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Altered States and the Study of Consciousness — The Case of Ayahuasca

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This paper is part of a comprehensive research project whose aim is to study the phenomenology of the special state of mind induced by the psychoactive Amazonian potion ayahuasca. Here, I focus on those aspects of the ayahuasca experience that are related to basic features of the human consciousness. The effects of the potion are discussed in terms of a conceptual framework characterizing consciousness as a cognitive system defined by a set of parameters and the values that they take. In various theoretical contexts, these values have been assumed to be basic, paradigmatic properties of human consciousness. The phenomenological data pertaining to ayahuasca indicate that the features at hand can be modified. Following earlier suggestions by William James and Aldous Huxley, I conclude that any general theory of consciousness should be based not only on the study of so-called ordinary consciousness, but also on that of non-ordinary states.

In his *Varieties of Religious Experience* William James (1929) observes:

> [O]ur normal waking consciousness, rational consciousness as we call it, is but one special type of consciousness, whilst all about it, parted from it by the filmiest of screens, there lie potential forms of consciousness entirely different. We may go through life without suspecting their existence; but apply the requisite stimulus and at a touch they

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> are there in all their completeness, definite types of mentality which probably somewhere have their field of application and adaptation. No account of the universe in its totality can be final which leaves these other forms of consciousness quite disregarded. (pp. 378–379)

These lines are famous and they are quoted often, but not so often cited are the two sentences that introduce them:

> Some years ago I myself made some observations on [the basis of a personal] nitrous oxide intoxication. . . . One conclusion was forced upon my mind at that time, and my impression of its truth has ever since remained unshaken. It is that . . . .

And there follow the lines that I have cited above (for more information, see James, 1882).

The novelist–philosopher Aldous Huxley (1959/1971) made similar observations following his personal experience with another psychoactive substance, mescaline. The mescaline experience led Huxley to write two essays, *The Doors of Perception* and *Heaven and Hell*. The following quotes are from the opening pages of the latter:

> Like the earth of a hundred years ago, our mind still has its darkest Africas, its unmapped Borneos and Amazonian basins. In relation to the fauna of these regions we are not yet zoologists, we are mere naturalists and collectors of the specimen . . . . Like the giraffe and the duck-billed platypus, the creatures inhabiting these remoter regions of the mind are exceedingly improbable. Nevertheless they exist, they are facts of observation; and as such, they cannot be ignored by anyone who is honestly trying to understand the world in which we live. (p. 71)

> A man consists of what I may call an Old World of personal consciousness and, beyond a dividing sea, a series of New Worlds — the not too distant Virginias and Carolinas of the personal subconscious and the vegetative soul; the Far West of the collective unconscious . . . ; and, across another, vaster ocean, at the antipodes of everyday consciousness, the world of Visionary Experience. (p. 72)

Thus, when exploring the geography of the mind, claims and suppositions based only on ordinary states of consciousness (notably, the states of normal wakefulness, sleeping, and dreaming) are not sufficient. Any general, comprehensive theory of cognition has to encompass both the ordinary and the non-ordinary facets of mind.

The observations made in this paper are part of a research program in which I attempt to draw a comprehensive systematic chart of the special state of mind induced by ayahuasca, a powerful psychoactive potion from the upper Amazonian region. The phenomenology of the ayahuasca experience is multifarious. Here, I discuss only those of its aspects that relate specifically to modifications in one's state of consciousness. My discussion focuses on a series of non-ordinary phenomenological patterns, each associated with fea-

tures that are often taken to be basic, characteristic — if not defining — properties of human consciousness. In the special state of mind that ayahuasca induces, it appears, all these features fail to apply. Thus, these patterns indicate that some very basic assumptions regarding human consciousness have to be questioned. This supports the assessment made by James and Huxley, namely, that any general theory of consciousness should be based not only on the study of so-called ordinary consciousness, but also on that of non-ordinary states.

Ayahuasca — General Background

The potion ayahuasca is made out of two plants. Usually, the first is *Banisteriopsis caapi*, a liana of the *Malpighiaceae* family, whereas the second is *Psychotria viridis*, a bush of the *Rubiacaea* family. In common parlance, the term ayahuasca is used to refer not only to the potion but also to the first of the two constituent plants. Chemically, the main active ingredients in the potion are the alkaloids N,N-Dimethyltryptamine or DMT, harmine, harmaline and tetrahydroharmine. For information about the botany and pharmacology of ayahuasca, the reader is referred to Callaway et al. (1999), Ott (1993, 1994), Schultes (1982), Schultes and Winkelman (1995), and Spinella (2001).

Amerindians have used ayahuasca for millennia. In the tribal cultures of the upper Amazon region ayahuasca played a central role. In the past, ayahuasca was used for all major tribal decisions, particularly declaring war and locating game for hunting; it also served in initiation rites (for anthropological studies of the use of ayahuasca in the indigenous context, the reader is referred to the classical works by Reichel–Dolmatoff, 1975, 1978; and to the more recent works by Fericgla, 1998; Lagrou, 1998; Langdon, 1979, 1992; Luna, 1986; Mader, 1999; as well as the various contributions in Harner, 1973; Langdon and Baer, 1992). Today, the brew is still the basic instrument of shamans and medicine men in the entire region. It is said to enable healers to see the inner constitution of their patients, and thus establish a diagnosis and perform treatment (for general discussions of the healing practices associated with ayahuasca, see Dobkin de Rios, 1972; Langdon, 1992; Luna, 1986; as well as the contributions in Langdon and Baer, 1992). In the twentieth century, as a result of interracial contacts, several syncretic sects have been established in Brazil in which the indigenous ayahuasca traditions are coupled with Christian and other non-indigenous (in particular, African) cultural elements. The most important of these sects are the Church of Santo Daime and the *União do Vegetal* (the plant union). In the last decade both groups have expanded significantly throughout the urban centers of Brazil and recently they have established communities overseas as well (for general information regarding these groups, see MacRae, 1992; Polari, 1984, 1992, for

the first group; and the Centro de Memoria e Documentação, 1989; Brissac, 1999, for the second).

The consumption of ayahuasca usually induces powerful visions as well as hallucinations in all other perceptual modalities (depictions of ayahuasca visions are presented in the paintings shown in Luna and Amaringo, 1993). Pronounced non-perceptual cognitive effects are also manifest. These include personal psychological insights, intellectual (notably, metaphysical) ideations, and powerful religious and spiritual experiences. Moreover, ayahuasca introduces those who partake of it to what seem to them to be other realities. Those who consume the potion may thus feel that they are gaining access to new sources of knowledge and that the mysteries and ultimate truths of the universe are being revealed.

Practically all the scientific research on ayahuasca falls into two categories. The first is that of the natural sciences — botany and ethnobotany, pharmacology, biochemistry and brain physiology. The second category is that of the social sciences — notably anthropology. The disciplines of the first category try to determine the identities of the plants of which ayahuasca is made, analyze their active chemical ingredients and discover the pharmacological action these generate and the physiological effects they produce in human beings (see, for instance, Callaway et al., 1999; Grob et al., 1996; Strassman 2001). Anthropologists, in their turn, study how ayahuasca is used in various societies and groups. They record the rituals — religious or medicinal — in which the potion is consumed and the behavior of the people who participate in them. Anthropologists also study how ayahuasca and its rituals are related to various other facets of the cultures at hand — social structure, mythologies, music, religious beliefs, art and artifacts (see references above).

To my mind, the real puzzles associated with ayahuasca pertain neither to the brain nor to culture but rather to the human psyche. Ayahuasca is so intriguing because of the extraordinary subjective experiences it generates in people. As such, the study of ayahuasca belongs first and foremost to the domain of psychology, and more specifically cognitive psychology. My own research program is the first scientific effort to study the ayahuasca experience from a cognitive-psychological perspective (for more information, see Shanon, 1997a, 1997b, 1998a, 1998b). It is guided by the appraisal that the alliance of ayahuasca research and the study of mind is beneficial to both. On the one hand, cognitive psychology presents a new, most pertinent perspective for the study of ayahuasca. On the other hand, ayahuasca, with the unusual mental phenomena it generates, opens new vistas for the study of mind in general and of human consciousness in particular. Furthermore, studying ayahuasca from a cognitive-psychological perspective can shed light on topics that are within the province of other scientific disciplines, notably anthropology and philosophy.

Empirically, my study of ayahuasca is based on several sources of data. The first is the compendium of my own diaries in which I have written down full accounts of all ayahuasca sessions in which I have participated. Guided by the belief that the ayahuasca experience cannot be studied without firsthand experience, I have spent long periods in South America partaking of the potion in different locations and in different contexts of use; by now, I have done so more than 140 times.[1] Second are interviews in which I asked people about their ayahuasca experience. Overall, I have interviewed more than three hundred individuals — indigenous shamans, indigenous lay persons, residents of South America who are members of various syncretic sects using ayahuasca, independent drinkers (that is, individuals with extensive experience who are not members of any sect) and Europeans and North Americans with no prior experience with the potion.

Scope of this Paper

As indicated above, in this paper I review several phenomenological patterns encountered with ayahuasca which, I think, have major theoretical import for any general theory of human consciousness. Each pattern discussed corresponds to one aspect of consciousness (in some cases, several) that is usually taken as fundamental, and each reveals that the features in question need not necessarily apply. The theoretical import of this is that some very basic conceptions regarding consciousness have to be questioned and modified.

Both the theoretical characterization of consciousness and the study of altered states of consciousness are vast topics. Before I proceed, I would like to demarcate the scope of this paper and clarify what it is not. First, the paper is not meant to be a general theoretical discussion of human consciousness. Admittedly, a theoretical framework of consciousness is sketched here, but this is only by way of providing a skeleton and a conceptual reference system for grounding the phenomenological analysis. In principle, every theoretical statement made in this paper can be challenged and subjected to further discussion; but this is not the place for such a comprehensive discussion. Nor is this a general treatment of all altered states of consciousness and their import to the study of consciousness. Not even the domain of substance-induced altered states of consciousness is to be covered here in full. My concern is only one particular psychoactive substance, ayahuasca. In

[1]Would anyone imagine writing about music without ever having heard any? Yet, the state of affairs encountered with ayahuasca is precisely so: many of those who have investigated ayahuasca have had either very little or no firsthand experience with this potion. My research is the first scientific investigation based on a sizable corpus of firsthand experiences as well as the first involving systematic analysis of a large corpus of data furnished by other persons.

fact, this is not even an exhaustive study of the phenomenology of the ayahuasca experience as such. As indicated above, that phenomenology is multifaceted and involves practically all aspects of cognition. Here, however, I examine only those aspects of the ayahuasca experience related to what may be defined as the basic parameters of the system of consciousness. For a comprehensive charting of the various facets of the state of mind that ayahuasca induces, the reader is referred to Shanon (2002). Finally, the present article is not a philosophical treatise. Certainly, many of the findings presented here and the observations and claims associated with them have philosophical ramifications. Moreover, it may very well be that the most important questions about consciousness pertain to metaphysics. However, this paper is a phenomenological, cognitive-psychological one: what it sets itself to do is present empirical data pertaining to one particular non-ordinary state of mind and to spell out psychological implications these data have. Metaphysical questions are outside the scope of this framework.[2]

The foregoing remarks pertained to the aim and scope of this paper. Related to them are substantive considerations of exclusiveness, or rather non-exclusiveness. By no means am I claiming that the effects surveyed here are encountered only with ayahuasca. Very likely, all these effects are encountered in altered states of consciousness induced by other psychoactive substances, and most probably, also in states that do not involve the consumption of any such substance. As said, here I am offering only those data with which I have firsthand familiarity. Along with similar studies conducted with other psychoactive substances and non-ordinary states, this one could eventually contribute to a comprehensive understanding of altered states of consciousness in general.

Consciousness — General Preliminary Remarks

From a structural perspective consciousness is, essentially, a cognitive system governing human subjective experience. The system is defined by a series of parameters that can take different values. Changes in these values result in different states of consciousness. The task of the phenomenological psychologist is to define the structural parameters of this system, specify the values they can have, and spell out the dynamics of their change.

In principle, subjective experience could be designed in a number of different ways. Hypothetically, cognitive agents could have been built so that they

[2]In excluding metaphysics from this discussion, I am keeping to a cognitive-psychological framework adopting a strict phenomenological line. In the past, I have adopted this framework to the study of verbal-like thought sequences (see Shanon, 1984, 1989, 1998c); for an interesting defense of a similar position, the reader is referred to James (1890/1950, especially chapters VI, IX, and X).

feel, sense and perceive the world differently than do the members of the species *Homo sapiens*. Thus, when adopting the structuralist perspective, the study of what is the case is intertwined with that of what is not. Defining the parameters of a system and their values, *ipso facto* one is specifying actual states of affairs out of a space of hypothetical states that may or may not be actualized. Essentially, such specification is the goal of all scientific endeavors; in the case of consciousness, however, the enterprise is particularly difficult. Some of the key characteristics of consciousness are so ingrained in our psychological existence that we take them for granted and are usually blind to them. In order to define the structural parameters of consciousness and to determine their actual values, the student of mind has to consider the full range of these parameters and their values. The great potential contribution of the study of non-ordinary states of consciousness to the scientific understanding of the mind lies precisely in its rendering the parameters of the cognitive system apparent and in its revealing the various possible values that these parameters may take.

By way of clarification, let me introduce two analogies — the first casual, the second formal. The casual analogy involves my wearing eyeglasses. Without the glasses I cannot see. Usually, I pay no attention to the glasses. Indeed, I normally take them for granted. However, were the specifications of the lenses to be altered, the features of the world that I perceive would drastically change. For instance, were the lenses tinted pink, the coloring of all I see would be modified. With this, the existence of the eyeglasses, their specifications and their contribution to my vision would become apparent. Likewise with consciousness, only more so. Eyeglasses can be taken off, but consciousness is always with us, or rather — everything we experience is always grounded in consciousness. It is here that the fundamental cognitive-psychological importance of the study of the so-called altered states of consciousness is manifest. As noted, the basic goal of the structural analysis of consciousness is to identify the set of parameters that define the nature of human subjective experience and determine the specifications pertaining to them. But, as in the case of the eyeglasses, it is only when our state of consciousness changes that we can begin to appreciate these parameters and values.

The formal analogy comes from the field of mathematics. In the algebraic context a term such as a indicates a certain value: it is a as contrasted with, say, b. But in fact, a is $1a$, and furthermore, it is also $1a^1$ (i.e., a to the power of 1). Normally, the constant 1 and the power 1 are not indicated or even thought of. However, once a broader, polynomial perspective is taken, one realizes that indeed the single term a is a specific case of the more general expression mx^n, with the value of the variables being: $x=a$, $m=1$, $n=1$. Thus, a distinction is noted between two components of the mathematical expression. On the one hand is the term a as contrasted with other possible terms,

such as *b* or *c*; on the other hand are the multiplication and power factors — in the example given here, both are equal to 1. Turning to the domain of consciousness, I suggest an analogous distinction between, on the one hand, the particular contents of consciousness that one experiences at any given moment (i.e., specific sensations, perceptions, ideations and other mental states) and, on the other hand, the parameters that define consciousness as a cognitive system. The subject matter of a theory of consciousness is the latter, not the former.

A Typology of Non-ordinary Effects of Consciousness

A fundamental property of human consciousness is its being grounded in two domains — the self and the world. Indeed, from a functional point of view, consciousness is a system that, on the one hand, confers individual selfhood, and, on the other hand, affords human beings with connectedness to the external world and knowledge of it. Thus, subjective experience may be regarded as an interface between the private, internal domain of the self and the public world outside. Correspondingly, intertwined with the study of subjective experience proper is the study of both self and the relationship between human beings and the world.

Following is a typological survey of the various non-ordinary patterns of consciousness encountered in the special state of mind induced by ayahuasca. The survey is organized in terms of a series of structural parameters which, by the present theoretical perspective, define the system of human subjective experience. The survey begins with aspects of consciousness that pertain to the self, proceeds to ones pertaining to subjective experience proper, and then turns to ones having to do with the relationship to the world. Towards the end of the survey, I consider self-consciousness as well as semantic parameters related to the overall quality of experience.

1. *Agency*. The first parameter to be noted is the one distinguished by James (1890/1950) as the primary characteristic of human consciousness, namely, agency. All the mental materials that one experiences are, by definition, one's own. Thus, when a thought such as "This is a beautiful day" passes through my mind, semantically what is being entertained is something like the following: "I [B.S.] am thinking that this is a beautiful day." In general, it is as if all mentations are encompassed within quotation marks — inside is the content expression and outside is an indication of selfhood. *Prima facie* it would seem inconceivable that the thoughts that pass through a person's head would not be his. Yet, with ayahuasca, people do at times experience thoughts as not being their own.

Two phenomena will be noted. The first phenomenon consists in a dissociation between the self and the mental material one experiences. Content

passes through one's mind, but one does not experience oneself as generating it. The mental material is, on the one hand, private (for it happens to one particular individual, and other persons do not experience it), but on the other hand, experienced as not being the outcome of one's own will and/or cognitive work. Instead of being the generator of the thoughts that one is entertaining, one feels that these thoughts happen to one, or occur in one's mind. In various contexts of ayahuasca use, the term "reception" is often employed. The phenomenon is especially salient with that facet of the ayahuasca phenomenology which is most famous, namely, the visions that this potion induces. Typically, the visions present items and states of affairs that have nothing to do with the specific contingencies of the lives of individual drinkers. The contents of the visions are literally extra-ordinary, and the beauty they exhibit often surpasses anything seen or imaginable. Universally, people are stupefied as to how such visions could come to be.[3]

The second phenomenon has to do with control. Experientially, the feeling is that one is no longer in full control of the thoughts one entertains. Rather, one feels that other people or agents are controlling one's thoughts. The converse may also be experienced, namely, that one feels one is controlling the thoughts of other people. Related to this are experiences of telepathy and precognition, both commonly reported with ayahuasca.[4] While I have heard some remarkable stories about both telepathy and precognition, and while I myself have experienced some very perplexing episodes that seemed telepathic, my appraisal is that it is extremely difficult to ascertain the validity of these reports.

Similar patterns are encountered in psychopathology. On the basis of observations with psychiatric patients, Graham and Stephens (1994) proposed a distinction between ownership (mental materials being mine) and agency (mental materials being the products of my doing); further philosophical discussion of this is found in Radden (1996, 1998). I shall note that the dissociation between ownership (or possession) and agency (or generation) is experienced by all of us. This is the case with dreams: dreams are private and belong to one and only one individual, but they seem to happen *to*

[3]How the visions are generated is, indeed, a most puzzling question. This is especially so in light of the fact (documented by Shanon, 1998a) that the visions different people have exhibit marked cross-personal similarities and do so regardless of personal and socio-cultural background. Reflections on the nature of ayahuasca visions and the mechanisms and dynamics of their generation are presented in Shanon (2002).

[4]Indeed, one of the early names scientific researchers gave to the active ingredient in ayahuasca was *telepatina* (coined by Zerda–Bayón in 1919; see Morton, 1931). I should emphasize that I am talking here of reports of individuals of their having felt themselves experiencing telepathy and precognition, not necessarily of actual cases of such paranormal cognition. Personally, I am very doubtful of the actual occurrence of such feats. That people feel that they are experiencing them is, however, a phenomenological fact.

one, not be generated *by* one. In fact, this pattern may also occur in the context of normal (that is, non-pathological), ordinary thought: at times, thoughts pass through our minds, and we are perplexed as to how we actually came to think them.[5]

2. *Personal identity*. The self, the agent of consciousness, manifests a sense of personal *identity* (again, see James, 1890/1950). Ayahuasca can bring about modifications, at times radical, of this identity; these result in experiences of personal transformation or metamorphosis.[6] In the data I have collected, the most common are transformations in which one experiences oneself changing into another person or into an animal. Most animal transformations reported by my informants were to felines or birds; typically, the latter involve the experience of flying. On rare occasions, transformations into inanimate objects are also encountered. One Peruvian shaman told me that the most remarkable feat in his experience with ayahuasca was being transformed into a grain of sand. One non-indigenous informant recounted experiencing herself as a drop of water in a fountain (the Trevi fountain in Rome). The most extreme transformation of identity is that into nothingness. Here one's identity as a particular individual is lost and one feels that one is becoming joined with the universe. Understandably, the experience can be extremely frightening, but when accepted, it can be gratifying to the utmost. In the literature of various mystical traditions such an experience is central (see Bucke, 1901/1991; Forman, 1990, 1998, 1999; Stace, 1961); in the East it is associated with the terms of nirvana and samadhi (see, for instance, Conze, 1973; Griffith, 1991).

Transformations of personal identity exhibit variations in aspect and gradation. Thus, consider that transformation which is paradigmatic to ayahuasca, namely, the transformation into a jaguar (for anthropological discussion, see Reichel-Dolmatoff, 1975). In its simplest manifestations, the transformation may consist in only one's body, or perhaps only parts of one's body, being felt to undergo metamorphosis. Then, it may be that one experiences oneself to assume the bodily form and physique of a jaguar, but one feels that, deep down, one remains oneself. One may further adopt some behaviors of a jaguar and various of its attributes. The adoption of these may increase and gain force. Immersed in the world of the vision, one may find oneself moving as a jaguar, engaged in jaguar activity, being a jaguar amongst jaguars. Eventually, one may be (experientially) fully transformed into a jaguar, no longer being

[5]As pointed out by Hindu and Buddhist thinkers, how thoughts are generated is actually a more perplexing question than it usually seems to be (see, for instance, Chennakesavan, 1960).

[6]In the Amerindian context, such transformations are a major feat of shamans. The transformation of the shaman into a jaguar is especially significant (see Lagrou, 1998; Reichel-Dolmatoff, 1975).

cognizant of one's erstwhile identity as a human being. All these variations are found in the phenomenological corpus that I have collected; for a remarkable firsthand account of a jaguar transformation as experienced by an anthropologist, the reader is referred to Barbira Freedman, 2000.

3. *Unity.* Normally, personal identity exhibits unity. This is manifested in two respects: on the one hand, every individual has one cohesive identity; on the other hand, the thoughts that constitute each person's mentality are, in principle, all inter-connected so that a person's mental life coheres into a unified whole. With ayahuasca, consciousness may be divided and one may have both one's standard identity and another, new identity. In our culture, this phenomenon is usually regarded as pathological: it marks dissociation and disintegration and is taken to be indicative of the psychopathological condition of dissociative identity disorder (see Nemiah, 1989; Radden, 1996, 1998). In contrast, in the Amerindian context of ayahuasca, the ability to maintain a double identity is regarded as a major accomplishment — in fact, the prime talent of a competent shaman. Shamanic flight is not just having an illusion that one's identity, as well as one's whereabouts, have changed. Rather, the experience consists of the shaman existing in two realms simultaneously — being himself, here and now, and at the same time assuming the identity of another person or creature and being elsewhere, in other realms (see Eliade, 1964). Throughout world history, mystics have reported similar experiences (see Forman, 1998, 1999).

A description of divided consciousness which I find insightful is that of the anthropologist Taussig (1987) in his account of his first experience with ayahuasca. After describing his torso as being distorted, his limbs as becoming detached and a feeling that his body did not belong to himself, Taussig recounts:

> I learn to use dissociation as an advantage as a way of escaping from the horror. I am not the person got at; rather I am the disembodied face–presence calmly peering in and watching this other and unimportant me. I watch my other self, safely now. But then this second me, this objective and detached observer, succumbs too, and I have to dissociate into a third and then a fourth as the relation between my-selves breaks, creating an almost infinite series of fluttering mirrors of watching selves and feeling others. (p. 141)

I shall note that this pattern is reminiscent of that of the hidden observer encountered in the context of hypnosis: while the hypnotized person undergoes physical pain and endures it in a non-ordinary fashion without being aware of it, another "self" is cognizant of what is going on and can acknowledge it (see Hilgard, 1965, 1977).

4. *Individuation.* Unity marks the cohesiveness and inter-connectedness of the self; individuation marks its distinctness. Breach of unity results in fragmentation and compartmentalization so that parts of the self gain autonomy relative to one another; breach of individuation results in the self becoming non-autonomous vis à vis entities larger than itself. Normally, consciousness

is associated with well-defined individuated autonomy. With ayahuasca, there are instances where that is no longer experienced to be the case and the sense of the individual self dissipates. The following citations from Polari (1984) describe such experiences:[7]

> In that other, parallel existence that I assume exists in some other part of the cosmos, the concept of individuality is not very clear. I was part of a larger body that congregated with a series of "astral 'I's" pertaining to the same spiritual matrix that nourished various "physical 'I's." (p. 278)

> The passage gravitated toward increasingly more complex planes and I was able to reach increasingly elevated forms of consciousness. And the more elevated my consciousness was, the more extinguished was the notion of "individuality" and it dissolved in a manifest ocean of divinity where the total and the all were just One. (pp. 278–279)

In Polari's reports the non-individuation of consciousness is defined with respect to the cosmos or to some sort of supra-personal consciousness. The non-individuation of the self may also be manifested in the blurring of the distinction between the individual and other human beings. As a consequence, one may feel that one's identity is defined not individually but rather in group terms. A common case is the strong identification ayahuasca drinkers often feel with the other participants in the ayahuasca session. Personally, I have come to appreciate the experience of non-individuated group-consciousness through one particular ayahuasca-induced vision. In it, I found myself in the midst of an ant colony. It dawned upon me that consciousness was the property of the colony, not of the individual ants.

The reduction of individuation is especially manifest in those ayahuasca rituals in which communal singing takes place. The singing may be highly coordinated, both with respect to tempo and rhythm and as far as immediate adjustments in tune are concerned. On such occasions, it is as though the group has become a single organism acting in a precise and extremely concentrated fashion. Once I presented a cassette recording I had made of such singing for inspection to a musical laboratory equipped with high-technology measurement instruments. The experts were astonished at the perfect degree of synchrony between the people singing. Participating in singing rituals, I have observed this many times as well; identical observations were made by Reichel–Dolmatoff (1996) in the indigenous Amerindian context.

5. *Boundaries of the self and the differentiation of states.* Both identity and individuation are further defined by means of contrast. People have a sense of what constitutes their self and what does not. What is "not me" consists of

[7]Alex Polari is a Brazilian intellectual who is one of the heads of the Church of Santo Daime, a syncretic religious group founded on the ritual use of ayahuasca; the translation from the Portuguese is mine.

both the physical world outside and of the community of social others with whom I interact. On the basis of these contrasts, a differentiation is made between the internal world and the external one. With ayahuasca, the experienced boundary between inner and outer reality may dissolve. One may feel that one's "I" is blended with that of others, that one is so immersed in the world as to become unified with it, that there is no neat distinction between one's internal mental world and one's perceptions of the external world. Thus, quite a few informants reported that under the effect of ayahuasca they felt as one with other participants in the session, with plants they were looking at, or with the universe at large.

Likewise, the contrast or differentiation between the various mental states may fade. With ayahuasca, it may be difficult or even impossible to know whether one is perceiving or remembering, whether one is perceiving or generating thoughts, whether one is thinking or perceiving the thoughts of others. On several occasions, while participating in ayahuasca sessions, I have found myself reflecting upon the events of my day, wondering whether they were real or not and questioning whether the people I met and the interactions I had with them were not actually the orchestrated acts of an enchanted *mise en scène*. I have heard the same descriptions from several other persons.

It will be noted that patterns which are seemingly similar to those described are encountered in psychopathology and known under the labels of "depersonalization" and "derealization" (see Nemiah, 1989). Yet, as indicated above in conjunction with the parameter of unity, patterns of these kinds need not be taken as symptoms of pathology and hence viewed in a pejorative manner. Even if the defining features of the patterns appear to be the same, the psychological meaning invested in them may be very different, and therefore, the essence of the experience quite different as well. For instance, instead of taking the blurring of boundaries to be a symptom of psychopathological dissociation, this may be regarded as a state of grace in which a human being experiences herself connected to Nature, the Cosmos, the Ground of Being and/or the Divine.[8] Rather than a manifestation of psychological derangement, such an experience may be of enhanced well-being, stamina and happiness (for reports of similar experiences in the Western mystical tradition, see Merkur, 1999).

6. *Calibration*. As a rule, in order for an attribute to apply, some standard must be assumed. Things are big or small, heavy or light, slow or fast and so on, relative to certain standards. The same holds for conscious experience. Both the sense of self and the perception of the world presuppose standards,

[8]I appreciate that the term "grace" has Christian connotations. These, however, are not intended here. The term is one spontaneously used by many ayahuasca drinkers, including ones (like myself) who are not aware of these culture specific connotations.

hence calibration. Thus, we all have standards of the sense of the size and weight of our bodies, our posture in space and so on. Under the effect of ayahuasca all of these may change. For instance, one may feel that one's body is larger, lighter or heavier, and the like.[9] Two informants told me that they felt as high as the trees in the Amazonian forest. Another informant described a terrifying experience in which she felt the entire coherence of her body was lost. Also reported are changes in the scaling of the inner visual space. With ayahuasca the inner field of vision is significantly increased. Instead of having an angular span of 60–70°, it can reach 160° and even more.

7. *The locus of consciousness.* A special aspect of calibration is the experienced locus of consciousness. Where is consciousness located? At first glance, this may appear to be a meaningless question — mental events do not have a "place." Yet, subjectively, people do feel that there is a place in their bodies where the center of their awareness is located. Usually people locate this center in their heads. Some people, and some cultures, situate the center in the heart or in the stomach. For further discussion of this issue, the reader is referred to Jaynes (1976) and Lind (2001).

What does it mean to say that the locus of consciousness is "in the head"? Surely, it is not a symptom of the physiological fact that the organ responsible for thinking is the brain — until recent times most people did not know that this was the case, and besides, since the brain does not have proprioceptors, human beings do not have any sensation of their brains. If consciousness is to be placed where people feel foci of energy, agitation or tension, it does indeed make more sense to locate consciousness in the heart or in the belly. If, however, the locus of consciousness is to be defined in a quasi-geometrical sense as the primary reference point of mental spatiality, the common experience of the head as the center of awareness makes phenomenological sense. By and large, spatial reference is made relative to a singular point, namely, the mid-point located somewhere behind the eyes and between the ears. This makes sense as far as the phenomenology of perception is concerned and it is, I gather, not an accident that this point is related to the anatomical position of the brain.

Of course, normally we locate our consciousness within our physical body. With ayahuasca this need not be the case. A phenomenon reported by several of my informants is that of the out-of-body experience, in which the self dissociates itself from the body. One may even find oneself watching one's body from the outside (for further discussion of this phenomenon in other contexts, the reader is referred to Green, 1973).

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[9]This naturally brings to mind some of the experiences that Carroll's Alice had in Wonderland. Indeed, this very analogy passed through the mind of one my informants when she felt that the size of her body was changing and shrinking to the size of a match.

8. *Time*. Another aspect of calibration pertains to time. Just as we have normal feelings of the size and weight of our bodies, so too we have a normal sense of temporality. By way of defining the various possible modifications in temporality encountered in altered states of consciousness, let me introduce a series of determinants by which human temporality may be characterized. The following formulations are my own, but they are based on my reading of the literature on the philosophy and psychology of time (see, for instance, Sklar, 1977; van Frassen, 1985).

First and foremost is the *passage* of time: time flows. Metaphorically, the master clock is always ticking. Second, the *rate* of time's flow is calibrated: there is a certain pace that the flow of time is experienced to have. Third, time exhibits *order*. This is defined in terms of the sequential relations of "before" and "after." Fourth, time exhibits *directionality* — time moves forward. Experientially, this is manifested in the distinction between past and future: as time flows, what but a moment ago was experienced as future is now experienced as present and in a moment will be experienced as past. Fifth, a temporal *metric* applies so that specific and well-determined values can be assigned to both temporal location and temporal intervals. Operationally, these values define those statements that constitute answers to "when" questions. Sixth, all temporal distinctions pertain to a particular *frame of reference*. The frames vary with respect to the singular points that serve as the basis of reference or coordinate definition. Different agents or observers will be grounded in different reference points and thus have different temporal perspectives.

The six determinants span the various possible alterations in experienced temporality. First of these is the stopping of time, the experience whereby the flow of time seems to come to a halt. This is an extreme case of modification along the second determinant of temporality, namely, a change in the perceived rate of time's flow. Specifically, time may be experienced as passing faster or more slowly than it ordinarily does; this change need not be uniform. Third is a possible confusion in the ordering of time. In particular, the determination of the relationships of before and after may be disturbed. Likewise, the distinction between past and non-past may be blurred or become irrelevant. Confusion in the ordering relations may result in further confusions with regard to the distinction between memory, perception and thought regarding the future. Further, modifications in order relations may result in a failure to adequately establish temporal locations and intervals. Lastly, non-ordinary frames of reference may be adopted. With respect to this, three possibilities will be noted. The first consists of a modification of the perceived distance of time. This modification entails the feeling that things are more or less distant than they are normally sensed to be. It should be noted that this experience need not involve a change in the determination of the specific temporal location. The second possible effect consists of

the adoption of another agent's frame of reference. Specifically, one may look at things past or things future as if they were present. The third effect consists of adopting an absolute frame of reference in which time is no longer pertinent. In the philosophical tradition of the West this has been referred to as looking at things *sub specie æternitatis* (from the perspective of eternity). Experientially, this may be characterized as feeling that one is outside the dominion of time (see Shanon, 2001a).

Taken together, the foregoing distinctions define various possible manifestations of non-ordinary temporality. In particular, I shall distinguish between two clusters — that of *modified* or *altered* temporalities and that of *non-* or *a-*temporality. Modified temporalities constitute states of mind in which temporality is experienced but whose specifications are different from those of ordinary temporality. Modified temporality may be manifested in changes with respect to one or more of the aforementioned six determinants. Non- or a-temporality consists of the experience that one is "outside of time." With respect to this, two distinct cases shall be noted. Either time may, so to speak, cease, or a new, non-ordinary semantics of time may be assumed. The latter case includes states of affairs in which it is felt either that *any* temporal frame of reference may apply or that *all* temporal frames of reference are applicable or even co-present. It may also be that all points of reference are lost. With these experiences one feels that one has reached the realms of the eternal. With ayahuasca, both modified temporality and a-temporality are reported. Indeed, to one degree or another, all the possible effects surveyed above are encountered. For a comprehensive survey and discussion of these effects the reader is referred to Shanon (2001b).

The human experience of time may also be approached from a *semantic* point of view, one which is grounded in considerations of meaning and narration. As pointed out by James (1890/1950) and Bergson (1950) as well as by Gibson (1975, 1979), whereas physical time is defined in terms of an abstract, universal matrix, psychological time is defined in terms of events. As such, human time is intrinsically semantic, or rather, as conceptualized in Shanon (1993), intensional.[10] As experienced with ayahuasca, modified temporality is often coupled with sentiments of enhanced meaningfulness and of strong noetic feelings (see below). In its turn, the experience of a-temporality may take two extreme forms. In the first, time ceases to be relevant and temporality gives way to *pure semanticity;* in the second, neither time nor meaning are pertinent.

9. *Connectedness to the world.* The loosening of boundaries and the change in calibration entail enhanced connectedness with the world. Consciousness is

[10]Note that this term is written with an "s"; it means "intrinsically invested with meaning."

paradigmatically associated with the internal domain of subjective experience. Yet, a fundamental property of consciousness is its being directed outside of itself. This property too was singled out by James (1890/1950) in his classical analysis of consciousness; Brentano (1874/1973) called it intentionality. Intentionality affords connectedness to the world and makes it possible for human beings to know the world. As pointed out by both Bergson (1944) and Merleau–Ponty (1962), it is by virtue of our experiencing it that we come to know the world in which we live.

Typically, with ayahuasca connectedness to the world is felt to be increased. Above (see section 5) it was already noted that ayahuasca tends to weaken the differentiation between the inner and the outer worlds. Consequently, people often feel strongly connected with the world. The enhanced connectedness may be felt toward nature at large as well as toward particular items (e.g., a specific flower that one is looking at). It may also be experienced vis à vis other human beings. Here I would like to single out the repercussions the loosening of boundaries and the enhanced connectedness associated with it have on the experience of knowledge.

10. *Noesis*. With ayahuasca, connectedness is very often tied to powerful noetic feelings — that is, feelings that one is privy to veridical knowledge. Such knowledge is gained not by means of analysis and reflection, but rather by means of the experience of direct contact, or even identification, with the objects to be known. I shall note that this mode of knowing is very much in line with Spinoza's intuitive mode of knowing, that which he characterized as the highest that may be attained (see Spinoza, 1670/1967, as well as the notion of introception proposed by Merrell–Wolff, 1995). Noetic feelings have also been indicated as characteristic of mystical experiences by both James (1890/1950) and Stace (1961).

The issue of knowledge raises, of course, very difficult epistemological questions. Are the noetic feelings ayahuasca induces justified? Is the knowledge involved indeed veridical? The treatment of these questions lies beyond the scope of this psychological work. Here, let me note that I have presented these very questions many times to my informants. "How do you know," I asked, "that what ayahuasca made you see is indeed true?" Common answers were "I just felt it," and "I experienced this as evident. That's it." Analytically-minded philosophers might dismiss such answers as unfounded and unprovable. By contrast, it seems to me that Spinoza would accept them and demand no further proof. Indeed, by its very nature intuition, or introception, allows no proof other than itself. By its very essence, this type of knowledge is internal, and any putative proof — be it empirical or deductive — would be external, hence already outside of the realm of this knowledge. Obviously, this does not close the philosophical discussion, but I shall leave the matter at that. For further discussions in the context of mysticism in general, the

reader is referred to James (1929), Maslow (1970), Scharfstein (1973), Stace (1961), Underhill (1955), and Wainwright (1981).

11. *The conferral of reality.* Intertwined with knowledge is the conferral of reality upon the objects known. As pointed out by Merleau–Ponty (1962), perceiving involves not only discerning specific information about objects in the world, but also taking these objects to be real. When one sees a flower, not only does one detect that it is a particular object with a particular shape and color; seeing the flower, one also takes it to actually exist there in front of one's eyes.

Normally, human beings have a certain feel of the real (see Johnson, Hashtroudi, and Lindsay, 1993; Johnson and Raye, 1981). This feature is so fundamental to our perception of the world and our being in it that in general we are totally oblivious of it. Non-ordinary feelings of reality are usually associated with a diminishing sense of reality. We have all experienced this under conditions of darkness or extreme fatigue. Further, many theoreticians have argued that what distinguishes true perception, on the one hand, and memories, imagination and dreams, on the other, is that the former is clearer, more distinct, and more coherent than the latter (for a classical analysis, see Hume, 1739/1978; for a modern treatment, see Casey, 1976). The reduction of the sense of reality happens with ayahuasca too. However, the ayahuasca experience also presents cases in which the feel of reality is enhanced. A phrase many employ is that things are perceived as being "more real than real." The feeling is so strong and compelling that it may be coupled with the assessment, very common with ayahuasca, that what is seen and thought when under the effect of the potion constitutes ultimate reality, whereas the world that is normally perceived is actually an illusion. This indicates that reality judgement is actually a parameter that can take different values. Dreams and imagination usually decrease the value assigned to this parameter; the ayahuasca experience may increase it (for further discussion in the context of altered states of consciousness, see Deikman, 1969).

12. *Self-consciousness.* Not only are we conscious of the world, we are also conscious of ourselves as cognitive agents who think and act in the world. Endowed with self-consciousness we can reflect on both our cognitive activities and their products. Moreover, we can be conscious of our very selfhood and identity.

Under the ayahuasca inebriation, the consciousness of self is usually preserved. Admittedly, as described above, there are moments in the ayahuasca experience when it seems that one's individuated selfhood has dissipated. In such moments, self-consciousness may indeed be lost. Yet, it seems to me that self-consciousness can be maintained even when consciousness and selfhood undergo radical changes. With accumulative experience, drinkers of ayahuasca come to appreciate that extreme as the effects of the potion are, they can maintain a part of their being that is their own, normal self. This

may serve as an internal compass that keeps track of what is going on, sustains sound judgment, and maintains contact with the surrounding reality. Again I want to emphasize — this residue of the normal self can be accessed even when all other facets of one's consciousness are completely altered. High as one's soul may rise, one's normal self may still be able to maintain a distance and take cognizance of the special state in which one is and of what is happening in it. Several informants with extensive experience with ayahuasca have described this very state of affairs to me. Taussig's dissociative experience, cited above, also exemplifies the compartmentalization of self-consciousness and highlights the multi-layered character that it may take.

Yet, as indicated, on extreme occasions, there can be situations in which one's notion of one's own self is completely lost. This may be characterized as an enchantment, a kind of spiritual seduction. Absorbed by the marvels of ayahuasca visioning, one loses track of everything else. One forgets where one is, what is happening in the real world around one, and who one is. Overall, it seems to me that losing one's self is, to a great extent, a matter of a decision to let go, lose touch with reality and immerse oneself in the non-ordinary realms that ayahuasca presents.

13. *Semantic parameters*. All foregoing parameters were structural. In addition, I would like to introduce a cluster of parameters having to do with the quality of conscious experience; these may be regarded as semantic. I refer to the attribution of *meaningfulness*, to *aesthetic* sensitivity, and to a sense of *holiness* (or *sanctity*). All these are very salient with ayahuasca. The enhanced attribution manifests itself in the finding of special meaning in what one sees and hears: things and states of affairs are perceived as not contingent but rather, invested with meaning. Often, linguistic utterances are interpreted as conveying more than their literal meaning. The attribution of meaning is, according to some (notably, Heidegger, 1927/1962), a fundamental feature of human existence. It may also be linked to the conferral of reality. Enhanced aesthetic appreciation has been observed in many reports of experiences with psychedelics (see, for instance, Huxley, 1959/1971; Watts, 1962). Typically, it is noted that the (real) world is perceived as if it were a work of art. Specifically, things are deemed as more beautiful than usual, as being composed and structurally organized, and as exhibiting a particular style. In the reports of my informants, attestations of this are common too. The sentiments of holiness are manifested in approaching the world as a divine, benevolent creation. The mystical experiences may be associated with unitive experiences, whereby one feels that one is united with the ground of Being; such experiences also involve the parameter of connectedness discussed above.

Whereas the attribution of meaningfulness can be readily incorporated within existing cognitive models, the two parameters here indicated extend

beyond usual cognitive framework. Patterns encountered using ayahuasca suggest that the aesthetic and the sacred are fundamental determinants of human consciousness. Unlike all the other parameters discussed above, these may not always be apparent, and many individuals may not deem them pertinent. While, from a contemporary cognitive perspective, the inclusion of these parameters in a general modelling of mind may appear awkward, it is actually in line with Kantian and neo-Kantian philosophy (aesthetic judgement is the topic of Kant's [1790/1989] third critique, whereas an analysis of the holy along Kantian lines is presented in Otto, 1957). Recently, it has been suggested that religious sentiments are grounded in the structure of the human brain, and are thus part of the biological make-up that defines us as a species (d'Aquili and Newberg, 1999; Newberg and d'Aquili, 2001).

Summary and Conclusions

By way of conclusion, let me summarize what I see as the main theoretical implications of the foregoing survey. In doing so, I shall also highlight the contribution of the study of the ayahuasca experience (and other non-ordinary states of mind) to the understanding of human consciousness.

1. The very existence of the special phenomenological patterns here described indicates that some characteristics of consciousness which are often "taken for granted" are neither general nor mandatory. The effects surveyed violate what are usually regarded as basic, paradigmatic features of human consciousness. The phenomenology of the ayahuasca experience shows that, actually, these features characterize a particular cognitive profile out of a larger range of possible ones. In terms of the present theoretical framework, these features correspond to parameters that can receive different values. The values encountered in the ordinary state of mind define just one possible cognitive profile; in non-ordinary states other values are possible.

2. Some features of consciousness that normally are taken to be either synonymous with one another or intertwined need not be so. We have noted this in conjunction with the relationship of people to the materials that pass through their minds. Specifically two aspects were distinguished: possession (the mental materials belong to the individual in question) and generation (the individual is the author of these materials). In the ordinary state of consciousness both these aspects hold and both are either taken to be part and parcel of the same thing or are not distinguished from one another at all. Non-ordinary states of mind reveal that the two can be dissociated from one another, and hence are distinct. Another pattern is encountered in the relationship between time and perception. Normally, the temporal location of the perceiver and that of the object of her perception are identical. If I am

looking at the computer which is in front of me, then it goes without saying that the computer and I are co-temporal, both being temporally located in the same moment. With ayahuasca, people often experience themselves watching states of affairs taking place at other times, notably in the past: they are in the here and now, but what is before their eyes are scenes of ancient Egypt.[11]

3. The non-ordinary state of mind induced by ayahuasca reveals that some features of consciousness that are usually taken as fixed property are, in fact, variable: they are subject to modification and are matters of degree. For example, I have noted this with the sense of reality conferred upon the external world and the meaning associated with it. Likewise, the parameter unity may take the value "full unity," "no unity," or "partial unity."

4. The phenomenology of the ayahuasca experience suggests that within the definition of human consciousness exist some parameters that are not part of regular contemporary cognitive discourse. I refer to the parameters of aesthetics and sanctity. I propose that these are basic determinants of human cognition; correspondingly, they might be grounded in the very structure of the brain.

5. Taken in unison, the patterns we have surveyed corroborate the view that consciousness is a system exhibiting unity and coherence. It is not for naught that the various patterns in question (e.g., sensory hallucinations, metamorphoses of personal identity, modifications in the experience of time, and the like) are all encountered with ayahuasca (or with other non-ordinary states of mind). This is so because these patterns reflect modifications along parameters that define a single system, namely, the system of human consciousness.

6. The dynamic nature of consciousness should be borne in mind. Consciousness is a system that spans an entire range of possibilities along which, at different times, different profiles emerge. Throughout our lives, the values associated with the parameters of the system consciousness are constantly changing. The values in dreaming differ from those in normal wakefulness, those encountered when we are fresh and alert differ from those encountered in fatigue, and all these differ from those exhibited in the extreme states usually referred to as "altered (or alternate) states of consciousness." Since consciousness is always changing, always alternating, the term "altered/alternate states of consciousness" is, I find, deceptive.

The foregoing discussion underscores what I regard as a main goal of the study of mind, namely, the development of a theory of human consciousness.

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[11]Obviously, what I am referring to are subjective experiences, not any non-ordinary ontological state of affairs.

Such a general theory should account for all states of human consciousness and should characterize the different states of mind as special cases of one unified system. Instead of saying, as did James (1890/1950) in his classical analysis of consciousness, that consciousness is defined by a set of features (e.g., agency, unity, and continuity), I propose that consciousness be defined by a series of parameters that can take different values. Rather than fixing any particular set of values, the general theory of consciousness will define the pertinent parameters, the range of values they may take, and the dynamics governing the changes of these values in different contexts and in time.

More General Ramifications

The theoretical questions raised by the phenomenological study of ayahuasca bear on a host of philosophical issues. As stated above, serious treatment of these issues extends beyond the scope of this paper. Drawing to the close of this paper, however, I would like to make brief mention of three such issues.

First is the relationship between consciousness and the individuated self. At first glance it may seem natural to conceive the self as primary and consciousness as an attribute or a state of the self. Also plausible is to regard self and consciousness as inextricably linked, like the two faces of a single coin. Thus, usually, cognitive psychologists maintain either that the individuated self is fully commensurate with consciousness, or that it is the progenitor of consciousness. The special experiences associated with ayahuasca put forth other possibilities. There are occasions in which the sense of self dissipates but the experience of consciousness nevertheless remains. This suggests that consciousness as exhibited by individual selves may be a derivative phenomenon, which, in turn, depends on some sort of non-individuated consciousness. In other words, consciousness may perhaps precede individuated selves, the latter being formed when the former crystallizes into specific, bounded structures. This has been suggested in various quarters, amongst them Vedanta metaphysics (see Deussen, 1957; Deutsch, 1969; Sinha, 1991), the philosophy of Whitehead (1929/1978) and what Huxley (1944) referred to as "the perennial philosophy." As suggested by Polari (1984) on the basis of his extended experience with ayahuasca, there might perhaps be one transpersonal, supra-individual consciousness of which the various seemingly individuated cognitions partake:

> Our consciousness . . . could be . . . directly related with . . . the totality of the Cosmic Energy [which, in turn, is] merely a provisory point in the comprehension of other, infinite totalities that conduct us to the veritable totality which is God (p. 278) [and hence, in] the discovery of the veritable "I" of which the rational ego is just a pale caricature. (p. 282)

Interestingly, in his *Principles of Psychology*, James makes a personal note and confesses that, for his "own part," once metaphysical discussion is admitted, then:

> I find the notion of some sort of an *anima mundi* thinking in all of us to be a more promising hypothesis, in spite of all its difficulties, than that of a lot of absolutely individual souls. (James, 1890/1950, Volume 1, p. 346)[12]

James was fully cognizant of the esoteric nature of such a thesis, and given that the context of his book is psychological — not philosophical, let alone mystical — he is very cautious. The very fact that he chose to make his comment nonetheless is thus especially telling (for further discussion of James's views on these matters, the reader is referred to Taylor, 1996). More recently, similar views have been made by members of the school of transpersonal psychology (see Assaglioli, 1965; Goswami, 1990; Goswami, Reed, and Goswami 1995; Grof, 1972, 1998; Maslow, 1968, 1971; Walsh, 1993; Wilber, 1977, 1990, as well as by Hut and Shepard, 1996; see also the anthologies edited by Tart, 1992 and Walsh and Vaughan, 1980).

The second issue to be mentioned pertains to knowledge. Since Descartes (1641/1960), Western philosophy has been puzzled by how our knowing of the world can be proved to be veridical. As pointed out by Russell (1967), logically there seems to be no such proof. Yet, factually, no sane human being doubts the validity of that knowledge (see further discussion in Shanon, 1983). How are we to square the philosopher's skeptical argument and the manifest psychological certainty? To my mind, the way out involves a change in our basic conceptualization of what is knowledge. Often, knowledge is conceptualized in terms of a representation, or a picture that people have of states of affairs in the world (see, for instance, Wittgenstein, 1922). The picture theory suffers from a serious problem: between the cognitive representation and the world there is always a gap that cannot be bridged. The question is how these representations connect with the world. If cognition, and with it the human faculty of knowledge, is to be accounted for in representational terms, then cognition is bound to be confined to the realm of the internal. As argued at length in Shanon (1993), for a psychological account of knowledge to be viable, it has to be founded on a conceptual framework that takes the link between cognitive agents and the world in which they live as basic.[13] With ayahuasca, the intimate tie of mind and world is experienced con-

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[12]Similarly, in *Varieties of Religious Experience* James alludes to "the fact that the conscious person is continuous with a wider self" (James, 1929, p. 505).

[13]This stance is based on the insightful observations of Gibson (1979) and his followers in the school of ecological psychology (for a review, see Michaels and Carello, 1981).

cretely: users of the potion actually feel that knowledge of the world is the result of direct connectivity that ties people with the world. Thus, the problem of the gap is circumvented; in fact, it does not exist in the first place!

The third issue concerns the relationship between what are standardly referred to as the inner and the outer worlds. Normally in contemporary cognitive science, it is assumed that the two are distinct and separate. With ayahuasca, this is often felt no longer to be the case (for similar observations with other psychoactive substances, see Watts, 1962). Like mystics, many ayahuasca drinkers experience a deep, intimate connection between the two realms. The connection is such that there comes a point at which the very differentiation between the inner and the outer realms seems devoid of meaning. Thus, one feels that the individuated consciousness of each person is part of a higher, more extended supra-personal consciousness. If the feelings at hand do, indeed, reflect an actual state of affairs, then radical changes in the conceptualization of consciousness are entailed.

Finally, a topic to which I have already alluded in passing throughout the foregoing discussion, namely, psychopathology. As indicated, many of the patterns surveyed here are reminiscent of ones encountered in psychotic patients (for a review, see Reed, 1972). Such similarities notwithstanding, it is important to appreciate that the state of mind associated with ayahuasca, and with shamanic experiences in general, is fundamentally different from those exhibited by psychotic persons. As pointed out by Walsh (1990), the similarities between patterns encountered in shamanic and psychiatric contexts are often very misleading.[14] In the case of ayahuasca the non-ordinary experiences are willed: the shaman (as well as the person partaking of ayahuasca) purposefully puts himself in the non-ordinary state of mind, and knows that the experience is confined to a relatively short and well-defined period. When the effect of the potion is over, or when the trance is terminated, drinkers of ayahuasca will return to their normal selves and, if anything, will feel better (healthier, happier, psychologically enriched) than before they entered the non-ordinary state. Furthermore, shamans and experienced drinkers of ayahuasca have a measure of control over what is happening to them: they cannot stop the effect of the potion, but to a degree, they can navigate it. By contrast, the psychotic patient is subject to experiences that befall him uninvited, against his wishes, and without being able to influence what is happening to him. The qualities of the experience are different as well. Those of the shaman are well-structured and laden with meaning whereas those of the psychotic are often fragmentary and chaotic. And while the shaman finds joy and fulfillment in his experience, for the patient this is

[14]It shall be noted that, without exception, all shamanic rituals throughout South America involve the use of psychoactive substances.

surely not the case (see also Winkelman, 2000). Psychosis is a sad, painful experience that disturbs human life. By contrast, when properly administered, ayahuasca and other psychoactive agents may generate experiences that are most enriching. Further still, the experiences of the shaman are grounded in a socio-cultural context, valued by other people, invested with meaning, and integrated within a regulated inter-personal matrix. The same is true of ayahuasca experiences taking place in ritualized contexts, but, of course, this is not true in the case of psychopathology.[15]

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[15]That the use of ayahuasca be proper is crucial. Like fire, ayahuasca is a powerful tool, and it should be used with utmost care and prudence. Proper use may be very valuable; improper use is dangerous and ill-advised. In all the traditional contexts of ayahuasca use (as in all those in which I myself have partaken of this potion), ayahuasca is never taken alone and always within a set ritual conducted by a person who is especially trained for the task. As a rule, the rituals are strictly planned in advance, and their administration is very rigid. They are conducted for religious, spiritual or curative purposes; never hedonistically or for personal experimentation. Furthermore, the use of the potion is grounded in a rich cultural matrix, including music, dance, mythologies and belief systems. The common use of psychedelic substances in our culture is very different, and by no means do I condone it.

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