

This Book Review Forum appeared in the *Journal of Ritual Studies* 18.1 (2004): pages 96-128.

BOOK REVIEW FORUM [Journal page 96]

on

Michael Winkelman's

Shamanism. The Neural Ecology of Consciousness and Healing
2000, Westport, CT and London: Bergin and Garvey, ISBN 0-89789-704-8

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Response to reviews by *Michael Winkelman*

We are pleased to present the *Journal of Ritual Studies* Review Forum
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Shamanism. The Neural Ecology of Consciousness and Healing

(Michael Winkelman, Bergin and Garvey, 2000)

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[Journal pages 97-100]

Michael Winkelman's book is ambitious and wide ranging, bringing together a spectrum of writers and disciplines, and topics from metaphor and mimesis to neurophysiology. Winkelman's aims are several. Centrally, he hopes to show that shamanistic "altered states of consciousness" (ASC) are beneficial, that they produce their benefits by integrating information-processing functions of several areas of the brain, particularly the limbic system and the cerebral cortex, and that they have affected the course of human evolution. His approach is "neurophenomenological," meaning that it links neurology with culture and experience. His approach also is broad: he holds, for example, that to understand shamanism we must integrate the perspectives of mystical and contemplative traditions with those of the neurosciences. Whether or not he achieves this difficult integration, this book represents a welcome step along that path.

In the course of this effort, Winkelman engages a number of current and recurrent issues in anthropology (his own discipline), religious studies, and various related fields. I shall divide these issues into three sorts: those concerning shamanism (especially those concerning its universality, healthfulness, relation to other forms of religion, bases in biology and ideology, and evolutionary context); those concerning the place of metaphor, mimesis and symbolism in thought; and those concerning the relation of specific areas of the brain, and of specific mind-brain capacities ("modules," Fodor 1983, Gardener 1983), to thought and behavior.

Of the controversies concerning shamanism, a recurrent one in several disciplines is whether its distribution is worldwide or more restricted. This question of course hinges in large part on its definition. Some authors, the splitters (e.g., Kehoe 2000), argue for a highly restricted definition, even limiting shamanism to Siberia. Winkelman, in contrast, is a lumpner. Along with Eliade (whose *Shamanism* he considers seminal and classic), Winkelman takes shamanism to have been the original religious form throughout the world, and characteristic of hunting and gathering societies everywhere. He notes that such a global view of shamanism must encompass diverse individuals and practices, and also must make shamanism continuous with other sorts of religion; and he sorts out the continuities and differences in several useful tables. Despite his awareness of such variations, however, Winkelman finds unproblematic a definition of shamanism that makes it world-wide. Thus to be a shaman is, in one formulation, simply to use ASC "in interaction with the spirit world on behalf of the community" (pp. 60-61).

Another ongoing question in several disciplines has been whether the shaman is beneficial to his or her community and, as a subset of this question, whether the shaman is psychologically healthy. It is an issue about which Western opinion has become more sanguine over the course of the last century. For at least the first half of that period, most Western scholars regarded the shaman as a shadowy figure, often as a neurotic and socially marginal charlatan who used sleight of hand and ventriloquism to fool clients for personal gain. That image has shifted. The shaman has been largely rehabilitated, to become a talented psychotherapist and dramaturge, serving a community's needs for reassurance, explanation and social adjustment with flair and insight. Winkelman is firmly among the rehabilitators, seeing the shaman as a crucial benefactor of the community psychologically, medically, and politically.

His claims go much further, however. Shamans are not merely therapists; rather, they also have played a key role in human biological and cultural evolution. That role is to link brain functions, especially cognitive ones, that hitherto had been not only modular but also insular (Mithen 1996). The linkage is achieved by varied features of shamanic performance, such as drumming, chanting, and fasting. These serve to transfer the implicit and unconscious products of limbic functions to the cortex, where they become explicit, conscious, and integrated with other cortical processes. Such linkage also makes possible cross-modal and synesthetic operations, which associate experiences from different domains with each other--for example, sounds with colors, or spatial patterns with temporal ones. Such cross-modal operations in turn

allow--or constitute--symbolism and metaphor, the hallmarks of the human mind. Thus shamanism, by helping transcend the modularity of the early human mind (modularity is supposed to have been more pronounced in pre-modern *Homo sapiens*), produced the human mind as it now is: complex, subtle and, above all, flexible. Moreover, the production of such a mind is ongoing, since even the modern mind remains, to a degree, inherently modular. Hence it benefits from periodic bouts of shamanic integration.

Because shamanism thus preceded the modern mind and was instrumental in its creation, it is not surprising that it preceded modern religion as well. Indeed, it was the earliest form of religion (an opinion now common, largely because of the prevalence of shamanism in gathering and hunting societies). Winkelman holds that contemporary religions, including meditative ones, still have features of their progenitor, most notably ASC.

Regarding the bases of shamanism itself, Winkelman finds these both in an underlying biology and in the ideas which this facilitates. The most relevant aspect of biology is the modularity of brain function already mentioned. This means that our cognitive capacities are not general and interchangeable but are specialized for particular tasks--e.g., distinguishing the animate from the inanimate, understanding animal behavior, and discerning the intentions of other people. The modularity also includes both a "triune" organization (MacLean, 1973, 1993) which recapitulates evolution in that the brain comprises reptilian, paleomammalian, and neomammalian structures, and a bilateral hemispheric organization. These and other modular features constitute the potential for the cross-linkage of which shamanism largely consists. The basis of shamanism in ideas, on the other hand, is animism, defined primarily (p. 254), as by E. B. Tylor, as a belief in spirit beings. This belief, Winkelman writes, is also the most basic aspect of religion generally.

A second set of issues addressed concerns the origin and role of metaphor, mimesis and symbolism in human thought. A central question about metaphor and symbol has been whether they are primarily linguistic phenomena--even whether, as in a long-established view, metaphor is a mere epiphenomenon of language--or whether they are independent of language and perhaps prior to it. Winkelman takes the latter position, following a trend of thought in the last two decades, for example in the work of Fernandez (e.g., 1991) and of Lakoff and Johnson (e.g., 1999), that takes metaphor to be primary and pervasive in our understanding of the world. Winkelman is insistent that metaphor, mimesis and symbolism all are central to, but prior to and independent of, language. Mimesis, for example, has "properties that preceded speech and are necessary for it" (p. 45). These include "intentionality, generativity, communicativity, reference . . . and the ability to model an unlimited number of objects" (p. 46, quoting Donald 1991:171). Like metaphor and symbol, mimesis is made possible by links between brain areas, and like them is fundamental to shamanism.

The third topic addressed has experienced the most recent growth in interest, namely the roles of specific areas of the brain in thought and behavior, and the interface of these areas with culture. This is a subject of rapidly increasing attention not only in neurology and psychology but also, to a degree, in anthropology and several other disciplines. As noted, Winkelman with many other recent researchers takes human thought to be modular, but not absolute in this modularity since (again as noted) the modern human mind-brain is distinguished by its ability to cross and integrate the modules. In terms of the content of thought, this is the ability to compare patterns across domains. The aspect of the mind-brain Winkelman most emphasizes is the "neurognostic structures" (Laughlin, McManus and d'Aquili 1992), by which he means the "inherent knowledge structures of the organism, predisposing the structure of experiences and the cognized world" (p. 27)--more or less, it seems, what is loosely meant by "hard wiring." Shamanism consists largely in integrating the functions of these structures. Winkelman proposes, for example, that much of what shamans do is to elicit the content of modules specializing in perception of social relations and of animal behavior, and then to use this content metaphorically to represent spirits.

Among the strengths of this book are its breadth of topic and source, its partial basis in ethnography, and its presentation of a number of intriguing observations that suggest how one might bring together the perspectives of biological science and shamanic practice. That the book is wide-ranging perhaps is already apparent from the fact that its chief topics include the ethnography of shamanism, the nature of consciousness and of self, the nature of metaphor, mimesis and symbolism, and the neurology of experience. Each of these topics, especially the last, is given broad treatment. Writing on consciousness, for example, Winkelman notes the various meanings of the term, and he reviews etymological, systematic, genetic-epistemological, social,

and social-intelligence approaches to it. Similarly regarding the nature of the self, he draws on writers from G. H. Mead (1934) on the human ability to take the role of the other, to Harry Hunt (1995) on finding the basis of animism in the human propensity to sense a "felt presence" and to find a "sense of the self in the unknown other" (p.19).

Among the most attractive and accessible chapters for this reader are those that are descriptive and ethnological. These are especially chapter 2, surveying shamanism cross-culturally, and chapter 3, surveying altered states of consciousness. Chapter 2 includes, for example, a four-page table comparing shamans, shaman-healers, healers, mediums, priests, and sorcerer-witches as a continuum of practitioners in diverse societies, as well as a survey of principal features of shamanic practice. Chapter 3, similarly surveying states of consciousness, is insightful and once again wide-ranging. It describes the kinds of practitioners who use these altered states, their means of inducing them, and local interpretations of the states.

Throughout, the book offers observations (sometimes as asides) that reflect the author's ideologically liberal and culturally inclusive stance. Whereas positive biology, specifically neurology, appears as the dominant component of Winkelman's approach, he nonetheless points out the fallibility of science and the basis of observation in assumption. Most basically, perception itself employs models, and models may "contain systematic biases and errors" (p. 25). Science is no touchstone, and non-Western views, including shamanistic ones, must be taken into full account. More liberally yet, hallucinogens have led to uniquely human aspects of consciousness by producing "transcendent" experiences (p. 223). In the author's broad view, human understanding is very much a work in progress and one in which the anthropological enterprise, to be genuine, must be genuinely cross-cultural.

There are a few weaknesses in the book as well. One is the very generality that in other respects is a strength. In claiming commonalities among religious forms, for example, the author sometimes seems to overreach, as in stating early on his important claims that "the experiences produced within religious traditions [are] altered states of consciousness" (p. 6) and that there are "fundamental similarities in ASC experiences across cultures" (p. 4). But in fact, reports of religious experience seem to vary widely (James 1902:29, Allport 1950:4-6, and Geertz 1966 all remark on their diversity). Moreover, such experience may not differ categorically from secular experience: the torpor of parishioners during a sermon may resemble that of students during a lecture. Despite Winkelman's later adumbration of neurological support for his claims, I think that even more careful clarification and documentation are needed. Later, in a similarly broad assertion, Winkelman calls eight uses of psychoactive plants, starting with their use to establish contact with the supernatural, "universal," but gives little evidence. This is potentially problematic because--to take just one example--supernatural itself is a Western term whose cross-cultural validity has been questioned (e.g., American Anthropological Association 2001). Any claim of universality invoking it therefore needs extra attention. Concrete examples of his assertions (which often are repeated) are sketchy throughout, even though (as Krippner and Combs 2002 note) Winkelman has extensive field experience with shamans.

Winkelman's tendency toward generality is stylistic as well, as in his frequent use of the passive voice, his abstraction, and his documentation by reference to other sources, often with no page number. One frequent result is ambiguity, which sometimes is exacerbated by idiosyncratic usages. For example, he frequently uses "illustrate" where "indicate" or "suggest" seems his intended meaning. Moreover, various obscure or technical terms (ultidian, ictal, noradrenergic, axoplasmic, homeomorphogenetic, and others) remain undefined. All this may baffle the non-technical reader. At the least, it means that the book is not an easy read.

A last issue is that Winkelman's insistence throughout that shamanism, with related behavioral and experiential phenomena, is based in biology--a point that this reviewer is ready to cede at the outset--seems to imply that other human behaviors and experiences do not have such bases. But are not all behaviors and experiences based on capacities that at some level are biological?

These issues notwithstanding, the book is a bold break from the rationalism, dualism, and ethnocentrism that still characterize much of the Western study of religion in general and of shamanism in particular. Not least, Winkelman's determined defense of shamans and shamanism, including his identification of the shaman's attributes as talents and abilities, rather than as deficits, helps counter misapprehensions still widespread among Western scholars. In all, I find the book provocative, but most valuable as a suggestive guide to the literature on a wide range of topics centered on shamanism, and on the

specifically human neurological substrate on which, it holds, shamanism is based.

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Shamanism. The Neural Ecology of Consciousness and Healing

(Michael Winkelman, Bergin and Garvey, 2000)

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[Journal pages 101-104]

The neurophenomenological approach to consciousness is becoming increasingly important. This approach combines cognitive neuroscience with transpersonal psychology and the anthropology of consciousness. This includes phenomenological studies of experiences transcending personal consciousness coming from Western contemplative and Eastern meditative and shamanistic traditions. This approach is gaining importance because of the new brain imaging technologies. MRI (magnetic resonance imaging), fMRI (functional magnetic resonance imaging), PET (positron emission tomography), and SPECT (single photon emission computed tomography) are providing information about the structure and functions of the brain that has never been available before. In contrast to earlier behaviorist models of psychological research which were strongly biased against the study of consciousness, the new neuroimaging methods have placed consciousness front-and-center as a topic for psychological and neuropsychological research. Michael Winkelman's (2000) book, *Shamanism: The Neural Ecology of Consciousness and Healing* is a welcome contribution to the discussion coming from the anthropology of consciousness.

The anthropology of consciousness primarily concerns itself with cross-cultural studies of shamanistic states of consciousness, psychology of healing, psychopathology, ritual states of consciousness, trance, dissociation, and meditation. These are sometimes collectively referred to as ASC (altered states of consciousness). This area of research has been somewhat marginalized for many years from the mainstream of cultural and even psychological anthropology because of the reliance on phenomenological methods of inquiry. Data about altered states of consciousness were not seen as reliable by many anthropologists and most psychologists because of their subjective nature.

However, with the new neuroimaging technologies, altered states of consciousness are now objects for empirical research in the laboratory. Phenomenological reports of ASC are now being validated by neuroimaging studies which are able to identify the neurophysiological processes associated with specific states of consciousness. The neurophenomenological approach is revolutionizing the way researchers think about the mind and the brain, and the relationship between the two.

Prior to the advent of the latest neuroimaging methods, proponents of the neurophenomenological approach relied primarily on EEG (electroencephalograph) studies to inform them about the workings of the brain during ASC. However, compared to the new technologies, the EEG is a crude instrument which cannot adequately illuminate the inner pathways of the brain as messages are being sent from one part of the brain to another. This is precisely what the new technologies are able to do. Unfortunately, Winkelman's (2000) book does not take into account any of the findings of the new neuroimaging studies. This is the central limitation of the book. Winkelman provides an excellent summary of the older EEG findings and makes reasoned conclusions about the brain based on those findings. However, those conclusions are not supported by the latest neuroimaging studies.

For example, Winkelman concludes that shamanistic healing practices produce a limbic-cortical integration in the brain. He states:

Shamanistic healing practices achieve this integration by physically stimulating systemic brain-wave-discharge patterns that activate affects, memories, attachments, and other psychodynamic processes of the paleomammalian brain. . . . Shamanism represents adaptive potentials, an enhanced operation of consciousness derived from integrative brain functioning. . . . These potentials provided the basis for the evolution of synthetic symbolic awareness in early evolutionary periods of modern *Homo sapiens*, providing a basis for human development in the mythological systems representing self, mind, other, and consciousness. This is exemplified in the soul journey and in guardian spirits, which constitute forms of self-objectification and role taking that expand human sociocognitive and intrapsychic dynamics. (pp. xiii-xiv)

The gross information available from EEG studies has led Winkelman to conclude that there is a kind of single integrated state of consciousness which makes possible the various shamanistic phenomena of ASC

including healing and trance states. However, new brain imaging studies do not support this conclusion. For example, Hofbauer et al (2001) using PET found that subjects were able to decrease the experience of pain following hypnotic suggestion using two separate brain mechanisms. Hypnotized subjects under experimentally produced pain were given the suggestion that the pain intensity would decrease. These subjects reported decreased pain intensity and PET showed significant decreases in pain-evoked activity in the somatosensory association center in the superior parietal lobe. Other hypnotized subjects were given the suggestion that pain unpleasantness (emotional content) would decrease independent of pain intensity. In these subjects PET showed a decrease in activity in the anterior cingulate cortex, which is part of the limbic system, the area of the brain associated with the experience of emotions. Pain intensity was unchanged, but the subjects ceased to care about it. Rather than Winkelman's notion of "integration," Hofbauer et al concluded that both of these pain reduction mechanisms in the brain were separate types of *dissociation*.

Dissociation is the dis-integration of functions of the nervous systems which are normally integrated, for example, blocking the experience of pain from consciousness. Brain imaging studies indicate that dissociation is dependent on activity in the prefrontal cortex which sends inhibitory signals to various parts of the brain blocking neural messages from reaching association centers, thereby blocking information from reaching consciousness. At its greatest extent the neural blockage can even result in a complete shut down of cognitive processes. For example, Newberg and d'Aquili (2001) found using SPECT that a form of meditation they termed "passive" trance is based on the conscious intention to clear all thought, emotions, and perceptions from consciousness. This was accomplished by the right attention association area in the prefrontal cortex focusing attention away from all sensory and cognitive input. The attention association area, via the thalamus, caused the hippocampus to inhibit neural input to the somatosensory association area in the superior parietal region, causing increasing deafferentation or neural blockage. As neural blockage continued, the deafferented somatosensory area sent signals to the hypothalamus, which then signaled the attention association area. They concluded that a reverberating circuit was established which strengthened the neural connections enabling the attention area to completely shield consciousness from sensory or cognitive input. This in turn maximized neural blockage to the somatosensory area in the superior parietal region. They described this as a shutdown of neural input. The resulting subjective experience was a loss of self and a loss of environmental context. The cognitive processes were, in effect, turned off. This is not an integration, but dissociation, a dis-integration of the normal functions of the nervous system. It appears from brain imaging studies that dissociation is initiated by activity in the prefrontal cortex, which is the attention association area of the brain, and center of the executive functions of the nervous system.

Winkelman (2000) also concludes that the shamanistic integrative state of consciousness is responsible for a sense of "the other" in awareness which is the basis of animism, the experience of guardian spirits, soul journeying, gods and demons, and ultimately the origin of religion. He concedes that many shamans enter their vocation through an initiatory crisis or brief psychosis characterized by hallucinatory experience. By weathering the crisis and taming the demons the individual is able to control the spirits and make them his allies in shamanistic practice.

However, brain imaging studies of hallucinatory experience again point to dissociation. For example, findings indicate that some regions of the auditory and speech processing pathways are abnormally inactivated during auditory hallucinations, and other regions are abnormally activated. Shergill et al (2000) using fMRI concluded that auditory hallucinations arise through the disruption of normal cognitive processes, such as the monitoring of one's own verbal thoughts. This disruption is hypothesized to be caused by a loss of the normal functional connectivity between brain regions that underlie the experience of inner speech. Their findings indicated that there was a lack of the normal correlation between inferior frontal and temporal activity in psychiatric patients prone to hearing voices. According to Gomez (2002; Gomez and Lopera 1999), abnormal inactivation in the frontal and temporal lobes interrupts the functional connectivity of the usual network and allows abnormal activation of other regions. This eventually generates independent neural networks. Gomez hypothesizes that independent networks are activated during auditory hallucinations which produce a "division of the consciousness or the will." These hypothetical independent neural networks may be the neurophysiological basis of experiences of spirits, gods, demons, angels, and various "others" appearing in consciousness.

Rather than Winkelman's (2000) focus on the paleomammalian brain, the new brain imaging studies

indicate that the prefrontal cortex is the area of the brain most responsible for ASC. This is significant for theories of evolution of modern human consciousness. Winkelman rightly emphasizes the importance of shamanism in the development of the flexibility of human consciousness enabling the evolution of animism, anthropomorphism, totemism, and mimetic thinking in early *Homo sapiens*. The development of modern human consciousness was probably in many ways dependent on the early shamans who were the first explorers in alternative states of consciousness. Significantly, there is no evidence of any religious or artistic activities in *Homo neanderthalensis* or *Homo heidelbergensis*. Moreover, there is no reason to believe that the paleomammalian part of the brain differed in any way between *Homo sapiens* and these two earlier species. If the paleomammalian brain was responsible for shamanistic states of consciousness, then shamanism should have evolved as early as 500,000 years ago with the appearance of *Homo heidelbergensis*, a species with a brain just as large, if not slightly larger than *Homo sapiens* (Stringer and McKie 1996). The great cognitive flexibility and creativity we associate with modern humans only appears in the archeological record about 70,000 years ago in Africa, and about 40,000 years ago in Europe (Lewin 1998).

The origins of modern human consciousness are no doubt based on the biology of the brain as Winkelman (2000) concludes. However, in order to find those origins we must focus on the differences in brain structure between *Homo sapiens* and the species from which we evolved, *Homo heidelbergensis*. The shape of the brain in both *Homo heidelbergensis* and *Homo neanderthalensis* was quite different from that of *Homo sapiens*. In the earlier species, the temporal, parietal, and occipital lobes were much larger than modern humans, and the frontal lobes (especially the prefrontal cortex) were much smaller. This made for a skull shape that was smaller at the front, flat on top, bulged at the sides, and protruding at the rear, compared to the skulls of *Homo sapiens* (Allman 2000; Lewin 1998). The temporal, parietal and occipital lobes are the areas of the brain primarily associated with processing sensory information. The very large brain mass devoted to these sensory processing areas suggests that the earlier species may have had superior senses compared to *Homo sapiens*, but did not have our cognitive flexibility, creativity, or religious sensibility.

Based on brain imaging studies indicating the importance of the prefrontal cortex in the production of ASC, some informed speculations can be made about the origins of *Homo sapiens*. The most noticeable thing about *Homo sapiens* is the different shape of the brain. In early *Homo sapiens*, average brain size was the same as *Homo heidelbergensis*, but the temporal, parietal, and occipital lobes all became much smaller, while the frontal lobes (particularly the prefrontal cortex) became much larger (Lewin 1998). Up until the evolution of *Homo sapiens* the hominid brain had kept its same basic shape while getting progressively larger (Allman 2000). Apparently, the evolution of the *Homo sapiens* brain was the result of a completely different evolutionary process from earlier species.

I speculate that the shape of the *Homo sapiens* brain evolved as a result of *pedomorphism* (taking a juvenile form). Pedomorphism in *Homo sapiens* is visible in the body as well as the skull, but is especially noticeable in the shape of the skull. The changes in the body involved a more gracile shape and a narrowing of the bones. In the *Homo sapiens* skull, cranial bones became thinner, and there was a massive reorganization of the proportions of the head with the overall shape becoming rounded. This meant a shortening of the cranial vault, flattening of the face, and a dramatic raising of the forehead (Lewin 1998). The pedomorphy of the *Homo sapiens* skull is evident when comparing it to the skulls of juvenile apes. The skulls of juvenile apes are rounded like *Homo sapiens*. Only as they develop do ape skulls gain their adult shape with a flat top, protruding rear, and a massive chinless jaw sticking out from the face (Allman 2000). It is likely that all juvenile hominids had round-shaped heads just as adult *Homo sapiens* do. I suggest that the first *Homo sapiens* adults could have looked similar to *Homo heidelbergensis* juveniles.

The first *Homo sapiens* may have been juvenile versions of *Homo heidelbergensis*, presumably with *Homo sapiens* becoming reproductive at a juvenile stage of development. This kind of pedomorphism happens occasionally in nature, usually as a result of predatory pressures. Modern human hunting has clearly led to pedomorphism in various fish species. Human hunting is also suspected in the pedomorphing of several large mammals during the past 12,000 years. This happens when hunting is focused on the largest individuals, usually males, leaving the females and juveniles to reproduce. If a food species is consistently managed in this way it results in selection for pedomorphs, who cease to grow at a juvenile stage in order to reproduce before being taken by hunters (Flannery 2001).

One possible explanation for pedomorphism in *Homo sapiens* is human hunting and cannibalism.

Homo heidelbergensis were highly intelligent with brains equal in size or slightly larger than modern day humans. If they hunted their fellow humans for food, no doubt they could have understood the prudent management of this resource by only taking large males, just as human hunters do today. If this was done consistently over some time, it could have produced a pedomorphic species of humans. This juvenile-looking species would have been smaller, with round-shaped heads, and gracile bodies. There is fossil evidence of cannibalism in early *Homo heidelbergensis* and *Homo neanderthalensis*, as well as evidence of dietary cannibalism in *Homo sapiens* (White 2001).

I speculate that the eventual evolutionary success of *Homo sapiens* was made possible by new mental abilities inherent in the pedomorphic shape of the brain, particularly the large new prefrontal cortex. Brain imaging studies indicate that the shape of the modern human brain is responsible for the experience of ASC. The large new prefrontal cortex in *Homo sapiens* may have allowed humans to experience shamanistic states of consciousness for the first time in evolutionary history. It could have been this ability to experience spirits which made possible the development of organized religion, including charismatic leadership, group bonding through religious ritual, fanaticism, religious martyrdom, and holy war. The evolution of religion may have been the advantage *Homo sapiens* needed to replace both *Homo heidelbergensis* and *Homo neanderthalensis*. This was likely made possible, not by the paleomammalian brain (which we share with these earlier species), but by a large new prefrontal cortex, possibly shaped by pedomorphism.

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Shamanism. The Neural Ecology of Consciousness and Healing

(Michael Winkelman, Bergin and Garvey, 2000)

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[Journal pages 105-109]

On Personalizing Neurophenomenology: Commentary on Winkelman's *Shamanism: The Neural Ecology of Consciousness and Healing*

In what will no doubt be viewed as an important contribution to the fields of anthropology and religious studies alike, Michael Winkelman's *Shamanism: The Neural Ecology of Consciousness and Healing* (2000) details a complex and insightful account of the experiential and neurophysiological structures that provide a basis for better understanding the nature of consciousness, ritual, and healing cross-culturally. Since Winkelman covers a lot of ground in this book -- from the neuroscientific study of consciousness to the socio-economic factors correlated with shamanic practices cross-culturally -- I will restrict my comments to what I perceive to be three of the most significant general contributions of this work for anthropological theorizing and practice, before turning to suggest a few areas where Winkelman's project might be extended, and perhaps better realized, through a closer dialogue with cultural phenomenology (see Csordas 2002, 1996, 1994) and person-centered ethnography (see Hollan 2000, 2001).

Neurophenomenology

Building on Laughlin et al.'s (1992 [1990]) pioneering neurophenomenological approach, in this work Winkelman goes a long way in demonstrating the significance of integrating experiential and neurophysiological levels of analysis when undertaking anthropological research. In accord with a growing wave of interest in exploring the dynamic nexus of brain, experience, and culture in anthropology and other related fields of inquiry (see Greenfield in press; Ochsner and Lieberman 2001; Henningsen and Kirmayer 2000; Reyna 2002; Seigel 1999; c.f. Geertz 2000), Winkelman's careful phenomenological and neurophysiological investigations clearly establish a new standard for neuroscientifically informed anthropology.

As Winkelman explains, the significance of neurophenomenology for anthropological research lies in the basic tenets of the approach, which hold that to understand any given existential datum one has to investigate *both* the structures of experience through a detailed phenomenological analysis of the various contents and modalities of human consciousness cross-culturally, *and* the structures of the nervous system by means of the ever growing number of insights accruing in the burgeoning fields of neuroscience. Importantly, this experiential and neurophysiological focus helps to ensure that neurophenomenology is not reductionistic in the positivist sense (i.e., that the physical sciences can give a complete account of all things mental and cultural, or vice versa) since it is grounded upon a fundamental interdisciplinarity that necessitates the co-equal merger of anthropology, psychology, phenomenology and neuroscience. Moreover, as Winkelman also makes clear, this dual phenomenological and neurophysiological focus does not mean that neurophenomenology is dualistic in a Cartesian sense. Instead, neurophenomenology assumes that "mind" and "brain" are two complementary windows upon the same fundamental reality. Finally, because of this non-dualistic view of mind and brain, neurophenomenology importantly aligns itself with the growing anthropological interest in embodiment which has proven to be a fruitful means for grounding our investigations of the cultural and personal patterning of experience in differing societies (Csordas 1990).

Modes of Consciousness

In addition to highlighting the importance of neurophenomenology for anthropological theorizing and practice, a second significant contribution of this work is found in Winkelman's insightful discussion of the differential articulation of knowledge in various modalities of consciousness. As I have argued elsewhere (see Throop 2002, Throop and Murphy 2002, Throop 2003), anthropologists have all too often relied upon an overly cognitivist and propositionally biased account of consciousness and its contents when discussing the representation of cultural and personal forms of knowledge in their work. Winkelman, however, notably avoids this pitfall when, following Hunt (1995), he suggests that human consciousness is multiplex in nature; differentially organized according to the conceptual and abstract contents of linguistically mediated thought *and* the imagistic, perceptual and somatosensory contents of presentational forms of awareness.

Drawing upon MacLean (1990, 1993) and Laughlin et al. (1992), Winkelman further grounds these various forms of awareness in the differing structural and functional strata of the human brain. In this framework, "simple awareness" is accorded to the functions and structures of the "reptilian brain" (consisting of the upper spinal cord, mesencephalon, diencephalons, and basal ganglia), emotional and sensory-perceptual awareness to the structures and functions of the "paleomammalian brain" (consisting of the hippocampus, amygdala, and other structures traditionally associated with the limbic system), and linguistically mediated forms of reflexive awareness to the structures and functions of the "neomammalian brain" (consisting of those structures associated with the telencephalon/neocortex). Indeed, as Laughlin and I have pointed out in another article (Laughlin and Throop 1999), the significance of these insights for anthropology is tied to the fact that the differing neurophysiological structures mediating various conscious modalities may be differentially impacted by cultural resources, and as such may provide researchers with a way to account for both interpsychic variation *and* trans-cultural similarities in the structuring of subjective experience cross-culturally. In this respect, Winkelman's phenomenologically informed view of multiple modes of consciousness at least implicitly suggests the ever present possibility that the knowledge that we have about self and world in one mode of consciousness need not correspond to the knowledge we have in other modes (see also Throop 2003). This is a significant insight since it highlights for anthropologists and other social scientists the ever-present possibility that conflict can arise intra-psychically between those cultural, personal, and biological ways of knowing encoded in differing modes of consciousness

Psychopathology

A third significant contribution of this work for anthropological theorizing and practice lies in its attempt to utilize both phenomenological and neurophysiological evidence to weigh in on the long standing debate in anthropology and religious studies over the status of the mental well-being of shamanic practitioners. In response to a myriad of positions in anthropology and elsewhere which view practicing shamans as evidencing various forms of psychopathology – ranging from schizophrenia to epilepsy to dissociation to hysterical neuroses -- Winkelman provides an extensive review of the positive interpersonal, neurophysiological and psychoneuroimmunological effects of shamanic practice, ritual, and the induction of concomitant non-ordinary states of consciousness. Phenomenologically speaking, Winkelman argues that a key difference between shamanic and pathological states of consciousness is found in the context of the control of, and intentional entry into, those states of consciousness that are often associated with shamanic practice (2000:79). Moreover, Winkelman holds that shamans are able to clearly distinguish between experiences had in non-ordinary states of consciousness and those had in everyday waking life; an ability whose absence is generally held to be a key defining characteristic of many forms of psychopathology, including schizophrenia.

All of these insights serve as an important corrective to those scholars who view the intentional alteration of consciousness in the service of shamanic healing to be evidence of psychopathology. While it is certainly true that we must be careful not to fall prey to an unthinking relativism when exploring the relationship between culture, consciousness and psychopathology (see Spiro 2001), it is also true, as Winkelman points out, that we must, in searching for any trans-cultural criteria for assessing psychopathology, be careful not to fall prey to our own culturally shaped biases. Following Laughlin et al. (1992), Winkelman suggests that

there is in anthropology an all too often unexamined “monophasic bias” when it comes to investigating states of consciousness that fall outside the boundaries of normal waking states. In Husserlian terms, anthropologists are limited by their taken-for-granted adherence to their culturally conditioned “natural attitude” (Husserl 1993 [1950])—an attitude that tends to privilege what Schutz and Luckmann (1973) have termed the everyday life-world of the “wide-awake and normal adult.” Due to this bias, anthropologists -- as well as other social scientists, psychotherapists, and medical practitioners -- are often prone to dispense negative evaluations of those states of consciousness that do not conform to what is largely an unquestioned definition of “normalcy” as calibrated according to the standards of what Winkelman terms a “modern rational bureaucratic consciousness” (2000:xi). In highlighting the pervasiveness of this bias in anthropological assessments of shamanic practice, Winkelman thus notably calls our attention to the extent to which anthropological assumptions are still often deeply permeated by unexamined cultural assumptions which we must constantly struggle to “bracket” in the context of our ongoing research and theorizing.

On Personalizing Neurophenomenology

While respecting Winkelman’s attempt to ground his project in a search for trans-cultural aspects of consciousness, healing, and ritual, I would like to conclude this commentary by suggesting that Winkelman’s project can be importantly extended through complementing his current perspective with insights garnered from ongoing work in cultural phenomenology and person-centered ethnography.

As Csordas (1994, 1996) argues, in order to understand the efficacy of healing it is necessary to turn to a close phenomenological description of the subjective experiences of healers and patients in the context of therapeutic practice. Accordingly, Csordas explains that what is most needed in anthropological investigations into the therapeutic efficacy of healing cross-culturally is precisely “a way to grasp and formulate the experiential specificity of participants” (1996:94). In some ways, Winkelman has done much to support Csordas’ call for a phenomenological, participant-centered approach to investigating therapeutic efficacy. Indeed, while he does not focus on specific ethnographic cases, in this book Winkelman does detail a number of concrete neurophysiological, psychological, and interpersonal mechanisms that may account for the therapeutic efficacy of shamanic practices cross-culturally. These include: (1) a view of spirits and dream entities as externalized symbolic projections of what are otherwise occluded (i.e. repressed, unconscious) aspects of the patient’s consciousness; (2) a psychoneuroimmunological assessment of how psychological stress and its alleviation affects a patient’s physiological functioning as mediated through immunological responses; (3) a neurophenomenological (e.g. Laughlin et al. 1992) and sociosomatic (e.g. Kleinman 1973, 1987; Kirmayer 1993) view of how the ritual manipulation of symbols can invoke desired psychophysiological responses in a patient and situate those responses within personally and culturally meaningful contexts; and finally, (4) a sociological account of how shamanic healing practices help to restructure conflict ridden social relationships and intragroup tensions, while further enabling the continued formation of attachments between a patient and his or her social group.

That said, in accord with Csordas, I also believe that Winkelman’s approach might benefit greatly by turning to examine more closely the “experiential specificity” of shamanic practices in the context of the life trajectories of *specific individuals*. For it is only through a close descriptive investigation of the phenomenology of particular individuals participating in shamanic healing in differing cultures that we will ever be able to begin to parse the variegated effects of the various neurophysiological, psychological, and interpersonal mechanisms outlined by Winkelman in this book. As Hollan (2000, 2001) points out, a person-centered approach to anthropological research ultimately reveals the extent to which cultural forms of meaning are personalized by specific individuals, and as such, highlights the often complex articulation of cultural and personal elements in any given individual’s stream of subjective experience (see also Garro 2000, 2001; Obeyesekere 1981; Sapir 1958; Throop 2003). Given that individuals will differentially personalize the very symbols, concepts, and narratives associated with various forms of shamanic practice, that individuals will each be endowed with differing emotional predispositions that are tied to both the vicissitudes of their individual life trajectories and the nature of their temperaments, that individuals will have differential access to knowledge associated with illness, healing, and well-being, and that individuals will most likely have differing personally and culturally conditioned attentional attunements to intersubjective, physical, and

psychological phenomena, it seems likely that there may be a number of important differences in terms of the types of mechanisms that might account for therapeutic efficacy in response to any one given individual's experience of illness.

For instance, borrowing an example from Csordas' (1994:111-124) research on charismatic healing, it is evident that an individual who reports diffuse, painful tingling sensations in her chest in the context of working through persisting feelings of depression and failure that are ultimately traced to a problematic relationship with her mother, is in fact drawing simultaneously upon a complex array of cultural and personal knowledge when interpreting the etiology, persistence, and eventual alleviation of these symptoms. In this light, having an opportunity to carefully examine phenomenologically the patient's description of her bodily sensations, her personal memories, interpretations and expectations in light of her life history, and the dynamics of an actual healing session(s), ultimately opens up the possibility for better understanding the particular interpersonal, psychological and/or neurophysiological mechanisms that might be functioning to affect healing in any given individual case. Indeed, to find evidence of healing in the context of individual cases where alternative states of consciousness are not evoked or where an individual does not have a "well grounded disposition within the healing system" (Csordas 1994:112), might lead us to believe that healing was tied to the alleviation of social or interfamilial tensions. In contrast, exploring instances where an individual has deeply "internalized" the tenets of a particular healing system, has experienced alterations in their conscious state(s), and yet healing has somehow failed to occur, might serve to provide us with some insight into the nature of the impact of the interpersonal dynamics of healer and patient on therapeutic efficacy or may shed some light on the limitations of some forms of healing for specific psychological and/or physiological ailments.

In the end, I believe that by turning with cultural phenomenologists and person-centered ethnographers to an investigation of the concrete dynamics of interaction and experience in the context of specific healing events, their recollection, and their articulation in an individual's particular life history, researchers may not only be able to generate some important empirical verification for Winkelman's approach, but, may also potentially discover new insights into the neurophysiological, experiential, and interpersonal mechanisms tied to healing practices around the globe. Finally, it is important to note that this call for personalizing neurophenomenology should not be read as a general criticism of Winkelman's work: work that takes significant steps toward grounding many of the assertions found in a number of recent theoretical approaches to culture, psyche and soma in anthropology by shedding light on the concrete neurophysiological and experiential structures that mediate the mutual interpenetration of mind and body in the context of healing. Rather, my remarks here should more accurately be understood as an attempt to suggest possible directions for future research for those scholars interested in furthering a neurophenomenological approach to lived experience cross-culturally.

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Shamanism. The Neural Ecology of Consciousness and Healing

(Michael Winkelman, Bergin and Garvey, 2000)

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[Journal pages 110-112]

I consider Michael Winkelman's book a thorough exploration and analysis of comparative, intercultural research on shamanism. Being a sort of natural history of shamanism, the book boldly proposes an original bridge between culture and biology, resting upon the conceptual and philosophical framework of biogenetic structuralism. The latter, not very well understood by many anthropologists due to prejudices against any study implying a biological flavor that usually reminds of them E.O. Wilson's sociobiology, has its advantages and its limits. Advantages because it links updated research on neurobiology and the nature of consciousness stressing complexity, systemic perspectives, and a non-reductive approach to mental phenomena. Limits, because it displays an arcane jargon full of neologisms, not always clear and necessary for the main discussion. The book is traversed by long, technical words that produce on the unskilled reader a sense of ignorance, sometimes confusion and almost boredom. Yet I have a sense that they are worthy and accurate, but it seems difficult to grasp them all when one reaches the final pages. It seems also that because they are "new" for us anthropologists, they need to be repeated ad infinitum in order to become familiar and, logically, accepted. In this sense, the author fails using too many psycho-, bio-, neuro-, and socio- prefixes combined in incredible ways. However, their use is neither idiosyncratic nor personal; on the contrary, it shows dramatically the current state of the recent, sophomoric intercourse between radically different universes of discourse like those of the neurosciences and the social sciences.

In addition, while there is an extremely detailed account about the nature of shamanism, altered states of consciousness, and healing from a neurophenomenological view (whatever it means in terms of an empirical methodology vis-à-vis a regular phenomenological standpoint, for example), the same detail is lacking regarding the social, cultural, and political contexts in which the different types of religious specialists emerge. Maybe this is the weakest side of the book. In short, while the book on the one hand is biologically rich, on the other it is sociopolitically poor, and the evolutionary perspective influenced by J. Steward's work does not explain why, for instance, shamanism is related with hunting-gathering, decentralized societies, and possession appears when there is a centralized scheme of authority and social repression. A sort of Weberian "elective affinity" is found between types of shamanism and types of society, but the very link is not well developed in its historical and cultural significance. Even though both links are suggestive, more conceptual complexity is needed to explain the whole picture. Maybe a combination of critical Marxist approaches with a robust sociology of political and symbolic systems could contribute to illuminate these dark spots. In this context, I believe that Michael Taussig's work on shamanism and political economy in Colombia (1987), for example, will provide an interesting insight to the discussion. From a more philosophical perspective, I can suggest Paul Ricoeur's work on the hermeneutic field (1983), in which he identifies the two main currents of thought that deal with symbols and meaning. Indeed, the hermeneutics of revelation considers what the symbol reveals to the human being, especially in terms of numinous experience; it is phenomenologically oriented, identified in the work of Eliade, Otto, and van der Leeuw. On the other hand, the hermeneutics of suspicion, mastered by Marx, Nietzsche and Freud, points at what is behind symbols, what do they hide, and the task of the interpreter is to find the multiple layers of hidden meanings. Marx locates them in alienation and the effects of class structures; Nietzsche, in turn, in the will to exercise power; Freud in the obscure realms of the unconscious. In this sense, consciousness is the place of arrival of meaning, not its primary source, as phenomenologists tend to think. So, the origins of specific symbolic expressions must be found in society, not in individuals. Once constituted, symbols are learned, apprehended and internalized by the members of a group, a class, or a society.

I believe that Winkelman's symbolic approach could be enriched by a political economy of symbols, which would be helpful to identify the social and political dimensions of shamanic symbols that operate upon concrete individuals and their own "neurognostic structures". Maybe Winkelman's next step could be "Durkheim revisited through neurophenomenology," or "How neural networks are organized according to

the root metaphors every society possesses.” Winkelman’s work is very helpful also in two additional ways. First, the bibliographic research is outstanding, and provides an ample collection of titles about the anthropology of shamanism, mythology, comparative religion, genetic psychology, neurology, philosophy of mind, comparative epistemology, and comparative philosophy. (However, I wish it had included titles in other languages like Spanish, because there are interesting titles on shamanism)¹. In this vein, the book’s comparative goal is an excellent tool to start or continue research related to religion and shamanism from an intercultural perspective. Second, the neurobiological bases of shamanism discussed here are extremely useful for symbolic analyses, that usually ignore the biological, in-built, universal capacity of humans not only for producing symbols but their interface with the biological hardwiring that creates the conditions for their very existence. Here I find the book’s best contributions, which act upon the reader as an “opioid release” of creative ideas, analogies, and metaphors. We don’t have to agree 100% with Winkelman’s re-creation of the biogenetic structuralist view to acknowledge its potential to approach the relationships between mind and society through a bio-dialectical (my neologism) view. What I also found very suggestive is how symbols and symbolic systems –always related to shamanic imaginery– through the processes of “symbolic penetration” affect (or even shape) neural networks, triggering new routes of meaning, or “cleaning” old, repressed neural paths. This is connected with the neurophenomenology of personal identity and also with the cultural management of selves that are produced in the interface between social, collective consensus and specific symbolic configurations affecting specific but potentially universal, neural networks. The whole perspective integrates different levels of organization that run from the deepest biologically rooted structures to the most sociological dimensions of life. It allows us to develop a more dynamic approach to identity processes, mainly those related to existential crises, conversion, ordinary and extraordinary healing, among others.

Shamanism, to adapt Michel Foucault’s trope (1988), is one of the most ancient “technologies of the self” which, through the management of neural structures –mainly the reptilian and paleomammalian brains–, with socially embedded symbols and symbolic systems, produce a psychobiological and social integration, sometimes expressed in healing processes. It is definitely a holistic technology that neither is outdated nor weak or powerless. On the contrary, it seems that in spite of the social and political conditionings, shamanic structures, or the Shamanic States of Consciousness emerge even nowadays with unusual strength. This book allows us to know what could be labeled “Ur-shamanism,” a set of universal shamanic structures found interculturally, and its “distinctive features,” to borrow Jakobson’s terms. Many of them display sets of biologically grounded features, related to the ecology of mind; others seem culturally based, like rituals, myths, and healing techniques, which, all in all, are dialectically related. Having acknowledged that, it is now possible to explore both sides of shamanism, and trace concrete cases, for example, of symbolic penetration, within which the social bonding of a religious-shamanic ritual, like the Argentine Toba evangelical *culto*, creates the holistic context for healing (collective and/or individual) (see Miller 1995; Wright 1997).

In current society, shamanism and its multiple forms challenge the sense of control of the modern, autonomous, consumer subject, introducing a dimension of plurality always felt as dangerous, to say the least. Because control is a paradigmatic word of modernity, its opposite appears as pre- or anti-modern, according to a false evolutionary scale. It is control in the modern sense that is hardly accurate for a shamanic perspective of the individual, which, through its different technologies at hand, is defined as open (see Wright 2000), and subject to radical changes and challenges. One of them is the ASC managed in shamanism, which can produce a reordering of the psychic apparatus and the social status of a person, with positive consequences in terms of health. Intercultural evidence shows that many societies in the world have cultural, institutionalized mechanisms to alter consciousness, regarding the subject not as an ideologically closed entity but an open one. This dimension of openness and plurality, or a practical intersubjectivity (see for example, Jackson 1998), is closer to the phenomenological, lived experience of being a living person within a historically determined social milieu. In this regard, being a subject sometimes implies to be many selves at the same time, or many but in a specific, linear sequence. And that should not be regarded as dangerous and/or pathological, as Western ethnocentrism usually does. Interculturally oriented views of the shamanic technologies of the self involve universal, biological elements and cultural symbols, constituted historically; this sort of “geopolitics of symbols” is a task not yet developed with the same degree of sophistication as the neurobiological dimension. But Winkelman’s book as well as many titles included in it provides a robust,

biological basis to understand the archaic success of shamanism and its current emergence under different, adapted forms. It is true that for socio-cultural anthropologists sometimes “biology,” “universal,” or “genetic” are troublesome dimensions that challenge cultural relativism and our dreams of the “cultural” and “social” dimension of human life as the bed-rock of our studies –the Durkheimian-Boasian burden. I believe that we need to apply our own criteria of analysis, of doing ethnography on our own intellectual prejudices. Winkelman’s work addresses many of these sensitive areas of our epistemological certainties. It is due time to acknowledge the reality and importance of shamanism and the varieties of religious experiences associated with it. Also we must accept the unavoidable fact that we humans are biological beings, and that is not a problem at all. We have neurons, nerves, an Autonomous Nervous System, and that is O.K., we must turn our eyes on them, learning the specific language of neurobiology without remorse or guilt of betraying the anthropological canon of “culture.” Nevertheless, our biological dimension is also and simultaneously constituted, as a symbolic body, within which language, metaphors, rituals, and myths play a key role in the management of our well-being. Here, the healing power of shamanism is the outcome of a complex assembly of intertwined variables. Winkelman’s book helps us to see how they function to produce curing, and personal and collective integration. It will be helpful now to direct our attention to the archaeology and teleology of shamanic symbols, in Ricoeur’s sense (1983), to detect how they become what they are, what they were, and how they will change themselves into something else. At the same time, we will have to explore how, organized as systems of symbols, they interact with the neurognostic structures, producing effects on the whole being (individual and social). I think that this book is a useful handbook to guide such an endeavor, and I hope further research will show better adjustments in this rather difficult convergence of scientific discourses.

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Endnotes

¹ For instance, see Lagarriga, Galinier, and Perrin (1996).

Shamanism. The Neural Ecology of Consciousness and Healing

(Michael Winkelman, Bergin and Garvey, 2000)

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[Journal pages 113-118]

This book is a cool, scientific view of a topic traditionally discussed in the fervid context of religious enthusiasm or drug-induced euphoria. As a study of altered states of consciousness, (referred to as ASC throughout) it is essentially about ecstasy. These states include coma, deep sleep, dreaming, sleep-walking and sleep-talking, lost consciousness, hallucinations, visions, amnesic periods. They may occur naturally, or be induced by drugs, or by severe bodily privation, especially hunger and thirst. In protest against the heavy weight of acronyms imposed on the reader I will here refer to ASC simply as trance, although I know it is not entirely accurate.

Shamanism and consciousness are topics of supreme interest to religious studies, and in this journal it is worth warning readers about possibly misleading terminology. It could be a surprise for a student of religion to read that shamanism 'reflects a transcendent reality based in human neurophenomenology and constitutes an etic phenomenon' (p. 57). 'Transcendent' in Webster's dictionary has several meanings, among which students of religion are used to 'supernatural', 'being beyond comprehension', and 'relating to transcendentalism', which is 'a philosophy that emphasizes the unknowable quality of ultimate reality'. This is not at all what the book is about. The author never speaks about 'ultimate reality' or discusses the unknowable. His strongly scientific style accords with a strictly empirical and scientific content.

Michael Winkelman has been studying and writing about shamanism since he started his Ph.D. dissertation on magico-practitioner types at the University of California over twenty years ago. Just when we thought Carlos Castaneda's Indian shaman had been forgotten, here is the shade of Don Juan, with a new version of his apprentice. The modern anthropologist does not in the least resemble Castaneda, the devoted student-neophyte. Dressed in the scientist's white lab coat, he speaks to us again about the shaman's death-defying journeys and extraordinary visions, but this time the wildly impossible experiences are distanced. Using specialized scientific terms he transforms shamanic visions from magic to natural capabilities.

The intention of the book could not be further from vulgar sensationalism or the dramatic anecdotes which usually adorn this passionately interesting subject. The book is certainly not addressed to the general public. It splits between two parts. The first part surveys what has been written about altered states of consciousness, particularly trances, visions, occult knowledge, occult powers of healing, and all forms of dissociation (mostly religious as shamanism is a religious institution). I suspect that it is not written to instruct the ordinary run-of-the-mill anthropologists who want to learn about shamanism; it is too allusive for that, and presupposes familiarity with the bibliography. The second part surveys the new wave of neuro-biochemical, neuro-physiological, neuro-psychological etc., brain studies. This part seems to address the brain scientists, not the anthropologists who might have been competent to follow the first part. Personally I found it much too difficult. However, it is systematic and written with a lot of authority; it must surely be at the frontier of fast-moving areas of neurological research. But only a reviewer with some background in brain sciences could judge its scientific scope or say whether the treatment covers the state of the art. I am unfortunately unqualified for such a task; I could not recognize bias among his selected sources or tell whether important questions have been under-emphasized or exaggerated. But as a social anthropologist I can glimpse its value and make a few points.

'Shamanism', and shamanistic, and shamanic, are used here for various institutional forms in which a person acquires and uses supra-normal powers. A shaman has access to hidden knowledge: he can prophecy or discover things hidden in the past. He can mend broken limbs or heal sickness. He can converse with animals, they understand and obey him. Normal constraints of space and time do not constrain him. Sometimes a person is credited with these powers from birth; sometimes he needs to go through apprenticeship and initiation. It is crucial for the general argument that shamanic gifts are part of a universal human endowment. Indeed, the world-wide similarity of complex sets of shamanistic ideas would need explaining if it were not so. The possibility that it was discovered in one historic place from whence it spread through the world is considered, and convincingly dismissed. The wide distribution of these powers therefore raises questions in evolutionary psychology.

It is a complete break with the past to take shamanic healing seriously. Stories of extraordinary miracles

of healing or impossible foresight have generally been dismissed as fakes. Shamans have been presented as imposters who deceive a superstitious clientele. It is new to assume from the outset that the shaman can really do the things he claims to do and actually has some of the powers his people accredit to him. This bold standpoint is the basis for submitting shamanism to the rigorous biophysical scrutiny which is developed in the second part of the book. The central question is what these talents are for. What has been their evolutionary role?

Obviously the idea of consciousness is central to this study. The author attributes to it a crucial centralizing role in integrating bodily and mental functions. He gives full weight to the selective character of cognition. For one pattern of existence to be known, another has to be excluded. The selectivity is essential to a coherent consciousness; a particular view must dominate the alternative possibilities. With such a subject one could easily be overwhelmed by confusions: what distinguishes 'reality' and what is observed? How many 'realities'? How relativist can you get? Winkelman negotiates the philosophical traps by using the terms 'operative reality' and 'operational environment'; the reality we have to work with as distinct from perceived reality. He is too sophisticated to get entangled in the contemporary 'science wars' which rage between sociologists and scientists over the word 'constructed'. His view comes out loud and clear that all operative reality can only be known in constructed forms. He is also good on the idea of consciousness as a system of sub-systems, mediating and interacting with each other and with the environment at different levels. In his neuro-phenomenological approach, consciousness is recognized to be adaptive and actively constructive:

'all domains of knowledge ... are based in culturally programmed biocognitive potentials... this constructed nature of perception of reality also requires learning about the operations of the human brain' (p. 25).

And so, without saying any more about the cultural programming, we are launched into the brain sciences.

Winkelman subscribes to a 'cognitive revolution' in psychology which has replaced crude materialist determinism. Instead of mind being controlled by material conditions, the new scholars unashamedly study the power of mind over matter. This emphasis justifies the interest in shamanism. The shaman's art uses rituals to restructure consciousness; it produces a collective consciousness and manipulates individual consciousness. The trance forces a pause in the control exercised by consciousness; the pause allows a shake-up or a relaxation of previously strong controlling habits; the healer uses music, dance and potions to induce a favourable restructuring. A person who has built up, and now is under the control of, a particularly frustrating perception of the operational world may be blind to any exit from trouble, cannot see any solution, cannot fulfil expected responsibilities --- and experiences terrible stress in consequence. The guided trance allows previous knowledge that had been occluded to come forward, a new, acceptable scenario may emerge and new energies may be activated. Not fraudulent, the shaman can really cure the individual whose bodily ailments were due to fragmentation of consciousness, because he can promote its reintegration.

The sheer simplicity of the argument is breath-taking. The vaunted therapy out-bids psychoanalysis. Though the ideas are not new, they have so far been speculative, and unsystematic. The claim that mind controls body is an ancient fantasy, but the focus on the successful practitioner produces an entirely new slant. The present study is a powerful synthesis, or so it seems to me, but I am only the dazzled outsider. The risk of not being taken seriously may explain why the author has chosen to write in such a difficult style, heavy with technical terms and solemn with science. He is addressing his serious colleagues and, for what my naïve confidence is worth, I am sure that he will be taken seriously.

So many new avenues of research and experiment are suggested by his exhaustive coverage of the self, of trance, of mind, of brain, of theories of other minds, and analogic thinking. But there are a few things that he seems to have shirked. Throughout this big book he has paid tribute to the social or cultural factors influencing cognition and personality. He keeps piously waving the flag, but his analysis does not do much to take these factors into account. Perhaps that will be for the next stage of the vast enterprise. Perhaps this is my opportunity to voice some queries.

According to his model of the development and decline of shamanism, it was present at the very beginning of human society, as soon as trance was found to have therapeutic effects. To be sure of the cross-cultural presence of shamanism and its characteristics, he has used 'a forty-seven-society stratified sub-sample of the Standard Cross-Cultural Survey', going back to nearly two millennia BCE, (Babylonians to the twentieth century), and covering the major geographic regions. The result of using it has been to locate the origins of the

shamanic institutions in hunting and gathering societies where there is only weak political and administrative integration. However, views differ on the value of this famous ethnographic survey.

My first query is over what hunters and gatherers have got to do with this? The argument does not use variations in mode of livelihood. Apart from the speculation on origins, hunting and fishing are not presented as factors supporting shamanism. As far as I can see they only need to appear as an index of the lowest levels of social integration. The author has worked out a correlation between forms of shamanism and a sequence of nomadic and sedentary economies. He assumes that shamanism is present alongside the earliest hunting and gathering, but at this stage the shaman does not have powers of healing. (Is this true? How do we know?) Then comes agriculture, the shaman adds healing to his neuro-cognitive gifts, and the priest appears on the scene. In the next stage improved political integration allows a diversification of religious roles (p. 75). This is all that we get about the socio-economic factors.

The idea of comparing levels of social integration is excellent, but the levels considered are mostly pre-historic, pre-literate and pre-industrial, and their connection with stages of shamanism is unexplained. To base its origins right at the beginning of prehistory endows it with an archaic quality which predisposes us to regard it as an obsolete therapeutic mode. Furthermore, to put so much emphasis on hunting and gathering as the original condition and natural habitat of shamanism is out of step with Winkelman's universalistic approach. He insists on the biological basis of ASC; he insists that mind governs body and also that the full-blown universal forms of shamanism result from institutions that manipulate trance experiences for therapeutic purposes. Consequently we expect that certain institutions will turn out to provide the preconditions for shamanism. What are they? Winkelman's thesis does not need the hunters and gatherers, and their presence at the very outset of human life puts an archaic boundary round his topic.

The point about the universality of shamanic institutions is already made. Does Winkelman qualify it when he reverts to biological factors?

'Shamanistic traditions have arisen throughout the world because of the interaction of innate structures of the human brain-mind with the ecological and social conditions of hunter-gatherer societies. This is possible because this ASC basic to selection, training, and professional activities occurs spontaneously under a wide variety of circumstances. These ASC experiences can be induced naturally as a consequence of injury, extreme fatigue, near starvation, ingestion of hallucinogens, perception of natural phenomena, bioelectric discharges' ... (p. 77, and see p. 110)

Undoubtedly a livelihood entirely dependent on hunting and gathering exposes the population to great hardships. But other people also regularly experience injury, hunger, fatigue etc. It seems likely that the combination of physical hardship with population sparsity and low level of political coordination is more important for the origins of shamanism than hunting and fishing.

Does it matter? Yes! Our interest has been thoroughly aroused; we want to know whether shamanism is a modern option for the sick. For all my admiration of this fine book I have to suppose that it is much stronger on neurology and psychology than it is on the subjects I know. For social and cultural anthropology the reading is skimpy and old-fashioned. Recent trends in medical and psychological anthropology have ventured to study states of mind, affections, joys and sorrows. This book about healing says nothing about the relation between patient and healer. So it misses the way the whole field has been sensitised to pain and suffering by the new ethnography of healing cults. Over the last ten years the reports have begun to pile up in France and England. They differ from what was available before in so far as the new ethnographers do not learn the doctor's qualifications at second hand. Some have actually undergone the standard training and initiatory hardships, others have discovered their own healing powers unexpectedly. These anthropologists are living intimately among their patients. They know from direct experience what it is like to be a shaman and to practice his healing arts. Their insights are enriched by compassion for their clients, and recognition of the sicknesses, sorrows and deep depressions that the healer confronts.

To someone who has thought about shamanism as deeply as Michael Winkelman this literature will be a continual source of inspiration. Roy Willis, for example, discovered his own gift without any supporting religious context and without any intention of either studying healing or becoming a healer. He has subsequently worked as an independent colleague in joint healing sessions with established African healers (1999). His style of writing is personal and straightforward. Eric de Rosny, a French Jesuit missionary, also writes as an insider to the craft because he underwent the training as a 'seer' among the Douala of Cameroon, (1981, 1996). Edith

Turner's close range studies of healing among Alaskan Inuit (1996) also has no doubts about the power of shamans to heal. These field anthropologists have achieved a remarkable combination of objective and subjective understanding. Their results are mind-blowing. They will endorse Winkelman's desire to create a non-dualistic (post-cartesian) knowledge of mind and body. In their work nothing will contradict or challenge his general theory. But they may not find that he has built enough of a bridge between practice and science.

When I try to explain what I think the book is about, I fail. I think it should be about the deep-laid social proclivities of the human spirit. If we are created as social beings, there must surely be some regular hard-wiring in our brains that alerts us to the reactions that the other human/social beings are having to the same event. If we really are social beings, we must react as other beings in our range of sociality react to the same signals. We would expect there to be some levels on which we would respond directly. But as far as I can see, the author takes the traditional view that communication is about information being transferred between solipsist minds, and this is the stance that make supranormal communication problematic.

The book inspires us with a desire to know more about healers and their powers. Do all human beings have these powers? Winkelman says, "Yes," at least potentially. Do emotional pains and bodily privations release these powers for any one? If the answer is "Yes," should we not expect to find urban shamans? There is no reason to suppose that ASC does not flourish in our cities, but the categories of the Standard Cross Cultural Survey do not help. The primacy attributed to hunters and gatherers becomes a distraction. Winkelman believes that shamanism flourishes at a low level of social integration, but does not say why. Nor is he clear on what he means. He assesses level of social integration quite crudely according to size of political and administrative units, and it stands alone, unexplained. I assume it does not rest on an intuition about primitive organization being more hospitable to mysticism; he would never be able to relate such a thesis to the rest of his argument. In practice I think he is right; there is something about a low level of social integration that may be conducive to shamanism.

Shamanism is a matter of culture and culture depends on social organization. I suppose that a successful shaman is a strong and colourful personality who would not fit comfortably into every kind of culture. A hierarchical type of social environment is good for achieving coordination and can be found at very low levels of social integration. To take the favoured example, it could give comparative advantage in collective forms of hunting and fishing. As a form of organization it might be intolerant of shamanism because hierarchy requires a high degree of personal discipline for coordination, precise timing, and protocol. On the other hand, a hierarchical culture is hospitable to analogical thinking. Comparative research using the grid/group style of cultural analysis would be worthwhile. If my hunch is right, the sick individual might be less responsive to the shaman's techniques of calming and arousal in a hierarchical system. I could not predict whether the culture of hierarchy would encourage the shamanic arts. The comparison could be applied to different niches in modern communities. The most disadvantaged sections of a vast industrial system, with no access to power or authority or any strong community basis, could well be more susceptible to the shaman's arts. Wouldn't that open up new reflections on theories about the religions of the dispossessed?

I have consulted brain scientists for this review, who ask for more information about the shaman's trance, and about the alleged therapeutic benefits that trance allows the shaman to confer on his patient, and the patient's trance (if any), and about possible therapeutic benefits of sending the patient into trance. Unfortunately Winkelman says practically nothing about the doctor/client relationship. He does not tell us what the shaman's trance allows him to do for the patient. It may help to bring the patient into a trance, which may then be therapeutic in some way, but Winkelman does not tell us how that works. Or if he does, it is in the scientific terms that I have so much difficulty in interpreting (1).

Another topic fringing the book's central project is the question of why we know so little about this experience. If it is universal, as the author claims and I believe, why have we dismissed its validity? Why is it discredited and reduced so readily to the level of fairy tales? Or, to put it another way, how should we explain the near disappearance of shamanism? The answer may have nothing to do with the disappearance of the hunter-gatherer way of life, nor with the growth of political control. It may be simply that shamanism is an individual calling, and cannot compete with powerful institutional challenges.

The shaman's claims to be able to cure could be seen as a threat to modern medicine. More dangerous to the shaman's profession is the fact that his claims are set in a religious context. His bold dealings with spirits and ghosts and his romantic night journeys to and from heaven are part of his stock in trade; he can do nothing without them. Their cosmological implications would bring him into direct conflict with the Christian Church.

In Europe he would be likely to share the fate of the wise countrywomen who used to cure warts and sell love potions, and whom the Christian clergy saw as a threat to their cure of souls. Carlo Ginzburg has vividly described (1983) their persecution as witches and heretics in the 16th century.

Today we have no interests to protect against a possible threat from shamanism -- all the more reason to study it dispassionately. This is exactly the right time for a vindication. Information technology continues to transform the infrastructure of our civilization. Its effects include weakening community ties and the isolation of individuals. Regardless of the huge size and scope of our political units, we find ourselves moving into a society of weakly integrated social relations. We need to have access to this source of knowledge about our human psyche, and to use it as a resource for healing our own fragmented identities.

Endnotes

(1) Winkelman does say something about each of those in the first part of his book, but he slips between them in a confusing way and shamanic trance so dominates the overall exposition that the patient doesn't emerge from the discussion in a clear way.

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[Journal pages 119-128]

The Shamanic Paradigm: A Biogenetic Structuralist Approach

Many of the reviewers' comments point to the need to further articulate what I realize in retrospect was my primary objective-- the development a "shamanic paradigm." As a paradigm it offers a new framework for evaluating the nature of shamanism and the biological basis of religious experience and spirituality. This initial paradigmatic outline of the biogenetic structuralist basis of shamanism necessarily lacks many details and exemplifications. I appreciate the reviewers' efforts to understand the achievements, extend some incomplete aspects, and to recognize the compelling power of a neurophenomenological approach to shamanism.

The basic method of *Shamanism*, blending cross-cultural research with a biogenetic structuralist and neurophenomenological approach pioneered by Charles Laughlin, Eugene d'Aquili, and their associates, has borne fruit in several respects. First it has shown that a diligent effort to link cross-cultural patterns and universals with principles of the nervous system can easily extend our understanding of phenomena traditionally resistant to scientific scrutiny. This approach moves our understanding of shamanism from a delusive belief system to recognition of its role in human nature, evolution, and contemporary ethnomedical practices.

The essence of the neurophenomenological approach is reflected in the traditions of neurotheology, where spiritual experiences are examined in terms of underlying brain dynamics and processes. Neurotheology perspectives (e.g., see Ashbrook and Albright 1997, d'Aquili and Newburg, 1999, Rottschaefer 1999, Joseph 2003, Atran, 2002; see also Zygon 36[3]) search for physiological answers to the question of why humans appear pre-programmed by nature to have religious experiences. Similarities across people in terms of specific kinds of phenomenal religious, spiritual and meditative experiences reflect a biological basis. The associated changes in brain activity indicate the neurological processes mediating religious experiences.

Evolutionary approaches focus attention on understanding the adaptive value of these religious experience and impulses and the associated physiological responses, for if they were not adaptive for humans, they would not be so widespread, essentially universal. Such universality points to their significant survival value, but our understanding of how such behaviors were acquired is still in its infancy. Searching for the reasons for the evolutionary emergence of the specific types of behaviors typically characteristic of religious beliefs provides a basis for understanding why the religious impulse emerged.

A classic response is that religion addresses a psychological problem produced by awareness of self and its inevitable death. The ability to anticipate, to plan and foresight-- to see the future-- had the implication of providing humans with the capacity to anticipate and understand the inevitable end of the self, one's own death. The resultant anxiety and apprehension can be debilitating, requiring adaptations to deal with that awareness and its paralyzing consequences. Religious experience of god and the spiritual dimension and all they imply facilitated adaptation and survival, counteracting the terror produced by the inevitable reality of personal extinction. The spiritual function-- a perception of and belief in an alternative reality-- played a variety of roles in overcoming death anxiety. The sense of one's survival of bodily death in a sense of self apart from body is reinforced by the spiritual other, those unseen actors with human-like intentionalities and desires. The belief alone, rather than the direct spiritual experience, is sufficient, as religious beliefs are powerful mediators for people who do not have the benefit of spiritual experiences.

In contract, McClenon (2002) illustrates a biological basis for shamanic practices in hypnotizability. He shows the continuity of hypnotizability in humans with adaptive behaviors in other animals and the inheritable basis and functional effects of hypnotizability in humans. The hypnotic response in humans has its analogues in animal rituals that provide mechanisms for adaptations to their social environments by reducing stress and promoting intragroup cohesion. Shamanic ritual healing exploits the tendency to hypnotic susceptibility, which provides healing mechanisms derived from access to the unconscious mind, its creative visions, and physiological and psychophysiological responses. Enhanced connections between unconscious and conscious aspects of the mind exploited characteristics associated with hypnotizability-- dissociation, fantasy proneness, temporal lobe lability, and thin cognitive boundaries. These provided survival advantages, facilitating healing responses through an enhanced suggestibility to symbolically induced physiological changes, facilitating psychosomatic responses

and the emergence of creative strategies.

The adaptive effects of shamanic practices are revealed by phylogenetic approaches to the basis of ritual and biological understandings of the underpinnings of shamanic universals. The following sections detail this evolutionary basis of ritual and emphasize some additional aspects of neurotheology, the biological basis of religious experience.

Shamanic Ritual in Phylogenetic Perspective

The biocultural paradigm of shamanism extends the perspectives of *Biogenetic Structuralism* (Laughlin & d'Aquili 1974) and *The Spectrum of Ritual* (d'Aquili, Laughlin & McManus 1979). Neurological bases underlying human cultural institutions can be revealed by the homologies found in information on: human universals, their relationship to neurological structures, and the similar structures and functions found in other animals (d'Aquili, Laughlin & McManus 1979; Laughlin, McManus & d'Aquili 1992). The biogenetic structuralist approach provides theoretical and evidentiary frameworks for interpreting human behavior, cognition, religiosity and ritual behaviors in evolutionary perspective. This comparative psychology approach connects human behaviors with those of other species, facilitating identification of biopsychological functions and related neurophysiological, cognitive and social processes. Ritual behaviors in non-human animals play a significant role in identifying the evolutionary origins of shamanic rituals.

In discussing the emergence of shamanism some 40,000 years ago, Winkelman (2002a) reviews theoretical and evidentiary frameworks that place shamanic ritual in phylogenetic perspective. Shamanic and other human rituals share a variety of conditions found in non-human animals' formalizations, 'fixed action patterns' and displays (Smith 1979). Animal ritual provides mechanisms for communicating and coordinating group behavior (e.g., see d'Aquili, Laughlin & McManus 1979 for discussion). Animal rituals are a form of communication that enhances relations among members of a species, making internal information available to others. Ritual coordinates the action of individuals into collective, socially coherent and coordinated patterns. Ritualization, displays, and fixed action patterns exemplify the most complex forms of communication and cooperation among non-humans (Smith 1979). Ritual behaviors reduce aggression through the maintenance of dominance hierarchies and linking members into formalized patterns of behaviors that coordinate individual's actions toward a common purpose. The primary biological function of ritual is to synchronize individual behaviors into group action. "[R]itual, inclusive of ceremonial ritual, is an evolutionary, ancient channel of communication that operates by virtue of homologous biological functions (i.e., synchronization, integration, tuning, etc.) in man and other vertebrates . . ." (d'Aquili, Laughlin and McManus 1979, p. 40-41).

The use of song and chanting in shamanic healing rituals reflects expressive community communication processes derived from biologically based capacities with deep evolutionary roots. Progenitors of shamanic chanting are found in the song, call and other vocal expressive systems of other animals (see Molino, 2000). These vocalizations express states of high arousal, communicating affective states and alarm. They also serve to maintain social contact and spacing, group and interpersonal bonding and enhance group cohesion and unity (Geissmann, 2000). Homologous human and animal rituals are illustrated in the activities of chimpanzees, particularly excited synchronous singing and dancing among members of a territorial group (Merker 2000) and chimpanzee 'dances' (Goodall 1986). In addition to the pant-hooting, foot stomping, tree hitting and exaggerated leaps, there are the 'primitive dancing' observed in captive chimps by Kohler (1927:314-15). All of these suggest a deeper evolutionary origin to shamanic practices that emerged in the Middle/Upper Paleolithic transition.

These expressive capabilities that humans share with other primates were extended in human evolution, but continue to share functions as a communicative and expressive system. The point Guthrie makes regarding the use of metaphor and mimesis as pre-language symbolic systems has been further developed by Donald (1991) in *Origins of the Modern Mind* and in his recent book *A Mind so Rare* (2001). A core aspect of shamanic practice, dancing, is part of a larger group of cultural activities such as chanting, singing and play that share common modules that provide rhythm, affective semantics and melody (Molino 2000, paraphrase p165, 173). This rhythmic capacity of the brain provided an expressive system predating language (Donald, 1991). The close linkage of musical expression with movement and dance reflects the operation of innate brain capacities known as the "mimetic controller," which provides the unique human ability to entrain the body to external rhythms (Donald, 1991). Group ritual dances and vocal imitation of animals were among the first of human mimetic

activities. Mimesis provides a basis for a shared culture through enactive symbolism. This communication system of the body involves a “rhythmo-affective semantics” that expresses the fundamental emotions (Molino, 2000) and the primary mechanism through which humans learn social roles and physical skills. This mimetic ability expressed through imitation and ritual produced a mythic ethos that was enacted early in human evolution in activities involving collective participation. The shaman’s use of dance, imitation and drumming reflect the utilization of this innate mimetic controller, which provides mechanisms for producing coordination among a group.

The Evolutionary Roots of Shamanism in the Middle/Upper Palaeolithic

A number of anthropologists (e.g., Clottes and Lewis-Williams 1998, Ryan 1999, Winkelman 2002a, Lewis-Williams 2002) demonstrate the pre-historical manifestation of shamanism in symbolic behavior during the Middle/Upper Paleolithic transition 40,000 years ago. The shamanic bases of the activities are illustrated in the correspondences of the universals of shamanism with the central features of the elements and styles of these artistic depictions, the nature of human and animal representations of animals, and the ritual use of caves (see Winkelman 2002a, Ryan 1999; Clottes and Lewis-Williams 1998; Lewis-Williams 2002). This shamanic cave art is central evidence for the emergence of modern human cultural capacities and the underlying cognitive revolution. Shamanic ritual and cosmology exemplify the cross-modal cognitive integrations that typify the emergent features of Paleolithic thought (e.g., combinations of human and animal features in metaphoric representations).

Winkelman (2002a) shows the ability of shamanic ritual processes to provide the psychological and social integration processes that characterized group needs in coping with the changes associated with the Middle/Upper Palaeolithic transition. The role of shamanism in this transition to modern culture involved psychosocial and psychobiological adaptations that enabled early humans to use shamanic practices to adjust to the ecological and social changes of the Upper Paleolithic. Shamanic rituals produced mechanisms for social bonding, engaged self-transformation processes, and contributed to cognitive evolution by producing integrative visual and metaphorical thought processes. Cognitive and social evolution was enhanced by shamanic ritual activities that promoted group bonding and the identity formation that was central in managing the consequences of the Middle/Upper Paleolithic transition.

Shamanism extended cognitive evolution in the production of visual symbolism and analogical thought processes. The shaman’s renowned visionary state can now be understood as a form of presentational symbolism (Hunt 1995), a symbolic capacity that operates through images and bodily states. It is this rich symbolic medium that underlies many of the shamanistic capabilities to acquire information and heal.

Shamanic practices appear to be a key element in the evolution of what Skoyles and Sagan (2002) refer to as “mind ware,” our extrasomatic inheritance that facilitated human adaptations in more effective ways than biological evolution. Culture or “mindware” employs symbolic systems to capitalize on brain plasticity, the development of neural networks in response to repetitive and important experiences. Symbols program neural developmental patterns, making symbols a powerful force in the functions of our brains. This symbolic capacity is a “missing link” differentiating humans from hominid ancestors, allowing us to be programmed with the knowledge of our ancestors. Shamanism played a central role in the use of symbols to re-program emotions and in allowing emotions to be managed through symbols of attachment, and in using symbols to expand our capacity for forming relationships with people from different communities, using animal identities and totemism for the inclusion of others within the concept of in-group.

Shamanism and Basic Forms of Cognition

The activation of specific neurocognitive modules in religious experiences has been postulated by a number of anthropologists and psychologists. Rather than a specific and special quality associated with religious beliefs and experiences, we find that most of the cognitive, psychological, social and emotional features underlying religious thought and action are widely shared with other domains of human activity and experience. These cognitive capacities involved in shamanic thought are at the core of human cognitive evolution. Boyer (2001) illustrates the role of fundamental cognitive processes in religious thought. These include a “detection instinct” that leads us

to perceive agency and postulate causal agents. This is closely related to a conceptualization of animacy (versus death). In addition to concepts of intentional agency, spiritual beliefs and religiosity have a “hyperactive” theory of mind and emotionality (Atran, 2003), attributing human-like intentions, qualities, personalized reactions and meaning to everything.

Shamanic cognition emphasizes special attributes of human consciousness involving the extension of meaning and intentionality to objects and the natural world (Hubbard 2002). Humans tend to assume something is a rational agent with mental states, beliefs and desires when lacking adequate knowledge about the properties of its design to explain its behavior. The “intentional stance,” the attribution of mental states, desires and beliefs to something else, goes beyond a “physical stance” of attributing expectations regarding behavior by an object. This extension includes understanding phenomena of the natural world in terms of the dynamics of people and their interpretations. Hubbard notes that shamanism’s extension of intentionality into the natural world results in an expansion of the “in-group,” considering the unknown others of nature to be basically like self. This creates a greater sense of connection with the world, and by extension, with others who participate in shamanic practices. Religions also generally have a moral dimension that encourages social evaluation and “coalition thinking” that separates the world into “us” versus “them.” This exploits a social cognitive orientation involving a tendency to attribute meaning and perceive random events as constituting meaningful wholes. Hubbard (2002) points out that shamanism exploits a number of generic structures and processes of human thought reflected in similarities in shamanic and contemporary cognitive science views of the world. Current connectionist models of semantic memory reflect the shamanic “web of life” model that emphasizes the interconnectedness and interdependence of all life forms and interrelations among species. This view of complex linkages among all aspects of the natural world and the balance among them as essential to survival instills a sense of altruism towards all species because of their role in sustaining the ecosystem. This view of the interconnectedness of nature reflects the structure of memory and other aspects of cognition, themselves formed by input from the environment that forms the structure of the neural networks of memory. The fundamental representations of vision and spatial perception are isomorphic with the structures of the natural world, reinforcing the experience and correctness of perceptions of the fundamental similarity of the properties of humans and the natural world. These common structures of the natural world and mind facilitate the emergence of the unconscious structures of the world and brain into consciousness by virtue of their iconic similarity. In visionary experiences, these images have implicit coding of information retrieved from the unconscious and transferred to awareness. The access to natural world structures provides a basis for information not ordinarily available, and may also produce a general heightened awareness by increased access to various channels of physical information normally excluded because of habituation. Access to image-based natural world structures provides linkages to evolutionarily earlier structures of the brain and their learning and memory processes. Such “animal-like” cognitive processes (e.g., see MacLean’s discussion of paleomentation processes) can provide vital information for self-awareness, environmental adaptation, hunting and food procurement and protection.

Shamanic ASC and Brain Dynamics

Throop’s comments here extend a basic argument of *Shamanism*, namely that the altered states of consciousness (ASC) associated with shamanic practices are not pathological, but rather a significant form of cognition that still has relevance today. The cross-cultural perspective helps to mitigate the dominant Western cultural biases that view ASC as pathological. The cross-cultural distribution and the neurological basis of these manifestations of consciousness help us understand their rightful role in human cognition and culture. Castillo’s comments about “dissociation” raise issues I frequently considered in writing about what might appear to be a contradictory idea, the integrative nature of shamanic ASC. Castillo correctly points to a number of phenomena that illustrate the shamanistic use of dissociation as a therapeutic device. But I don’t think that “dissociation” necessarily falsifies the hypothesis of integrative ASC. Dissociation can be integrative when rejection of certain experiences or aspects of the self allows for one to comfortably assume other social roles. Dissociation may be integrative when it separates from ordinary ego awareness to connect with repressed aspects of developmentally earlier forms of the self. When the auditory hallucinations occur because of disruption of normal cognitive processes or lack of connection between regions of the brain, information is being integrated into these processing areas from other

systems. This is reflected in Castillo's discussion of research showing that interruption of usual functional connectivity of some networks allows for the generation of independent neural networks and their integration into consciousness.

The single integrative state of consciousness that Castillo and Guthrie chastise me for proposing is more complex, as they suggest. I recognized substantial differences among ASC, pointing to the distinct *states* of consciousness (e.g., soul journey, meditative, possession) that are found within the integrative *mode* of consciousness (see Chapter 3). There are clearly experiential and physiological differences among ASC, but this does not negate some general dynamic properties that crosscut these different ASC found within the integrative mode of consciousness. Throop's comment makes a similar criticism in pointing to the need for an examination of the "experiential specificity of shamanic practices in the context of the life trajectories of . . . particular individuals participating in shamanic healing in different cultures . . .". Clearly an ethnography of consciousness, particularly ASC, is a key aspect of extending the insights here, as well as addressing the diversity of ASC called for in Castillo's and Guthrie's comments. Such individualized approaches can also help us better understand healing processes as Throop points out, and the healer-patient relationship that Douglas refers to as a central part of healing.

But major aspects of shamanic healing are not particular and specific to patients, but a generic response of human neuropsychology. Our understandings of the brain dynamics and functions involved in ASC and spiritual experiences are entering a new era as a new generation of tools are brought to bear on the neurological occurrences associated with ASC experiences. Castillo's comments point to the new and more precise understandings of the brain's differential activation provided by neuroimaging studies. Most of this cutting edge research was not available in the early 1990's as this book was being developed, and was still too undeveloped to rely upon them as a basis for a theory of shamanic ASC. The new findings from neuroimaging studies that Castillo cites seem to suggest an alternative to the paleomammalian brain and integrative consciousness model presented in *Shamanism*. But I think a careful consideration illustrates that these new findings extend the paradigm presented rather than contradicting or replacing it with something fundamentally new.

Most physiological models of spiritual experiences and ASC have emphasized activities centered on the limbic system or paleomammalian brain. Theta wave activity, a signature of ASC, is associated with activation of the temporal lobe, as are a variety of psychological disorders and drug experiences, specifically those with religious interpretations. Areas which neuroimaging studies implicate in ASC involve the pre-frontal cortex (PFC), an association area that manages major executive functions of the brain. The PFC receives input from all of the sensory areas and the multimodal association areas, mediating image patterns; it is associated with the execution of willful acts. The flow of information from the paleomammalian brain relevant to perceptions of agency and self is managed by the PFC. However, in ASC the notable ability of the frontal lobes to inhibit behavior is undermined by the powerful activation of the paleomammalian brain. The PFC may be highly activated in ASC because the ascending activation of the neuraxis involved in ASC necessarily generates input into the PFC on the way to the frontal cortex. Nonetheless, the PFC may be central to these experiences. As Castillo points out, the PFC differentiates the modern human brain from its hominid ancestors (Donald 2002).

The recent research applying neuroimaging technologies to ASC and spiritual experiences is opening new vistas in understanding the specificity and modularity of the brain and the relationship of brain states to spiritual experiences. Persinger's research examines experiences associated with electromagnetic field stimulation of various areas of the brain, particularly of the right hemisphere and temporal lobe of the limbic brain. Stimulation there produces a kind of religious experience characterized as a "sensed presence," a feeling of the presence of a sentient being. This may include a perception of a visual presence and a loss of the sense of a separation between self and the world. Other aspects of the "sensed presence" may include dream-like states, internal sensations in the body, a sense of detachment from the body, as well as emotional arousal. Persinger sees the "sensed presence" as the prototypical "god experience" and involving the right hemisphere's production of a sense of "other" that is equivalent to the left hemisphere's production of sense of self. Also significant are functions of the temporal lobe, particularly those of the amygdala and hippocampus, "the gateway to the experience of images . . . a vivid stream of past memories . . . [that can] initiate an inundation of rich fantasy over which the experiencer had little control" (Persinger, p. 274).

The meditative state of "absolute unitary being"-- a perception of no space or time, of being boundless, and self-transcendent annihilation of the boundary between self and other-- is associated with decreased blood flow

to the areas of the brain that function as an object association areas managing information regarding the boundaries between self and environment. Specifically, “deafferentation of the posterior parietal lobe and parts of the inferior parietal lobe, particularly the non-dominant side, was responsible for a progressive increase in unitary experience” (D’Aquili and Newberg 1999), p. 245). Preliminary research suggests that many of the other typical mystical and spiritual experiences will show a specific neurological signature reflecting the differential activation or deactivation of specific parts of the brain.

Shamanic Healing

As Douglas’s comments point out, many want to know the relevance of shamanic potentials to contemporary societies and our own need for healing. Is shamanism still relevant? The biological perspective on shamanism indicates that shamanism will always be relevant. The perspectives of *Shamanism* show that shamanic healing practices use both natural processes and symbolic cultural and social activities to manipulate physiological responses. Both physiological and cultural effects on perception, attention, emotion, self, identity and innate forms of cognition are mediated by “meaning” created through the culturally mediated construction of the cognized environment through the socialization processes, which canalize physiological responses to symbols (Laughlin, McManus and d’Aquili 1992). These learned symbolic and affective associations enable contemporary ritual and symbols to evoke physiological processes. Symbols link perceptions, cognition and affect with physiological responses, enabling “symbolic penetration,” the effects of symbols upon physiological processes and latent psychological structures. Shamanic practices can still manipulate the relationships between symbols and brain processes, healing through the use of metaphor to produce psychophysiological integration at preverbal mythic levels. Ritual processes help overcome cultural conditioning and psychosomatic dynamics, enhancing interactions between conscious and unconscious processes, and linking pre-verbal mythic levels with cultural and egoic structures, creating psychosocial and psychophysiological integration.

Samuel (1990) offers a similar perspective, suggesting that “shamanic mechanisms” provide means of altering individual circumstances that individual’s themselves cannot change. Shamanic processes link humans’ digital and analogical processes, creating a flow of relatedness with what Samuel calls “modal states.” These modal states are the hidden structures of perception and means by which humans engage in social interaction. Shamans are able to dissociate from habitual automatizations and enter into special modal states that enable them to see the symbolic nature of normal body states. This enables the shaman to use ritual to tune the modal states of entire communities, placing them in a balance through analogical thinking processes. If we conceptualize the shamans’ work as operating on the basic underlying structures of perception, affect and cognition, their potentials to heal individuals and whole communities will never become obsolete.

This continued relevance of shamanism in the contemporary world is well attested to in an abundant literature on shamanic healing in the popular press and in areas of transpersonal and humanistic psychology. Outside of the halls of academe, the laboratories of science and the clinician’s purview are a wide range of contemporary healing practices that incorporate the shamanic potentials. And these practices are invading the mainstream of medicine. Decades ago Achterberg (1985) pointed out the roles of shamanic imagery in cancer therapies. Winkelman (2001, 2003a) has described the use of shamanic practices in substance abuse rehabilitation, and has outlined the role of shamanism as an evolved psychology still relevant to contemporary people (Winkelman 2002b). The biological basis of these practices means that they will continue to resurface, as eloquently attested to in a recent issue of *Cultural Survival* on “Shamanism and Survival” (Winkelman 2003b).

One aspect of contemporary shamanic healing involves what is called “core shamanism” by anthropologist Michael Harner (1990), founder of the Foundation for Shamanic Studies. Activities are based upon common principles and practices of shamanism found worldwide, taking a holistic and eclectic approach. Healing practices address soul loss, guardian spirit and power loss, spirit and object intrusion, and possession, and are considered particularly effective for the treatment of the consequences of trauma, drug dependence, and mental and emotional illness (Harner and Harner 2000). Shamanic therapies involve restoring and maintaining personal power through an alliance between the shaman and client that requires the latter’s self-discipline and dedication. Central aspects of the classic shamanic vision quest, as a process for self-empowerment, underlies contemporary shamanic counseling and the training of the client to make a shamanic journey on their own to acquire or restore their personal power. Shamanic journeying induces a sense of mastery and control, a modern concern. Shamanism’s

characteristics reflect the emerging biopsychosocial paradigm focused upon the integration of emotional, mental, spiritual and social dimensions of well-being.

Douglas suggests that I neglect how it is that the social and cultural factors affect physiological processes. I do discuss the role of symbolic and metaphoric processes in healing, but these are theoretical and logical models rather than physiological models. The ability of culture to program neurological structures has only recently been recognized, but is becoming of increasing interest across the spectrum of science (e.g., see Skoyles and Sagan 2002, Donald 2001). Castillo (1997) discusses these neurobiological effects of culture, showing how adaptation, learning and memory are imprinted in the brain's neuronal microstructures. The processes of learning modify the brain's microstructures, allowing cultural patterns to exert influences on the development of the neuronal structures. The patterns of cultural interpretation and normative responses become embedded in the structures of neural networks that are formed in the processes of habitual interpretation, action and thinking created by enculturation. Culture guides learning and thereby modifies the nervous system. One effect is in terms of producing long term potentiation by repetitive interactions with the environment. The cultural schemas employed in these interactions imprint cultural patterns in the brain's microstructures through the formation of neural pathways that are internalized in the individual's plastic neuronal structures. This cultural programming of neuronal structures enables interpretations of experiences to evoke physiological responses. This capacity is clearly one of the major tools of shamanic ritual, what Laughlin, McManus and d'Aquili (1992) call the "theater of the mind." Culture can also produce biological disorders as well through the culturally influenced neuronal adaptations that are involved in stress responses and emotional reactions. Culture's influence may also produce maladaptive patterns of behavior and thinking in the individual, creating neural microstructures and neurological tuning that constitute pathophysiological processes and psychological maladaptations.

Parting Clarifications

One point several commentators obscure is my effort to make a clear delineation between the core shamans of technologically simple societies, and the many other types of shamanistic healers. The universally distributed shamanistic healers-- practitioners who enter ASC to interact with spirits on behalf of the community-- do not all share many of the other characteristics found among hunter-gatherer shamans (e.g., soul flight, soul loss, animal powers, transformation into animals, death-and-rebirth, etc.). Notably my distinction between (core) shamans and other kinds of shamanistic healers is not an arbitrary definitional approach, but rather one empirically derived from cross-cultural research. Douglas similarly misreads the evolutionary schema, mistakenly asserting that the hunter-gatherer shaman does not have healing powers. To the contrary, the healing potential of shamanism is part of a long evolutionary development, one that Fabrega (1997) discusses as the "sickness and healing" response found among other primates. Another point Douglas raises is the relationship of shamanic practices to forms of social organization. A point I have addressed elsewhere (Winkelman 1992, 1996) is how political integration leads to a suppression of shamanic practices, producing the phenomena Westerners characterize as "witchcraft" (see also Harner 1973). Shamanism's demise in the modern world is not merely an abandonment of cultural practices of earlier millennia, but an active oppression of these practices by those who wish to exert hierarchical control over human consciousness.

But shamanism will continue to struggle to find acceptance in the modern world. As Samuel (1990) points out, there is an inverse relationship between the dominance of shamanic mechanisms and the presence of political hierarchies with centralized decision-making processes. Shamanism had a predominant role in societies where the shaman played a vital role in maintaining local consensus. Samuel suggests that the shaman and priest represent different kinds of modal states of unconscious perceptual structures. The state apparatus of the priest must subordinate the shaman as a means of maintaining dominance over the life world. Shamanic modal states produce a sense of unity that cross-cuts mind-body distinctions and the dichotomy of self and society. These are incompatible with the state's rationalizing approaches based upon the subject-object dichotomy.

Finally, I would like to address what some may mis-perceive as a materialist reductionism in my arguments. I would defend my arguments against such simplistic categorizations on several grounds. The biogenetic structuralist position used here argues for a biological structuring, but recognizes that "superorganic" factors in culture and social life provide for an elicitation and patterning of those biological potentials. While the physiological system may need to be functioning in a specific way for ASC and other spiritual experiences, this

does not reduce the experiences to their biological substrate. To borrow a metaphor from Gregory Bateson (Mind and Nature), when we observe a program on television, it appears that the TV produces what we see. But if we take apart the TV we will not find the source of the signal, which is broadcast from another source. The TV is not the source of the signal, but it must be properly tuned to receive the signal. So too must human biology be appropriately “tuned” to receive those experiences we call spiritual and ASC. Indeed, ASC have been discussed in terms of a “tuning” of the central nervous system. A physiological approach to shamanistic practices does not *a priori* exclude other spiritual interpretations. This physiological approach does, however, ground our understanding of spiritual experiences in human nature, and reinforces a point made in many spiritual traditions that the spiritual is as much a part of nature as is the physical.

In conclusion, I think the most damaging critique of *Shamanism* from my reviewers is that it is not an easy read, being filled with technical jargon and lacking concrete examples. As much as I would like it to be a popularly accessible reading, it is an initial statement of a paradigm, and speaking to scientists rather than the public. It is an effort to stimulate scientists to re-think the evolutionary and social importance of practices that have been maligned throughout most of Western academic history. As the reviewers’ comments suggest, it will hopefully have such an impact, especially as neurotheology and brain studies converge.

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