect and reverence in her dreams, concluding that death is part of the life process, and that an awareness of its inevitability enhances the immediacy and enjoyment of each daily activity. Similar cases might emerge when psychotherapists work with clients who bring *ayahuasca* experiences to the therapeutic session.

The transformative power of an *ayahuasca* experience is dramatically illustrated by Santo Daime Padrinho Sebastião's account of the first time he drank the beverage in Mestre Irineu's church:

I drank the Daime, went to my corner and sat. After some time things began to happen, and I became fearful. I got up to leave very quietly because everyone was silent. I started to leave on tiptoe and as I passed by the place where people drank the sacrament, the Daime enveloped me in an awful smell. It made me go quickly back to my space. As I arrived on the bench, I heard a voice saying, "The Mestre asked if you are a man, and up to now the only thing you have done is moan." Then my old body hit the floor and there it stayed. I was outside my body looking at the old junk that was me.

All of a sudden I saw two men who were the most beautiful beings I had ever seen in my life. They were resplendent, like fire! They began to take out my whole skeleton from within my living flesh without hurting anything. As they worked, they vibrated everything from side to side, and I, on the other side, was watching all they were doing. Next, they took out my organs. One of them held my guts in his hands. Together they used a hook that opened, separated, and extracted from my guts three nail-sized insects, which were responsible for what I felt walking up and down inside me.

Then the one who had been seated next to my prostrate body, which was still stretched out on the floor, came very close to me and said, "Here it is! What was killing you were these three insects, but now you will not die from them anymore." Then they closed my body. Do you see any scars? There are none. Thank God I healed, like a child. (De Alverga, 2000, pp. 74-75)

From this experience, Padrinho Sebastião was initiated into Santo Daime. The CSSS would score this for "spiritual characters" (the two "beautiful beings"), "spiritual activities" (the "work" with Sebastião's body), and "spiritual experiences" (the out-of-body experience, and the encounter with the two men from which Sebastião "healed like a child"). The bodily "work" is similar to that of many shamans who are "called" to their profession by a dream or vision of dismemberment, death, and rebirth (e.g., Krippner & Welch, 1992, p. 67). In the case of Sebastião, he devoted himself to a spiritual mission that was crucial to the development of the Santo Daime church.

Sebastião's out-of-body experience is similar to those reported by other people over the millennia (Alvarado, 2000), but are not a rarity among *ayahuasca* experiencers. The American researcher Dennis McKenna (2000) recalls a União do Vegetal session, in 1991, in which he heard a voice, seeming to come from behind his left shoulder:

It said something like, "You wanna see force? I'll show you force!" The question was clearly rhetorical, and I understood that I was about to experience myself changed into a disembodied point of view, suspended in space, thousands of miles over the Amazon Basin. I could see the curvature of the earth, the stars below shone steadily against an inky backdrop, and far below I could see swirls and eddies of clouds over the basin, and the nerve-like tracery of vast river systems. From the center of the basin rose the World Tree, in the form of a giant *Banisteriopsis* vine. It was twisted into a helical form and its flowering tops were just below my disembodied viewpoint. (pp. 155-156)

In retrospect, McKenna felt he had finally experienced the "true profundity" and the ultimate "force" of *ayahuasca*.

This discussion would be incomplete without a consideration of how *ayahuasca*-induced spiritual experiences meet criteria found elsewhere in the literature. One of the most instructive models has been created by Deikman (1980) to categorize mystical experiences; we feel that the same model can be used to study spiritual experiences. According to Deikman's model, experiences labeled "mystical" (or, for us, "spiritual") embody an array of occurrences. They may be "untrained sensate," "trained sensate," or "trained transcendent." Untrained sensate

phenomena occur in individuals who do not actively practice a spiritual discipline; they occur most frequently in natural settings or under the influence of drugs. Trained sensate phenomena differ from untrained sensate phenomena only in that the experiencers have prior knowledge or expectation of the occurrence; hence, they may be prone toward interpreting their experience to conform to their acquired learning. Trained transcendent phenomena are experiences that have been cultivated through disciplined practice. Deikman suggests that a sense of "ego-loss" (i.e., transpersonal experience) is most characteristic of the latter category. We feel that the use of the CSSS could test this hypothesis and other aspects of Deikman's model; spiritual experiences involving "ego-loss" or what Deikman calls the "unity of all things" could be compared across his three categories.

Additional research projects suggest themselves. Do fantasy-prone persons (Krippner, 1993; Lynn & Rhue, 1988) report more spiritual content from their *ayahuasca* sessions than other experiencers? Does high spiritual content in *ayahuasca* reports contradict or mirror scientific descriptions of the natural world? Narby's (1998) speculations about the link between *ayahuasca* serpent imagery and the DNA double helix would suggest the latter. Does high spiritual content in *ayahuasca* reports parallel the recovery from drug addiction and other dysfunctional behavior claimed by many *ayahuasca* advocates? (e.g., Richman, 1990-1991). Does the spiritual content in *ayahuasca* reports support the proposition of some psychotherapists (e.g., Frank & Frank, 1991) that myth, symbolism, and rhetoric are key elements of successful psychotherapy in whatever form it is practiced? Is the vividness of *ayahuasca* imagery related to behavior and attitude change, as has been reported by some Western psychotherapists (e.g., Achterberg, 1985)? In addition, the CSSS allows investigators to chart the increase or decrease of spiritual content during a single *ayahuasca* session or during a series of sessions, leading to a better understanding of the phenomenology of these occurrences.

Roberts (1999) has suggested that entheogen-induced experiences may facilitate the functioning of the immune system. If such a study is ever attempted, the CSSS would be one of several scales (e.g., Hood, 1975; Pahnke & Richards, 1966;

Whiteman, 1986, p. 656) that could be used to identify and evaluate the spiritual content of reports by those individuals whose immune functions are enhanced following the ingestion of *ayahuasca*. Evolutionary models of spiritual growth (e.g., Combs & Krippner, 1999) could also be evaluated by the use of the CSSS in combination with verbal reports.

A final research question is the origin of the brew itself. Davis (1998) asks, "How did the Indians learn to identify and combine in such a sophisticated manner these morphologically dissimilar plants with such unique and complementary chemical properties?" (p. 166). Schultes and Raffauf (1990) have commented, "One wonders how peoples...with no knowledge of chemistry or physiology, ever hit upon a solution to the activation of an alkaloid by a monoamine oxidase inhibitor. Pure experimentation? Perhaps not. The examples are too numerous" (p. 9). Narby (1998) adds,

So here are people without electron microscopes who choose, among some 80,000 Amazonian plant species, the leaves of a bush containing a...brain hormone, which they combined with a vine containing substances that inactivate an enzyme of the digestive tract, which would otherwise block the...effect. And they do this to modify their consciousness. It is as if they knew about the molecular properties of plants *and* the art of combining them, and when one asks them how they know these things, they say their knowledge comes directly from [the] plants. (p. 11)

And, for now, that may be the most parsimonious answer.

Notes

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1. The words "ritual" and "ceremony" are used in a variety of ways, but Krippner (1994) has made the following distinction:

Rituals may be conceptualized as prescribed, stylized (often symbolic), step-by-step performances of mythic themes; as such, they attempt to promote social solidarity, provide for life transitions, and reinforce a society's values, belief systems, and rules of conduct. Rituals are generally performed in specific places, at definite times, by mandated persons. Although used interchangeably with "rite" and "ceremony" by some

writers, it may be useful to define "rites" as "mini-rituals" of passage from one stage to another (e.g., puberty rites, baptism rites) and "ceremonies" as elaborate "maxi-rituals" that often include a series of rituals (e.g., coronation ceremonies, four-day Sun Dance ceremonies). (p. 183)

Because the *ayahuasca* sessions described in this paper are elaborate events, we have used the term "ceremony" as a descriptor.

2. Masters and Houston's (1966) "sensory-perceptual" and "psychological-recollective/analytic" levels roughly correspond to Grof's (1985) "biographical-recollective" level, while their "symbolic-mythic" level resembles Grof's "perinatal" level which, in turn, reflects his "basic perinatal matrixes" and "systems of condensed experience." According to Grof, both the "basic perinatal matrixes" and the "systems of condensed experience" can incorporate "mythic sequences" (p. 97).

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