

Listening for the Logos: a study of reports of audible voices at high doses of **psilocybin**

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THERE ARE REPORTS that psilocybin mushrooms can engender a dialogue between the one who ingests them and a voice of unknown origin. The objective of the present study was to search for such reports, to look for differences between those who reported having heard a voice with psilocybin use and those who had not, and to characterize the voice.

An anonymous questionnaire

was distributed among the

members of several organiza-

tions resulting in a sample

of 128 participants. The

phenomenon of a perceived

voice during psilocybin

mushroom use was reported

in better than a third

of participants:

There are a number of verbal and literary reports that psilocybin (or "psilocybian") mushrooms speak to human beings—that is, they can engender or catalyze an auditory dialogue between the one who ingests them and a voice of unknown origin. T. McKenna terms this "interiorized linguistic phenomenon" an experience of the Logos. The Logos is to be understood as a sort of intermediary between what one might consider to be God, the Truth, or the "Suchness" of reality, and human beings. While it is possible to experience directly the Absolute, or noumenon of phenomena, or the Nondual, much of recorded historic experience of what has come to be known as divine inspiration or revelation comes through one of the various manifestations or intermediaries of the Absolute in the form of gods, spirits, angels, or ancestors. The daimon of Socrates is a good case in point; for example, Angeles states that in Plato's Symposium "the daimon communicates to the gods the prayers of humans and reveals to humans the commands of the gods." At times these intermediaries of the Absolute appear to humans, but they also reportedly can be experienced as disembodied voices.

The Other

While it can be argued that the voice, or voices, may ultimately be "some previously hidden and suddenly autonomous part[s] of one's own psyche" (T. McKenna, 1991b), such

discussion can lead one into the philosophical abyss of what is ultimately meant by "one's own psyche" and the concept of self and other. Nonetheless, the voices many times present themselves as quite alien.

Persinger's findings

Persinger and his colleagues at Laurentian University are looking at "Other," "ego-alien intrusions," or a "sensed presence" phenomena from a neurophysiological perspective. In the search for brain correlates to the experience of "presences," their studies have focused primarily on the deep temporal lobe structures of the brain, the amygdala and hippocampus, which Persinger characterizes as the most electrically unstable structures in the human brain.

There are three major points to be gleaned from Persinger's work relevant to the auditory voice phenomena reported by individuals taking high doses of psilocybin. First, the numerous reports studied by Persinger that involve an ego-alien experience or a sensed presence are similar to reports of the otherness or alienness of the experience of the Logos. Second, that the temporal lobes are implicated in Persinger's correlational studies is highly suggestive, as the role of the temporal lobes in normal and so-called hallucinatory audition is well known. Third, Persinger's focus on melatonin is interesting because melatonin production in the pineal gland is accomplished through the conversion of serotonin by the enzyme HIOMT. Thus, any compound that affects the serotonergic system (as psychedelics do), and is reported to elicit a sense of an alien other with auditory voice phenomena, must be explored with an eye toward Persinger's findings. Psilocybin fits the bill on both points. However, while the investigation of neurochemical correlates is a vital

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piece in the understanding of Logos-like phenomena, it is not true that by describing the neurochemical correlates of any mental activity one has found its explanation. Perhaps the relationship between the brain and its neurochemical correlates to the experience of mind should best be thought of as an interface with, or receiver of, mind (Sheldrake, 1989). Wilber views the brain as an exterior aspect or manifestation of the mind and consciousness. In any case, trying to understand the mental effects of the psilocybin experience solely in terms of physio-chemical factors entirely misses other levels of comprehension.

Potency and Dosage

Due to species variation, psilocybin mushrooms differ in potency. For example, concentrations of psilocybin in *Psilocybe cubensis* is about 2 mg/gm, whereas the quite potent *Psilocybe semilanceata* averages around 12.8 mg/gm in fresh specimens. Potency can also vary between strains of the same species, or even between various mushroom "flushings," or fruitings of the same mycelial organism (mushrooms are the sexual organs, so to speak, of the underground living web organism known as a mycelium). One therefore has to estimate average amounts and percentage concentrations when dealing with mushroom psilocybin and psilocin. Fortunately, there are some general agreements. Most sources cite psilocybin's entheogenic or psychedelic effects in humans as occurring between 5 and 50 milligrams, with the highest reported human dose at 120 milligrams and the "maximum safe dose" around 150 milligrams (Ott, 1993). A consensus of opinion favors a "high" dose of psilocybin to be at least 12 milligrams, or five or more dried grams of well-preserved *Psilocybe cubensis* mushrooms for a 154-160 pound person. There is some discussion, however, concerning whether mushrooms containing psilocybin differ in their effects from pure synthetic psilocybin, aside from the effects of the synthetic generally lasting a shorter time. In any case, it was understood by the researcher that the amount of psilocybin and psilocin varies between mushroom species, making sheer comparisons of number or weight crude at best, and it was hoped that the species-based psilocybin/psilocin content variation would be randomly distributed throughout the study's sample and therefore not a source of bias.

Voices

T. McKenna conducted a survey that was highly influential in the development of this

study, in that its results suggested that the audible voice phenomenon was dosage-related. He has also stated that for some individuals, as much as 9.5 grams of dried mushrooms are required to elicit a voice, and also that other conditions and techniques may be necessary to hear a voice. Though there are a number of different types of voice experiences, the common thread running through them all is the imparting of information to the listener. This is the crucial importance of voices. In traditional usage, the mushroom voices give healing information. While there are many reports of experiences with psilocybin that do not include the phenomenon of voices, it should be noted that "the Indians recognize that it is not to everyone that they speak" (Munn, 1976). Perhaps they do not speak to one for a number of reasons: poor mental set, the lack of a technique to elicit a voice, poor environmental setting, old or improperly stored mushroom material weakening the psychoactive effects, insufficient dosage, psilocybin mushrooms versus synthetic psilocybin, poor absorption in the stomach, idiosyncratic body chemistry, mental experience, a person's sensory input style, or not enough experiences with psilocybin (use over time may deepen the experience, as with LSD in psychotherapy) (Grof, 1985, 1988).

Strange Sounds

While not a voice, another reported auditory experience with tryptamine compounds, especially psilocybin, is what has been described as a "buzzing" sensation or sound. Discussion of this peculiar audile phenomenon may not be so far afield from the focus of the present study. Gordon (1993) has suggested that tinnitus (a condition of ringing, buzzing, hissing, or humming in the ears) from any cause can trigger auditory hallucinations of music, or even speech.

Biochemical Correlates?

There are a few provocative and suggestive findings in the literature. However, these should be examined with the admonition, as previously discussed, that to the detriment of understanding, "it is so easy to replace the word 'mind,' in our inquiries, with the word 'brain'" (Alexander Shulgin & Ann Shulgin, 1992). A common denominator in the biochemical research with psychedelics in general, and with tryptamines in particular (psilocybin/psilocin), is that, somehow, the neurotransmitter serotonin is specially involved in the psychedelic experience. Of particular interest to this study is research suggesting that serotonin may have a special role in the perception of inner (subjec-



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tive) auditory experience (Andorn, Vittorio, & Bellflower, 1989; Hegerl & Juckel, 1993).

Psilocybin is an "agonist[] or partial agonist[] at several subtypes of the serotonin (5HT) receptor: 5HT-2, 5HT-1c, and 5HT-1a" (Strassman, 1992, p. 241), and the chemical structure of psilocybin's metabolite, psilocin, is close in structure to serotonin. While this may suggest a reason for the general psychoactive effects of psilocybin and psilocin, it cannot solely account for the tryptamine, psilocybin-specific auditory voice phenomenon. The reasons for this are many. As already stated, serotonergic neurotransmitters and receptors are strongly involved in the psychoactive effects of many of the psychedelics, including, for example, the phenethylamines; yet reports of voices are absent in one major work on phenethylamine compounds (Alexander Shulgin & Ann Shulgin, 1992). It is also not enough to say that the auditory effects of tryptamines are the result of their having a unique structure in comparison with other psychedelics: for example, it can be pointed out that LSD and other of the ergolines "can [also] be viewed as rigid tetracyclic tryptamines" (Nichols, 1986, p. 338).

If tryptamines, particularly psilocybin, are shown to have specific and somewhat unique abilities to stimulate auditory voice phenomena in human beings, their mere similarity to serotonin is not sufficient explanation. However, the serotonergic system is somehow specially involved in auditory experience, as is Brodmann areas 41-42 in the temporal cortex and Broca's area (P. McGuire, Shah, & Murray, 1993).

Demographics of the Sample

There were several sources of participants for the study: subscribers to the MAPS Newsletter, the membership of The Fane of the Psilocybe Mushroom Association, the subscribership of The Entheogen Review, and the Internet. The final sample consisted of 128 participants who had returned useable questionnaires. Ninety-nine males and 29 females ranging in age from 18 to 75 ($M = 40.72$, $SD = 12.86$) made up the study. Judging by postal marks, participants hailed from at least 31 states and 8 foreign countries. Of these individuals, 106 designated Caucasian as their primary ethnicity, followed by Jewish, with six, and one of each for 13 other ethnicities. The average years of education for the group was just over 16, or the equivalent of a Bachelor's degree ($M = 16.48$, $SD = 2.52$). Based on the responses to the question of the number of times psilocybin was taken, the study examined approxi-

mately 3,427 reported psilocybin experiences ($n = 118$). Of the total questionnaire responses ($N = 128$), 35.9% ($n = 46$) of the participants reported having heard a voice(s) with psilocybin use, while 64.0% ($n = 82$) of the participants stated that they had not. Based on the responses to the question of the number of times [they] experienced a voice(s) with psilocybin, the study examined approximately 394 experiences of psilocybin-induced voices ($n = 40$). Each item on the questionnaire was designed to be treated as a separate variable to be compared between groups or correlated within a group. Because of the skewness of some of the distributions, and in some cases due to the type of data collected, all comparative and correlational data for the study were analyzed using nonparametric statistics. Also, exploratory and confirmatory subgroups were utilized.

Differences Between the "Yes" and "No" Voice(s) Groups

True to T. McKenna's suggestions for how to increase the possibility of voice experiences with psilocybin, the group that reported having heard a voice(s) with psilocybin use (the Yes group), on average, took the mushroom more times, took a larger amount of dried grams of mushrooms per use, and took the mushroom more often in darkness than the No group. In fact, the average reported dried grams of psilocybin mushrooms taken per experience for the No group is less than the average minimum amount of dried grams of psilocybin mushrooms needed to hear a voice(s), as reported by the Yes group. The Yes group also used psilocybin and then tried or intended to hear (evoke) a voice(s) more times than did the No group. Curiously, and not predicted by T. McKenna, the Yes group reported using psilocybin mushrooms grown themselves more often than the No group. One may speculate that the care and attention required by mushroom cultivation might contribute to a greater intention to hear a voice(s), thus leading to a more successful evocation. There were two findings of statistically significant differences between the Yes voice(s) and No voice(s) groups. First, the Yes group reported taking psilocybin more often while alone than the No group. This could have also been predicted by T. McKenna's suggestions of technique. By being alone, talking is eliminated as a distraction. It must be that the phenomenon of a voice(s) is subtle enough, at least initially, as to be missed due to exterior (talking, light) or interior (lack of intention) distractions. Namely, the voice(s) does not

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present itself to the “bemushroomed” person simply because he or she ingested a certain amount of psilocybin. Although, as many participants suspected (according to comments written on the questionnaires), larger average doses may be one of a number of factors to account for the presence or absence of the voice(s) experience. The second statistically significant difference between the groups was the finding that those in the Yes group endorsed having heard a voice(s), at least once, when using drugs other than psilocybin significantly more often than did the No group. In other words, those participants who heard voices with psilocybin also tended to hear voices while using other drugs. It is interesting to note that the descriptions of these voices were not so different from the descriptions of voices heard while using psilocybin. These results tend not to uphold the theory that psilocybin is somehow unique in its ability to catalyze or elicit voice phenomena, and yet a majority of the participants who reported hearing a voice(s) through psilocybin and other drugs or means indicated that they first heard a voice(s) with psilocybin. Perhaps for those individuals, psilocybin acted as a catalyst that opened a door to the subtle experience of the voices, which then allowed them to experience the voices by other means. Also it should be noted that, by far, the most popular answer as to which drugs other than psilocybin also catalyzed voices was LSD, followed by DMT and mescaline. LSD and DMT are similar to psilocybin in that they can be classified as serotonin-like—and even though mescaline can be classified as catecholamine-like, its psychedelic effects can probably be represented in terms of changes in serotonergic neurotransmission. Thus, the suggestive connection between drug-catalyzed voice(s) phenomena and serotonergic neurotransmission, discussed earlier in this article, appears again.

Of T. McKenna’s technical suggestions for eliciting a voice(s), only two were not supported: First, the admonition not to eat a full meal within the six hours before taking psilocybin (in fact, the No group, on average, did this less often). The second is his suggestion that cannabis may aid the hearing of voices. In only 17.4% of total voice(s) experiences with psilocybin ($n = 34$) was it reported that it was helpful to take any other drug(s) with psilocybin to hear a voice(s)—but, in agreement with T. McKenna, of the few who responded in the affirmative, cannabis was the most popular choice.

A number of crude measurements of

personality were attempted in this study. An examination was made of introverted and extraverted attitudes, remembering dreams, having lucid dreams, meditating, “Type A personality,” and “repressive coping style.” However, the groups were not found to differ significantly on any of these facts. Also, a number of personal beliefs were examined: religious belief, belief in spirits, belief in precognition, belief in life after death, and personal health assessment. On none of these beliefs was this study able to show a repeatable, statistically significant, difference between the Yes and No groups.

A number of possible sex differences were also examined and none were discovered. It seems that men were not experiencing significantly more male voices than women, and women were not experiencing significantly more female voices than the men.

Overall, the results of this study suggest that what made the difference between hearing a voice or not with psilocybin was more about what people did, than who they were. Better than one third of participants’ reported experiences with a voice(s) and psilocybin involved some form of evocation. That evocation was not reported to occur 100% of the time prior to hearing a voice(s) may indicate that evocation was not always necessary, or that perhaps after a participant evoked the voice(s) in some way in his/her early experiences, it was no longer always necessary to do so with later voice(s) experiences.

Voice(s) Characteristics

It was not reported very often that there was more than a single voice heard during an experience. Additionally, it was found that the voice experience cannot be maintained for long periods of time (average reported length of time was about 19 minutes).

A look at those characteristics endorsed as occurring, on average, in more than 50% of reported total experiences with a voice(s) and psilocybin, may also help to describe trends that characterize the voice(s). The experience of the voice(s) is generally reported as positive, insightful, and useful. Though evidently a subtle phenomenon, the voice(s) is reported most of the time as clear-sounding and sensible. The experiences of being able to communicate with the voice(s), and gain information, were also reported to occur in over half of the episodes. These facts tend to lend credence to the theory that the voice(s) may be experiences of a Logos-like phenomenon.

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Concerning the more specific characteristic tendencies of the voice(s), those who have experienced the phenomenon describe the following features as occurring in most of their experiences: First, the voice(s) usually sounded old. This is consistent with the findings of at least one other source (Oss & Oeric, 1991). Second, the voice(s) usually sounded male. Third, the voice(s) was usually described as low-pitched (bass-like), slow paced, and of low volume. It is interesting to note that at least one other tryptamine compound has been found to alter (lower) the perceived pitch of externally-generated voices and music, DIPT, or, N, N-Diisopropyltryptamine (Alexander Shulgin, personal communication, January 25, 1996). One additional point: in a little less than half of reported experiences, participants stated that the voice(s) expressed emotion; compassion, anger, love, calm, humor, fear, and sadness were most often reported.

Other features of the voice(s)

Emphasis of the "otherness" of the voice(s) pervades the phenomenological descriptions given by many of the participants, and is also borne out by some of the statistical data. In just under half of reported experiences, participants had the sensation that the voice(s) came from outside of their heads. A majority of participants also stated that the voice(s) was not familiar when they first heard it with psilocybin. A few participants even commented that although it was their own voice they heard, the "information" was not from them. Finally, in just under half of reported experiences, participants said that the voice spoke in first person. Interestingly, this occurrence was highly correlated with the participants receiving insight from the voice(s). It may be that the experience with an other who is an I (who witnesses, reflects, communicates, shares) facilitates insight, much as in psychotherapy (Frank, 1989). One of the most interesting findings of this study is that in over 45% of participants' total experiences with a voice(s) and psilocybin, sounds other than voices were present. Notice should be given to the words used by a number of the participants: high pitch, high tone, humming, buzzing, whirring, ringing, rustling, rushing water, howling, vibrations, whooshing, crinkling, insect-like, drumming, whirling-circular. These reports are similar to observations made by T. McKenna and D. McKenna (1993), Strassman, Qualls, Uhlenhuth, & Kellner (1994) and Weil (1980). It may very well be that, as Gordon

(1993) concluded, a condition of ringing, buzzing, hissing, or humming in the ears, from any cause, can trigger auditory hallucinations of music, or even speech. For example, one participant reported that he heard voices when a motor (lawn mower) was running. An interesting side note: use of *Heimia salicifolia* (*sinicuiche*), a plant that contains the alkaloid cryogenine or vertine (Ott, 1993), has been reported to cause a ringing in the ears that then turns into orchestrated music. The many reports of the Yes voice(s) group hearing other sounds are consistent with a theory that these sounds may be involved in the hearing of a voice(s).

It may be that the Logos (as Mind) superimposes itself on, and utilizes, the formless white-noise of internal (tinnitus, for example) or external (drumming, rattles, motors, running water, glossolalia) stimuli, to create a voice(s), and then, entering the individual's faculty of audition, speaks. Meaning (form) is superimposed on the formless.

So what does it mean?

My study lends credence to the theory that psilocybin inspired voices are expressions of the Logos. Beyond that, what the Logos is, well, that depends on how "Eastern" your world view is. That is, when people ask me what I think these voices may be, whether part of us or not, I have to first ask them what the mean by "us." The question of what is self and what is other then takes prominence. Is there anything that we can say is truly alien? Though in our experiences we may encounter a "Wholly Other," from an Eastern perspective (or in the ancient West, a Plato-Plotinian one) all of the Cosmos is interior to us. Can it be said that there are boundaries to the human psyche? Psilocybin voice experiences force us to confront our notions of a personal self and a universal Self.

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