IMAGINATION AND REALITY: ON THE RELATIONS BETWEEN MYTH, CONSCIOUSNESS, AND THE QUANTUM SEA

by Charles D. Laughlin and C. Jason Throop

Abstract. There often appears to be a striking correspondence between mythic stories and aspects of reality. We will examine the processes of creative imagination within a neurobiological frame and suggest a theory that may explain the functions of myth in relation to the hidden aspects of reality. Myth is peppered with archetypal entities and interactions that operate to reveal hidden processes in reality that are relative to the human condition. The imagery in myths in a sense "sustains the true." That is, mythopoetic imagery keeps the interpretive process in experience closer to the actual nature of reality than the rational faculties operating alone are able to do. Indeed, whereas rationalizing can easily lead us awry, genuine myth rarely does. Explanations of events offered by cultures around the world are frequently couched in terms of mythic themes and events. An important function of myth is to provide a "field of tropes" that informs the lived experience of people. This paper focuses especially on those aspects of myth that represent facets of the quantum universe and give us clues as to the relationship between consciousness, symbolism, and reality.

Keywords: archetypes; brain; cognitive development; cultural neurophenomenology; eidetic cosmology; mediate; myth; neurobiology; neurognosis; potentiate; reality; symbolism; trueing; truth.

Charles D. Laughlin is a professor of anthropology and religion in the Department of Sociology and Anthropology, Carleton University, Ottawa, Ontario, Canada K1S 5B6. C. Jason Throop is a doctoral candidate in the program for psychocultural studies and medical anthropology in the Department of Anthropology, UCLA, Los Angeles, CA 90024. This paper was presented at the Otherworld Reality Conference held in the Great Room of the Royal Society of Arts, London, England, 10–11 May 1999, and is dedicated in loving memory to our friend and colleague, Eugene G. d'Aquili (1940–1998).

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> *". . . the cultural habits of humanity have always made room for the sacredness of nature."*
>
> —Simon Schama, *Landscape and Memory*

> *"Fundamentally, then, there are no religions that are false. All are true after their own fashion: All fulfill given conditions of human existence, though in different ways."*
>
> —Emile Durkheim, *The Elementary Forms of Religious Life*

> *"Whoever denies the existence of the unconscious is in fact assuming that our present knowledge of the psyche is total. And this belief is clearly just as false as the assumption that we know all there is to be known about the natural universe. Our psyche is part of nature, and its enigma is as limitless."*
>
> —Carl G. Jung, *Man and His Symbols*

While it is true that people may imagine worlds that do not exist and may fail to imagine worlds that do, there often appear to be striking correspondences between mythopoetic systems found in many of the world's cultures and certain fundamental aspects of reality. This observation raises a number of interesting questions about the relations among imagined worlds and reality, including: What are the cognitive functions of myth? What neurocognitive mechanisms are responsible for the imagination-reality correspondence? How can we account for the intuitive recognition of truth in mythic tales? And how is it that reasoning about reality from a mythical foundation is often truer than reasoning alone?

In this paper we examine the processes of creative imagination within a neurobiological frame and suggest a theory that may explain the functions of myth in relation to the hidden aspects of reality. The perspective we use is that of cultural neurophenomenology, an interdisciplinary body of work that integrates research in anthropology, psychology, neuroscience, physics, and phenomenology.[1] In particular, we want to show how it is that imagination may be understood as a natural process, a universal function of the human brain—a brain that is embedded in a universe of ordered energy within which it evolved, in which it develops, which sustains it, and which informs it by way of energetic interrelations at many levels, including that of the quantum sea. The view we present is intended as a corrective for the extremely cynical postmodernist views that have persuaded people that all human knowledge is merely the product of social construction and that there is no such thing as truth (see, for example, Anderson 1990).

Myth and Imagination

So that we all begin on the same page, let us make clear what we mean by a mythopoetic system. Traditional societies are often characterized by cul-

tures that are grounded upon a cosmological ontology. By cosmology we mean that people conceive of the world as

(1) a totality that is
(2) made up of everything in existence as parts of that totality and
(3) in which all of the parts interact in a systemic way such that
(4) the existence of the totality depends upon all of the parts' interacting and mutually influencing each other and the totality.
(5) Much or most of the totality, as well as essential aspects of all the parts, are hidden to normal sensory perception.

Astrophysicists and other physical scientists use the term *cosmology* to refer to the systemic properties of the universe, but from an ethnological point of view they are actually describing a kind of quasi-cosmology[2] and not the true cosmology of a people who go about their daily lives in the intimate understanding of and participation in the world-as-cosmos. Such peoples intuitively grasp that what they do in their daily lives has an impact on the totality of existence and that the totality impinges on every aspect of their lives.

The Mythopoetic System. Traditional cosmologies are expressed through a society's *mythopoetic system*—the society's entire corpus of sacred cosmological symbolism, including that found in myth, ritual, mobiliary and architectural arts, drama, performance, sacred landscape, and games. All of the different symbolic media composing a traditional mythopoetic system are interconnected within the context of the unity of cosmic understanding. They are variant expressions of a single reality as understood by the people. This is not to say that the mythopoetic world and the world of direct, personal experience are the same. As John Cove (1987, 28), an anthropologist and student of Northwest Coast Indian mythology, notes, "the relationship between mythological and lived-in realms is never completely isomorphic. Each is more or less than the other. If the first has particular significance, it is in giving a foundation for meaning in the second." Moreover, it is important to remember that cultural resources (including mythopoetic systems) are always to some extent refracted through the lens of individual consciousness—a consciousness that is always patterned according to the historical vicissitudes of a particular life trajectory (see Hollan 2000).

The cosmology, and thus the mythopoetic system, is therefore part of a living system of meaning that is played out in the context of individual minds and bodies that are both personally and culturally informed. The cosmology and its symbolic representations are lived, and in the living the cosmology is animated and confirmed within the crucible of each person's consciousness. Cosmologies and mythopoetic systems are thus bound up

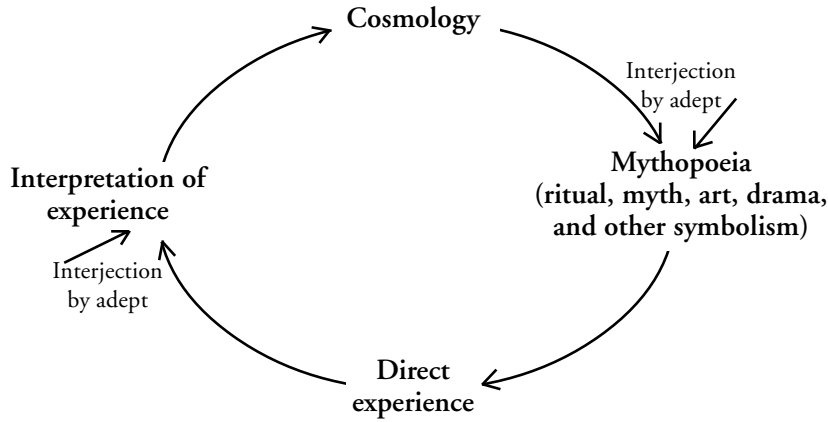

Figure 1. The Cycle of Meaning. The society's cosmology is expressed symbolically in its mythopoeia and especially its myth-ritual complex. Symbolic expression leads to direct experiences that are interpreted in such a way that the cosmology is vivified and verified. Shamans and other religious adepts may influence the process by controlling the symbolic expression and by helping to interpret experience.

in what we might model as a *cycle of meaning* (see figure 1; see also Laughlin, McManus, and d'Aquili 1990, 214–33).

The cosmology, which people mainly carry around in their heads, is imagined and expressed by way of their culture's stock of symbolic media, which allows people to participate intimately in their version of a symbolically pregnant mythic reality.[3] As Alfonso Ortiz (1972, 135) noted, the associations, principles, and assumptions upon which a traditional cosmology is founded are rarely, if ever, simply created anew by particular individuals. Rather, most people accept and participate in accordance with the worldview they inherit from their culture. This participation results in real-life experiences that are in turn interpreted in terms of the cosmology, thus completing a negative feedback loop[4] that instantiates the cosmology in individual experiences and also confirms the truth of the people's system of knowledge (Ricoeur 1962; 1968).

Here it is important to note that, while the tendency is to envision the cycle of meaning in terms of a negative feedback loop, it should not be thought of as an entirely closed system that is incapable of change. Positive feedback is also a possibility, as direct experiences can, on occasion, lead to alterations in interpretations, which in turn can change aspects of the cosmology and the ritual-mythopoetic reflections of that cosmology found in that particular culture. Consider, for example, Anthony F. C. Wallace's (1956) pioneering work on culture change, Max Weber's ([1922]

1978, 244–46) writings on charisma, and Gananath Obeyesekere's (1981) work on "subjectification" and creativity. Indeed, Obeyesekere argues that a great deal of creative impetus in cultural transformation stems from ritually induced experiences in altered states of consciousness. Not satisfied with the "cumbersome" nature of the phrase "altered states of consciousness," Obeyesekere calls these states "hypnomantic consciousness." He explains that these states are characterized by their great creative capacity and their ability to "generate subjective imagery and cultural meanings" (1981, 169). Moreover, he also argues that myth is itself directly "generated out of the hypnomantic consciousness" (1981, 181). Also of interest is his attempt to outline the integration of the creative and conventional sides of culture (the generative and conservative aspects of the cycle of meaning) by describing how the products of hypnomantic consciousness can be "reworked by the conscious mind, and [as such] brought in line with the needs of the individual and the demands of culture" (1981, 181). Just as we pointed out with our description of the cycle of meaning, Obeyesekere asserts that culture and myth therefore "feed back into the hypnomantic state, influencing the thought structure of these states" (1981, 181).

These two attributes of the cycle of meaning can be understood in terms of the following example. Let us take the not-uncommon case of dream incubation. A culture might hold that while one is asleep one's soul can depart from the body, thus freeing it to obtain culturally valued information about the world. A member of such a culture who wishes to discover something important about the world might therefore be inclined to use a culturally specified ritual means of incubating lucid dreams. Ritually induced dream incubation then might generate an experience in which an individual is able to perceive him- or herself as a consciousness flying free of the body and able to discover information about the world. In this instance, the experience not only instantiates the belief system but also confirms the veracity of the society's hermeneutical system.

Conversely, in the process of incubating lucid dreams a precocious dreamer may have some novel experience (for example, an interaction with an entity or spirit) that falls outside the interpretive framework provided by the cosmology. In this case, the individual who experiences this novelty may attempt to elaborate a new interpretive framework that can (given the proper set of circumstances) alter the parameters of the original cosmological system.

A society's mythopoeia is ultimately the product of the creative imagination of its people. By creative imagination we do not mean mundane fantasy (imagined unreality), but rather the *imaginatio* in Henry Corbin's (1969, 179) sense—the exercise of the creative intuitive faculties associated with imagery by which the essentially invisible aspects of reality may be envisioned.[5] As Corbin noted, modern Euroamerican culture is marked by a vast chasm between its conception of reality as described by science

on one hand and unreal fantasy on the other: "In short, there has ceased to be an intermediate level between empirically verifiable reality and unreality pure and simple" (1969, 181). In traditional societies this intermediate level by which (in Emile Durkheim's sense) reality is imagined is the mythopoetic level.

Traditional cosmologies—like many other taken-for-granted cultural assumptions and practices—tend to be conservative of meaning. They resist change in knowledge to some extent, for the principal functions of a society's worldview are to ensure a complementarity of experience for the society's members and to reflect the authenticity of experience. The traditional cycle of meaning is the product of an inherent effort after meaning, as opposed to an effort after truth.[6] That is, the cognitive processes of the human mind-brain operate to associate what is arising in the sensorium at a given moment with patterns stored in memory—in F. C. Bartlett's (1932, 44) terms, "an effort to connect what is given with something else." The effort after truth shifts the orientation from attributing meaning to the given to discovering what is novel in the given and then evaluating meaning models by comparison with the given's experienced novelty. In other words, the effort after meaning is a quest for an ordered patterning of experience with a recognition of the correspondence between an experienced given and the instantiation of that given in memory, while the effort after truth is a systematic search for anomaly in our experience of a particular given as it arises in the sensorium. The former is common to people everywhere; the latter is rare and is the fundamental impetus for developing what Edmund Husserl called a "rigorous science"—that is, a "science" that is not merely another form of ideology (Husserl 1965). More will be said about this distinction later.

The view we are expressing here is contrary in many respects to the semiotic structuralism of Claude Levi-Strauss (1964; 1967; 1971; 1978). It has been Levi-Strauss's contention that myths can be understood only in relation to other myths. In his form of analysis, the meaning of one myth is ascertained by comparing the symbolism and relations among the symbols with those of other myths. The idea is to work one's way back to the elemental structures of mind that produce myth in the first place. The methodology involved in this essentially exegetical project is remarkably convoluted and really has nothing to do with people's experience of the world in the context of the here and now (see, for example, Maranda and Maranda 1971). In fact, the contingencies of daily existence are irrelevant to a semiotic structural analysis, for questions of lived experience, development, and adaptation enter the picture as nothing more than distortions of the primordial structures that produce myth.

Although it is true that myths from a single society are typically interrelated and form a system of symbols and meaning—the entire mythopoetic system is involved in producing what Paul Friedrich (1991) has called a

"field of tropes" —the mythic system in reality gains its efficacy by informing the lives of real people. The meaning encoded in sacred stories and other media informs lived experience, and that is why myth is found to be so intimately associated with a society's ritual activity. Durkheim long ago stressed the important connection between ritual and myth ([1912] 1995). In fact, his writings on religion often attest to the significance of ritual as a mechanism through which individuals are able to harmonize their subjectivities both with one another and with the cosmological system as expressed in a particular society's collection of myth (Throop and Laughlin forthcoming). Durkheim's view of the close connection between ritual and mythology is evidenced in his assertion that "If myth is withdrawn from religion, ritual must also be withdrawn. . . . Indeed the rite is often nothing other than the myth in action" ([1912] 1995, 79). Perhaps inspired by Durkheim, Victor Turner (1985; 1992; Turner and Bruner 1986) strenuously disagreed with the semiotic structuralist account of how mythic texts function in traditional religions and with the minimizing of the role of ritual implied therein. Turner saw, as Durkheim before him and as we also see, that ritual, not disembodied myth, is the cornerstone of religion. As implied in the cycle-of-meaning model above, religion is an active process with ritual enactment at its very core (d'Aquili, Laughlin, and McManus 1979; Laughlin 1989; Laughlin et al. 1986; see also Rappaport 1999).

The Myth-Ritual Complex

So we see that at the center of a society's mythopoetic system may be found a complex of myth and ritual from which the other media (say, the people's art, drama, and games) derive their primary inspiration (see d'Aquili 1982; 1983; d'Aquili and Newberg 1999). By myth we mean *the corpus of sacred stories that constitutes a highly symbolic, but coherent, description of a people's origin (cosmogamy), as well as the origins of significant aspects of the environment (animals, food plants, changes in the weather, social roles, institutions, and so on).* The stories are primarily concerned with transmitting knowledge about the primal relations in the cosmos upon which the existence and well-being of the people depend. They form the primary warp and woof in the fabric of a people's "field of tropes," a field of interconnected meaning in which each of life's significant experiences has a location, much as a patch has its appropriate place in a quilt.[7]

Myth may do many things within the sociocultural context of a people. For instance, anthropologists have long understood that mythology provides a charter for many of the society's important institutions (see, for example, Malinowski 1954). Myth also can provide a conventional moral order to situations people face in their daily lives (Jackson 1982), offer explanations for natural phenomena and catastrophes of various kinds (Frazer [1890] 1996), incorporate magical formulae for use in the world

(Young 1983; Weiner 1988), and operate as a repository for cultural knowledge (Turner 1974, 239).[8] But there are two other important functions of myth we need to address here, for we are not interested only in myth as a repository of culture but also in the relationship between creative imagination, experience, and reality. Those two functions are (1) the transmission of socially salient vicarious experience and (2) the coordination of individual conceptual systems relative to socially valued experience. As explored above, myth (with ritual) is a primary mechanism for developing and maintaining what Durkheim called the "collective consciousness" fundamental to a people's religion and cosmology ([1912] 1995]; see also Throop and Laughlin forthcoming). Important domains of experience are registered in story and transmitted in such a way that the receiver lives the experience vicariously through internally generated feelings, thoughts, and images—through, say, the imagined adventures of the hero or sacred being. Moreover, the didactic quality of myth makes it possible for people to share the same body of core symbols and the sacred context in which the symbols apply. In this way, everyone more or less agrees that some particularly salient event in everyday perceptual reality is an instance of some general force or phenomenon depicted in the stories. For instance, a number of Laughlin's Navajo friends are convinced that much of today's social upheaval results from the failure of people to conform to certain prescriptions (such as keeping winter and summer ceremonies distinct) that are clearly expressed in the sacred stories.

And, as Durkheim emphasized, the reality expressed in myth is not merely the figment of imagination *but is reality itself imagined* ([1912] 1995, 12). This insight is crucial, for it differentiates the present account from the cynical relativism of many postmodern accounts. Indeed, ethnologists find that this reality base must be so, for the contingencies addressed in myth often indicate important elements and issues fundamental to the adaptational style of a people (Rappaport 1984; 1999). Also, the more seminal students of religion have acknowledged the adaptational significance of myth. Levi-Strauss (1967) has noted that myth is concerned with fundamental dilemmas of human existence—dilemmas that may have very serious adaptational consequences. Mircea Eliade (1963, 1) understood myth as a comment on the human condition generally and noted that traditional peoples code myth as a "true story" or a story about reality. Both neuroanthropologist Earl Count (1960) and theologian Paul Tillich (1963) saw a society's myth as a description of a people's understanding of "the world as problem"—an expression of the "ultimate concerns" of a society. Social phenomenologist Alfred Schutz (1964) goes further, suggesting that myth refers to transcendental experience and the boundaries of a people's view of multiple realities.

Joseph Campbell, who perhaps has given myth more thought than any other scholar of our age, recognized the problem that societies face in en-

suring that the development of each member's consciousness proceeds in a way that maintains a collective reality base relative to the environment:

> Thus a mythology is a control system, on the one hand framing its community to accord with an intuited order of nature and, on the other hand, by means of its symbolic pedagogic rites, conducting individuals through the ineluctable psychophysiological stages of transformation of a human lifetime—birth, childhood and adolescence, age, old age, and the release of death—in unbroken accord simultaneously with the requirements of this world and the rapture of participation in a manner of being beyond time. . . . Their effect, therefore, is to wake the intellect to realizations equivalent to those of the insights that produce them. (Campbell 1986, 20)

Campbell (1959) suggested that universal mythic themes may operate as innate releasing mechanisms for structures in the depths of the human psyche. Mythic elements, operating as metaphors, may be "supernormal sign stimuli" (that is, images) that may be more effective than naturally occurring phenomena for potentiating (stimulating, preparing) neurocognitive structures in the human brain for development. The society's mythic system may be organized in a unique way so as to release constellations of neurocognitive development of certain appropriate types. For instance, hero myths may operate as initiators. The imagery penetrates to the depth of the psyche and activates and potentiates development of those constellations of faculties valued by the society.[9] By manipulating the motifs and elements of myth, a society may orchestrate deep psychic development by penetrating and potentiating constellations requisite to development along certain lines. These become the "collective consciousness" of a particular people—a collective representation that is keyed to both the local and global realities within which people are embedded.

Myth Is Activity. An intact traditional mythology is never a static phenomenon. Myth works its way in the world through the activity of people in the world—through people's cognitive operations, feelings, and actions. Thus myth results in real effects and consequences in the lives of people and in the environment. Moreover, myth is intimately connected with the body of ritual of a people. By *ritual* we mean a system of symbolically pregnant, rule-governed, and formalized activity and speech that people repeat as required by social prescription and the meanings of which are established by social convention (see d'Aquili, Laughlin, and McManus 1979, 39; d'Aquili and Newberg 1999; Rappaport 1979, 175; 1999; Grimes 1996). As Wallace (1966) liked to say, ritual is the "work" of religion – ritual is where the mythopoetic system is most active. Ritual may take the form of an actual mythic performance—like the Passion Play—in which aspects of the mythology are actually enacted and, as it were, brought to life through a society's particular style of dramaturgy (see Schechner 1985; Turner and Bruner 1986). Or the society may sponsor individual or group pilgrimages during which mythic events are enacted upon the much grander

stage of the sacred, "mythologized," landscape (see Devereux 1992; 1996). In any event, it is by participation in ritual that people often attain mythologically rich experiences and insights, and it is the mythical activity of ritual that contributes most dramatically to a traditional society's cycle of meaning.

The myth-ritual complex is thus bound to reality in at least three important ways: (1) through the direct intuitive grasp of the order of reality, (2) through regulating the development of the individual consciousness along collective paths, and (3) through enactments in the world that have real effects and consequences.

The Hidden. Anthropologists have repeatedly noticed that traditional societies espouse a cosmology that concerns itself with the hidden forces behind things and events. The hidden forces are given symbolic expression as animated, often anthropomorphic, characters that play an *epiphanic*[10] role in myths, mystery plays, and other forms of ritual performance. These forces often provide an imaginative explanation of the unseen vectors of causation and energy that run between all objects and events in the universe.

Much of Navajo philosophy, for instance, is organized around the postulate that all perceivable things in the world have invisible aspects that may often be imagined as "Holy People"—the Mountain People, the Star People, the River People, the Rain People, the Corn People, and so on. For more philosophically inclined Navajo thinkers, these Holy People are thought of as anthropomorphized symbols for the usually hidden and vital element within all things, which traditional Navajo philosophy equates with "Wind" (*nilch'i*; see McNeley 1981). People also have such a hidden dimension, called "the Wind within one" (*nilch'i hwii'siziinii*). All these Winds are really part of the one all-pervasive and all-encompassing Holy Wind. Winds are never held to be distinct entities inasmuch as energy is thought to be flowing in and out of even the most enduring objects. It is the coming and going of wind that accounts for the tapestry of reciprocal causation typical of this particular understanding of the cosmos. The choice of wind as the central metaphor is an explicit recognition—common to many cultures on the planet—that there are forces that normally cannot be observed save by inference from their effects.

It is very much the function of myth in societies like Navajo to reveal and explicate the hidden dimensions of the world. The hidden energies that are the essence of the world are given a face—a countenance that may be contemplated, that is "pleasing to the mind," that may be enacted in ritual (for example, in the elaborate and ingenious Navajo system of *hitaal*, or healing ceremonies), and that may be imagined in daily life as the efficient cause of significant phenomena and events. For those members who are well versed in their society's mythopoetic system, the core myths and

their various symbolic extrusions are often understood to be all of a piece. They form a single, ramified "cognitive map" (Wallace 1966) within the context of which events—even events in the modern world of global politics and economic affairs—make sense and are easily related to both other events in the contemporary world and archetypal events that unfold in the context of mythological narratives.

Myth and the Process of Trueing

Earlier we made the distinction between the effort after meaning, typical of traditional cycles of meaning, and the effort after truth. We did not mean to imply that the system of meaning that people strive to instantiate is untrue in any fundamental way; far from it. In fact, the creative imagination represented in a living mythopoetic system operates to "true up" the collective consciousness of a people (so much is implied in Corbin's notion of the *imaginatio*, mentioned above). That is, mythopoetic imagery keeps the interpretation of experience closer to the actual nature of reality than rationality operating alone is able to do. We all know how easy it is to rationalize something that is untrue. Whereas the rational faculties can easily lead us astray from the essential nature of things, genuine myth rarely does. What we want to do now is develop a better understanding of how this veridicality function of myth works.

According to the *New Oxford Dictionary*, the word *true* denotes consistency with facts, agreement with reality, what really is, or a match between the description and the way things are. In other words, the sense of the root is "telling the truth" in both the sense that what one says is consistent with reality and the sense that it is consistent with reality as one knows it to be without deceit (that is, both a subjective and an objective connotation of genuineness). The root also refers to agreement of an act or statement with some standard, rule, or pattern. The connotation is that the statement is "as it should be," or correct. Used as a verb, instead of as a noun or an adjective, the word *true*, like so many of our more familiar words, suggests the domain of physical and mechanical activity. In this case, the term implies architectural activity. To "true a wall" means to make the wall accurate in measurement relative to a plan, a plumb line, or a level—the sense being of an activity that makes something precise. One may "true" something by adjusting or shaping it into accurate conformation with a pattern or plan. To "prove something true" is to verify it in relation to something else. And a tool to true something with was once called a "truer."

Myth operates as a truer of cognitive operations, particularly developmental operations, in very much the sense suggested by Campbell. From now on we want to use the terms *trueing* and *truer* in this very special sense, that is, *trueing refers specifically to the inherent, epistemic faculty of the brain to produce a cognized world in a dynamic and veridical way in conformation to reality.*

The role of trueing in adaptation is obvious. During the many generations that our brain has been evolving, failure to model the world accurately resulted in a quick death and a continuous selection against nonveridical distortions of cognized reality. In the process of coming to know the world, the importance of intuition and imagination are at least as important as reason in forming an accurate cognized picture of reality. In the Western philosophical tradition this idea can be traced back at least to Aristotle, who recognized that the faculty of imagination plays an important function in helping individuals to determine the nature of any given object that may be affecting the senses (Leahey 1997, 65). We believe that the role that the imagination plays in helping to form an accurate understanding of reality is also evidenced by the fact that intuition and imagination are likely phylogenetically prior to the linguistically organized conceptual faculties of the brain (see Laughlin and d'Aquili 1974; Laughlin 1997). They are certainly developmentally prior to a number of abstract conceptual faculties. Lateral, metaphorical associations, so fundamental to the structure of mythology, are produced in very young children. Babies are born operating on perceptual objects in their environment and learning by forming cognitive associations upon those images (see Laughlin 1991). This is not to say, however, that the imaginal structures of the brain do not continue to develop. Indeed they do, and that means that imagination in an adult may operate as complexly as the rational faculty does. In fact, it is precisely because of the potential complexities of adult imagination that the mythic systems of many cultures are able to display such intricacy and sophistication.

Trueing and Neurognosis. The human brain does not begin life, as was once believed by psychologists such as William James, as either a "booming, buzzing chaos" or a tabula rasa. On the contrary, the neurocognitive structures that develop through childhood to become the adult brain have their beginning in rudimentary, genetically programmed organizations of neurons and support cells. From the perspective of cultural neurophenomenology, we call these nascent neural structures *neurognostic models* or simply *neurognosis* (see Laughlin, McManus, and d'Aquili 1990, 57–59). It is neurognosis that initially mediates the highly organized world of experience of the pre- and perinatal child (Laughlin 1991). Neurognosis also mediates the "species typical" cognitions that Adolph Bastian called "elementary ideas"[11] and Carl Jung termed "archetypes."[12]

It is upon neurognostic imagery and intuited associations that mythology is grounded. Although myth frequently takes the form of a narrative, we hold that the essential structure of myth is nonlinguistic—it is neurocognitive, a structure of consciousness. As Levi-Strauss would say, myths tell a story; but whereas language is the most common medium for telling stories, myth may be expressed via other mythopoeia as well (drama, pil-

grimage, art, and games). True myth, as Levi-Strauss (1964; 1971) repeatedly emphasized, exists within the brains of people, while expressions of myth are particular transformations on the true myth, just as the true symphony is in the mind of the composer or conductor and the performance is but one iteration of the form.

Now, the neurognostic makeup of each person will vary, and so too will the course of development of the individual over his or her lifetime. Likewise, the expression and course of development of neurognosis will vary socially according to the history and environment of the group's culture. However, it is the underlying neurognostic origin of the imagery, structure, and thematic motifs that is definitive of myth and that we recognize to be cross-culturally similar, even when patterned by culturally distinct elements and materials. For instance, the changeling in myth may become a tiger, hyena, wolf, bat, or killer whale, depending upon the local fauna and the values of a people, but the form of the changeling remains the same: a human being changes mysteriously into an animal, usually a carnivore. Some of these universal qualities of myth have been analyzed and described in the works of anthropologists and mythologists such as Clyde Kluckholn (1959), Levi-Strauss (1978), Jung (1964), and Campbell (1959) —structural elements such as the mytheme, binary opposition, metaphor, and metonymy; archetypal images like the Serpent, the Tree of Life, Trickster, and the Great Mother; and narrative motifs that include the hero's quest and the "blackening" (see Thompson 1955 for an index of recurrent motifs).

In this way mythical stories can be understood as the expression of both the fundamental neurognostic structure of the human mind-brain and the content appropriate to the varying environmental and cultural exigencies characteristic of a particular society. The neurognostic structure of myth comprises what we might call the *eidetic cosmology*[13] upon which virtually all traditional cosmologies are grounded and of which all are transformations. We argue that it is the neurognostic grounding of this eidetic cosmology that assures the trueing of knowledge. In common parlance, we are "wired" to know reality from a very human, species-typical point of view (d'Aquili and Newberg 1999). But the entire "wired" complement of neurognostic models is never activated in a single individual. Rather, the field of neurognostic models, and the eidetic cosmology they mediate, provide the species with an organ of what Stephen J. Gould (1991) has called "exaptation"—the process by which physiological structures either (1) proved adaptive in earlier generations in one way and in later generations prove adaptive in novel ways or (2) were not particularly adaptive in earlier generations but proved to be adaptive to new situations in later generations. The brain is our organ of exaptation par excellence. With its initial complement of neurognostic models, the developing brain is able to mature in such a way that it resolves the tension between the need to conserve

its own integrity and the need to organize itself in relation to the sociocultural and physical environment in which it grows (see Piaget 1977; 1985). During development there is a great deal of selectivity among the repertoire of neurognostic models, only some of which will mature in the course of any given lifetime (Edelman 1987; 1989; Changeux 1985).

The eidetic cosmology upon which mythology is grounded is mediated by an organization of neurocognitive cells that represents in its formations both the invariant structures of reality and the body's own internal nature as part of that reality. In this way the eidetic cosmology can be understood as being mediated by living cells that organize themselves during neurogenesis so as to reiterate with each generation an ancient system of knowing that has proved to be exaptationally optimal over countless generations. And one of the mechanisms by which this system becomes activated is its expression in the society's corpus of myth. Returning to the cycle-of-meaning model, we can see that there is an embedded neurognostic cycle of meaning that ensures the trueing of the greater system of knowledge for mythically informed cultures (see figure 2).

The new model resembles the previous formulation, except that it is concerned with the eidetic cosmology implicated in all of the details of a society's mythopoetic system. The eidetic cosmology is *expressed* within the society's distinct style, embedded as it were like the figure in one of

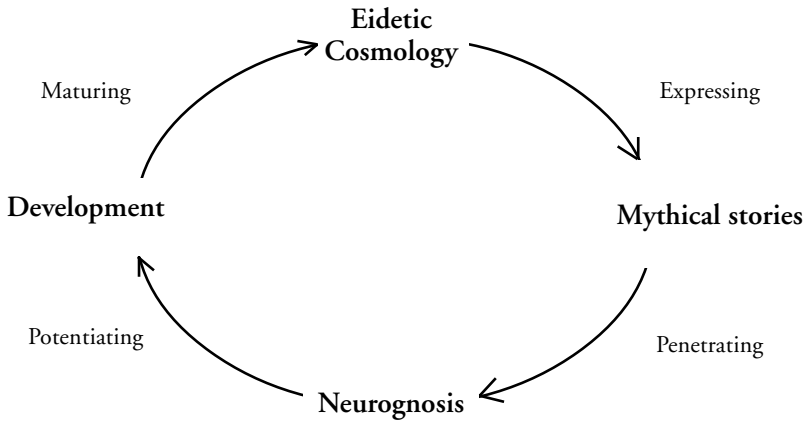

Figure 2. The Neurognostic Cycle of Meaning and Maturation. The eidetic cosmology is embedded within and plays a role in organizing a particular culture's cosmic worldview. The eidetic cosmology is expressed in mythical stories that penetrate to the neurognostic structures of the young brain. Neurognosis is potentiated for development, and through the course of a lifetime the constellation of neurognostic structures appropriate to the culture and environment matures.

those modern stereographic pictures that you have to look at in just the right way in order to resolve the hidden image. The eidetic structure *penetrates* along with the rest of the narrative into the depths of the brain where it is "recognized" by the target constellation of neurognostic structures. Thus neurognosis becomes *potentiated* for development (*à la* Campbell's "innate releasing mechanisms") in just the right configuration to true knowledge to reality and at the same time to give knowledge the distinctly cultural flavor that is characteristic of the society's "local knowledge" (to use Clifford Geertz's apt 1983 phrase) as it *matures*. The neurognosis in each individual that recognizes the eidetic structure of the cosmology implicit within myth may also be part of the neural network that is mediating experience, so that the eidetic cosmology is not only reiterated in each developing brain; the individual may experience the "archetypal" elements and relations directly.[14] As is the case with the culture-level cycle of meaning, the experiences relative to the eidetic cosmology act to confirm the "truth" of the cosmology and bring it alive.

One of the most common reactions people have to the intuition of truth about reality is to feel as if they knew it already. In a very real sense they do know the truth before they hear it. When the embedded universal structures of myth penetrate to neurognostic networks that are ready for potentiating, the experience may be one of recognition—literally of "re-cognizing" or "re-calling" what the species has known throughout the ages within its collective unconscious. For this reason, a society's mythology may be *polydevelopmental*; that is, the mythology may be so organized that it will effectively potentiate neurocognitive structures at various stages of maturation. Once the constellation of neurognostic structures is on the path of maturation, the mythopoetic system may re-potentiate the developing structures at later junctures—may participate in "initiating" the next stage of development. Anthropologists have reported a number of societies that have mythopoetic systems that are explicitly designed in multiple levels of narrative, each subsequent and more complex level given to the initiate when he or she is developmentally ready to receive it.[15] Of course this has been the strategy of many of the Western mystery schools in their programs of initiation and spiritual development.

Trueing, Intuition, and Action in the World. Knowledge is trued in conformation with the eidetic cosmology. Trueing usually occurs through one or both of two modes: through *intuition* and through *action in the world.* Intuitive trueing brings knowledge into conformity with the totality of being and universal processes, while action in the world tends to true knowledge about the locality. We are born knowing in both senses, and mythology often will reflect both of these modes (Laughlin 1997). When we know the cosmology via intuition, the knowledge tends to be *unitary* in its characteristics—the emphasis is on the systematic properties of the world.

But when we know by virtue of action in the world, the knowledge tends to be *avulsive* in its characteristics—the emphasis is on making distinctions among things and responses to things.[16]

The word *intuition* is a fairly vague term that refers to a range of processes of knowing. The root of the English word derives from the Latin *intuitus*, meaning roughly "the act of achieving knowledge from direct perception or contemplation." Cognitive psychologists Daniel Kahneman and Amos Tversky (1982) suggest that intuition refers to at least three types of phenomena: (1) judgments made about things that are consonant with a person's worldview, (2) ignorance of the rules and procedures used to reach judgments about things, and (3) lack of analytical and computational methods used to reach judgments about things.

Intuition typically labels a type of experience in which the answer to a question, the solution to a problem, guidance in following some goal, or a creative impulse resulting in the emergence of some image, idea, or pattern springs into consciousness whole-cloth, as it were—seemingly out of nowhere. Adelbert Ames, the remarkable perceptual physiologist and philosopher, is said to have

> had the habit of putting a problem to himself in the evening just before he went to bed. Then he "forgot" it. The problem never seemed to disturb his sleep. But he often "found" the next morning on awakening that he had made progress on the problem. And as soon as he got to his office he would pick up his pencil and pad of paper and begin to write. He always said he didn't know just "what would come out." (Cantril 1960, viii)

We have all had some experience of "seeing" through to the solution to some problem in this way. The "seeing" is apprehending through sudden awareness an activity that has always been operating and there to "see." This sort of knowing is fundamental to the functioning of awareness and occurs in all of us all the time. It is the kind of knowing that apprehension of myth (at whatever level of cognitive maturation) requires. There is a general appeal about the wisdom of myth that invites instantiation in the moment. The event taking place before us reminds us of the general pattern of relations encountered metaphorically in myth.

Knowing through action in the world is much more locality-specific. This is coming to know in the classic Piagetian sense in which the internal neurognostic models developing in our nervous system interact with the aspects of the local environment through the activity of the organism and sensory feedback about the efficacy of that activity (Piaget 1977; 1985). Natural organic systems actually feed forward into the world. Activity operates as a reality check on the veridicality of the models that mediate the activity (Laughlin and d'Aquili 1974, 84–86). Models alternately assimilate operations in the world into themselves and accommodate themselves to feedback from the world. This is how the individual brain develops

a cognized reality that is so rich with local detail, nuance, and proficiency. We grow into our local space, however small or large that space may be, and develop not only a repertoire of adaptive knowledge about that space but also, to some extent, an identity conditioned by the physical and social particularities of that space.

Trueing and Culture. Cultures privilege knowledge in different ways. Some cultures emphasize knowing in the eidetic cosmological mode, while others will emphasize knowing in the local, empirical sense. And many societies are characterized by systems of knowledge that privilege both modes of knowing. As Pitirim Sorokin (1957; 1962) demonstrated, *sensate cultures* are those that in terms of their knowledge systems are way out on the adaptational pole and privilege local ways of knowing over knowing in the more eidetic cosmological mode. Sensate culture produces populations that are off balance in their understanding of the world. Because of this imbalance, sensate cultures over the course of generations tend to compensate by swinging back toward a view in which knowledge derived from the local mode becomes integrated with knowledge arising from development of the eidetic mode (Sorokin called these systems *idealistic cultures*). This compensatory swing back to a more idealistic balance seems to be happening in Western culture at the present time with an increasing tolerance for mysticism. The problem, of course, is that cultures never stand still, and the balance struck in one generation between local and eidetic ways of knowing may be lost to subsequent generations in the continued swing of the culture toward the opposite pole of *ideational culture* in which eidetic, more "mystical" ways of knowing are privileged. It is in the balanced idealistic and more mystical ideational cultures that a corpus of mythological tradition forms a living core of knowledge.

From the point of view of people in an ideational culture, what we might consider mystical knowledge or experience is not mystical at all. It is simply "the way things are." After all, the word *occult* in English just means "hidden from view" or "hard to see." When we finally experience and comprehend the mysteries, they are no longer hidden and hence no longer occult. The human brain is neurognostically prepared to apprehend the mysteries, but the extent to which our culture has accustomed us not to do so is perhaps the extent to which we must apply effort and exotic techniques to produce mystical experiences. One of the characteristics of a sensate culture is that it does not exhibit a living mythology, while a society way out on the ideational pole relates everything of importance back to the culture's mythological core knowledge. Members of an ideational culture tend to be acculturated into the eidetic cosmology by way of the sacred stories of the group and try to live their lives in accord with the hermeneutic frame provided by their culture's corpus of myths.

As we say, the mind-brain is born knowing the world in both the unitizing mode of eidetic cosmology and in the avulsive mode of local adaptation. During its maturation, the mind-brain strives to establish a balance within the tension produced by these two ways of knowing. But the mind-brain is a living system of cells, and if the press of environmental and social conditions results in an overemphasis upon localized adaptational development—a condition that seems endemic to sensate cultures—the inherent processes of metabolic and organismic integration tend to reassert their activities wherever possible. Such compensatory activities may be experienced by the individual as mystical dreams, visions, spirit or entity channeling, and other phenomena—perhaps, as Jung taught, a calling to greater attention to the inner workings of the psyche. In the absence of a corpus of sacred stories, these experiences may produce confusion and uncertainty for the individual having them. A society characterized by a sensate culture that has lost touch with its mythological tradition is awkwardly positioned to guide its people to a way of life in keeping with the more unitary aspects of reality.

Myth, Trueing, and the Physics of the Vacuum

We have seen how myth operates to true individual conceptual systems and the experience of individuals to the world in both the unitary (intuitive grasp of the systems properties upon which the universe operates) and avulsive (discriminative adaptation to things and events in the local environment) modes. It does so through its sacred stories and through enactment in ritual, both of which are directed at revealing the often hidden but nonetheless real nature of the cosmology in which humans are embedded. And, just as with the Navajo notion of Holy Wind, most traditional cosmologies account for the energetic and causative aspects of the cosmos.

In our own cultural history, science has gone a long way in its attempt to supplant the trueing function of the more traditional myth-ritual complex. For a couple of centuries or more, however, the picture that science painted of the universe was mechanical and related primarily to experiences of persons carrying out esoteric experimentation. With the advent of quantum mechanics, physics has begun to portray the universe in ways that look more and more like that of many traditional cosmologies. Scientists are coming to understand the universe as a vast sea of energy in which everything in the universe is bathing. For years the dominant picture we were given of this sea of energy was limited by the so-called Copenhagen account. The orthodox story out of early quantum theory threw out the idea of a hidden "ether" and claimed that, by the time one considered the world at the level of objects, constituent quantum events had been statistically eliminated from consideration by being reduced to classical phenomena (see Herbert 1985, 158–68, for a more complete description). The

Copenhagen account has been recognized as being phenomenologically problematic. It presumes a schism between experience and reality. It establishes a fundamental dualism between consciousness, which presumably operates in a mechanical universe, and reality, which is organized as a quantum universe. And as we have seen, the functioning of the traditional myth-ritual complex ensures that much if not all of the hidden world is revealed in such a way that daily events and cosmic events are all part and parcel of the same reality.

There are, of course, other interpretations of quantum mechanics now available in the literature.[17] Some of these, like David Bohm's (1980) notion of the universe as being simultaneously an "implicate order" and an "explicate order" and David Finkelstein's (1991) "causal networks," allow for the introduction of hidden dimensions of the world that are involved in the events we face in everyday life. Moreover, some of these newer accounts make it possible for us to better model the "acausal" dimensions of quantum interactions, specifically with regard to relations between consciousness and reality. One of the most promising areas of research at the moment is the current work being done on the physics of the vacuum (Boyer 1985; Greiner and Hamilton 1980; Saunders and Brown 1991).

An interesting take on the physics of the vacuum is that of Harold Puthoff (1990). As we understand Puthoff's picture of reality, the entire universe is a monad of energy of various densities. There exists a structure of underlying "zero-point" energy that permeates the universe—a quantum sea, as it were.

> In the modern view empty space or vacuum is never truly particle or field free, but rather is the seat of continuous virtual particle-pair creation and annihilation processes, as well as so-called zero-point fluctuations of such fields as the electromagnetic field. Originally thought to be of significance only for such esoteric concerns as small corrections in atomic emission processes . . . , it is now understood that vacuum fluctuation effects play a central role in large-scale phenomena of interest to technologists as well. . . . (Puthoff 1993, 14)

In a series of studies, Puthoff and his associates (Puthoff 1987; 1990; Cole and Puthoff 1993; Haisch, Rueda and Puthoff 1994a, b) have shown that many of the known results in quantum physics can be traced to underlying zero-point energy causation. This sea of energy literally permeates everything, even pervading a complete vacuum. Indeed, the vast majority of the energy in the universe is to be found as random fluctuations within this quantum sea. Now, this account looks very much like the Navajo notion of Holy Wind, which as we have seen is the essential energy foundation and hidden inner nature of all things, be they local or cosmic.

The Quantum Brain. There has been a flurry of interest in the direct interaction between the brain and the quantum sea (Beck and Eccles 1992; Deutsch 1985; Lockwood 1989; Penrose 1989; Stapp 1993; Laughlin 1996). This attention indicates an increasing concern for the question

of how the neurocognitive processes that mediate consciousness may also influence and be influenced by events happening throughout the quantum universe. Our suggestion is that neurognosis operates not only at the level of organizing neural networks but also at the quantum level by penetrating to and being penetrated by events in the quantum sea. In a sense, neural networks may be organized to operate as transducers into consciousness of patterned quantum-level activity and, reciprocally, from consciousness into quantum-level activity. Transformations of neural activity may produce transformations in the structure of the sea, and visa versa. Thus, local causation based upon biochemical interaction among neural cells may be transposed into nonlocal causation based upon biophysical activity between cells and the quantum sea. This would account for the very robust data we now have about distance causation events like remote viewing (Puthoff and Targ 1976; Puthoff, Targ, and May 1981; Targ and Puthoff 1977), consciousness-machine interactions (Jahn and Dunne 1987), and other psi phenomena (see Radin 1997)—phenomena not unlike the sort, like co-dreaming and telepathy, that are reported of traditional peoples by some ethnographers.

The suggestion that the brain and the quantum sea may interact directly still remains a tantalizing hypothesis at this time. To our knowledge, no one has unequivocally demonstrated quantum effects of cellular activity, other than the significant findings in the field of biophysics pertaining to bioluminescence (see Popp 1998; Gu and Popp 1993; Ho, Popp, and Warnke 1994). However, there are several promising avenues of research into possible mechanisms—avenues that are sufficiently interesting to have led a number of serious scholars to consider processes that mediate brain-quantum interaction (see Laughlin 1996 for a review). Although there has not yet been a definitive demonstration of direct neural-quantum sea interaction, the evidence is sufficiently suggestive to prompt some authorities to hypothesize that brain-quantum sea interpenetration may operate something like a "quantum computer" (Deutsch 1985; 1992; Wallace 1993a, b). That is, information and "computations" may be organized within the pattern of coherent quantum activities. These "computations" may be detectable by neural networks and used as intuitively derived information in higher-order neurocognitive processing. Although we do agree with Penrose's (1989) arguments against narrow AI-type computational models of consciousness, it does seem possible on the strength of parapsychological and ethnographic evidence that information exchange of a broader kind may be occurring between the conscious brain and the quantum sea (see Puthoff, Targ, and May 1981; Walker 1973; 1975; and Radin 1997, who also relate quantum physical and parapsychological phenomena).

Myths True the Quantum Brain. It may well turn out that the brain is trued relative to global reality in both a top-down and a bottom-up

manner. The brain may be trued from the bottom up by way of direct interaction with the quantum sea and trued from the top down by way of the eidetic cosmology inherent in mythic systems. Myth, in other words, reminds (literally "re-minds," or "re-calls" to consciousness) each member of the group of what his or her brain already "knows" at the level of its cells and its neural networks. Discrete experiences are not understood as solitary or unrelated to the totality of existence. Rather, particular events find their context within an intuition of the universe of causal energies. Important things happening to an individual are understood as a microcosm of the eidetic cosmology. People living under the influence of a traditional mythopoetic system are taught to perceive everyday objects, events, and states of affairs as instantiations of the totality. Here a culturally informed proclivity presumes the efficacy of the normally invisible causation behind apparently discrete events. Each human brain may indeed prove to be a microcosm that contains—like the proverbial mustard seed, or the more modern hologram—all the wisdom of the ages, requiring only the optimal conditions of development for each person to individuate into a sage. And some of those conditions have to do with participating within an intact, mind-brain-trueing, mythopoetic system.

Conclusion

It is unfortunate that the term *myth* has for more than a century been synonymous with *false*. We anthropologists do not use the term in this sense. Rather, we recognize that there is often a profundity to the sacred stories of a people. Summarizing, we have suggested that there often appears to be a striking correspondence between traditional systems of myth and aspects of reality. Myth is peppered with archetypal entities and interactions that operate to reveal hidden processes in reality relative to the human condition. Even with myths that are foreign to our own culture, we often sense an aura of wisdom imbedded in the sacred stories. The eidetic cosmology that is embedded in mythic systems comes alive in the imagery of the tales, and thus myths in a sense "sustain the true" in relation to reality. That is, mythopoetic imagery keeps the interpretation of experience closer to the actual nature of reality than rationality operating alone is able to do. Myths operate at the social level much as Jungian "active imagination" does in individual therapy. Myth penetrates to the archetypal level of the mind-brain, which is in direct interaction with the reality of the being and its environment.

One of the hallmarks of the trueing function of myths is that explanations of real-life events offered by traditional peoples are frequently couched in terms of mythical motifs. Moreover, mythical themes—like the Navajo Holy Wind—often represent facets of the quantum universe as modern science is coming to understand it. Myths offer clues as to the relationship

between consciousness, symbolism, and reality. While it is entirely possible to imagine a world or aspects of the world that do not exist, the creative imagination of traditional mythology is concerned with real questions and real concerns, often having to do with the hidden causation behind phenomena.

As Paul Ricoeur (1959, 60–76) likes to say, "myth invites thought." Those of us who have spent years studying traditional mythologies know quite intimately the magnetism of sacred stories. Myths impel us to engage with the mysteries of the hidden, to attempt to embrace a truly mythological comprehension of the transcendental world forever beyond our senses. But for a long time, our Western worldview has exacerbated the struggle to come to grips with mythology. Reared as most of us have been in an extremely sensate culture with its mechanical and materialist view of the universe, we were ill prepared to comprehend the universe as a cosmos in which the entirety of reality is implicated in our every action—indeed, in our very existence. But with the advent of modern quantum physics, which effectively reinstates the existence of something like the "ether"—for all intents and purposes the same as the Navajo's Holy Wind, and analogous concepts in many other traditional cultures—we are in a better position to comprehend the eidetic cosmology implicit in traditional mythologies.

Isn't it curious that the more we come to understand reality through the efforts of our high-tech sciences, the more reality looks like the world portrayed metaphorically in mythology? This development is not fortuitous. Anthropologists know that there is something fundamentally empirical about people everywhere: they all wish to understand to some extent the world of their lived experience. Generation upon generation of people have thought and imagined about the hidden forces behind experiences; and, as it is essentially the same human mind-brain doing the thinking and imagining, it is not really surprising that peoples would come up with essentially the same answers, the same essential intuitions about the hidden nature of reality. We are all born into the same world with its "matters of ultimate concern," and there is an apparent pattern to the ways we solve those concerns. As we have taken some pains to argue, those solutions are reality based. Durkheim was ultimately correct when he insisted that all religions are grounded in reality. They have to be. They are the product of a human mind-brain that evolved over millions of years in reality, that is embedded in reality, that experiences reality, and that imagines the hidden forces that render experiences of reality sensible.

NOTES

The authors wish to thank Paul Devereux and John Cove for their inspiration.

1. For further information pertaining to cultural neurophenomenology, see Laughlin and d'Aquili 1974; Laughlin, McManus, and d'Aquili 1990. Laughlin has constructed a self-guided tutorial on his Web site: http://www.neurognosis.com.

2. Although the theory of the origins and evolution of the universe may have elements of a traditional cosmology (systemic properties, cosmogony, even eschatology), people—including physicists—do not live their daily lives under the influence of conceptions of black holes, quarks, and the Big Bang.

3. Lucien Levy-Bruhl ([1923] 1966) called this intimate engagement with a people's mythopoetic system "mystical participation."

4. According to systems theory, a negative feedback loop is an information channel that tends to reinforce the previous state of the system—in other words, it is conservative feedback. A positive feedback loop is an information channel that tends to cause the system to change or readjust.

5. Of course, as Edward Casey points out, imagination as an intentional mental act should not be understood as merely restricted to hallucinatory or illusory modes of "fantasy" (1977, 10). According to Casey, imagination as an autonomous mental act tied to the capacity of the mind to independently generate both sensory and nonsensory presentations, while not dependent on our perceptual experience, does often serve a complementary role in both perceptual and mnemonic mental processes. For instance, imaginative "presentations may in fact serve to *supplement* perceptual presentations. Instead of emptily co-intending the unseen sides of a given visual object, I can actively imagine what these sides look like by summoning up a series of imaginative presentations" (1977, 139). Moreover, Casey also makes clear why it is important to distinguish between imagination and creative imagination. As he argues, "it is simply not the case that all authentic imagining is creative. Much *bona fide* imagining is banal and repetitive, manifesting an impoverished and threadbare character . . . [likewise] it is just as false to claim that to be genuinely creative one must imagine. Examples abound of cases of creativity into which imagination does not enter in any crucial way" (1977, 186).

6. In earlier writings Laughlin (1992) has attributed the distinction between "effort after meaning" and "effort after truth" to C. K. Ogden and I. A. Richards (1923), but actually the notion of "effort after meaning" originated with F. C. Bartlett (1932, 44). The confusion arose in a conversation Laughlin had with Earl Count in 1990 while interviewing him for the *Neuroanthropology Network Newsletter* that Laughlin was then editing and publishing. The distinction between "effort after meaning" and "effort after truth" is apparently Count's, or at least developed during the conversation.

7. Victor Turner (1967) used the metaphor of a person's being enmeshed in a "forest of symbols."

8. Robin Fox (1994) surveys some nine functions of myth and makes the valuable point that any and all of these functions may be considered either psychological or social, depending upon emphasis. Stith Thompson (1955) lists many recurrent themes in myths and other types of folk tales around the world.

9. Being exposed to a society's mythology is much like engaging in a socially guided exercise in "active imagination," a method used in Jungian psychology to trigger and explore processes in the unconscious by unfettering the imagination (1968b, 274–80; 1970, 495). Jung was reluctant to discuss the method in public; he considered it appropriate for use only in the case of a person sufficiently mature to handle the eruptions of material from the unconscious (Jung 1968a, 49). The method is essentially a kind of meditation in which the dreamlike fantasy material is allowed to flow through consciousness while the meditator is alert and undisturbed by the imagery and emotions passing through. This was not just Jung's euphemism for Freud's "free association," for, done properly, active imagination sidesteps the ego and allows the consciousness a much fuller experience of previously unconscious materials. Entering an appropriately receptive and alert state of mind, the meditator concentrates upon particular dream or fantasy imagery until it comes alive within consciousness, as it were, and then the meditator-as-watcher just notes what unfolds. But whereas the Jungian method is undertaken by the client for him- or herself, with perhaps the aid of the analyst as guide, myth provides a form of social guidance into an

archetypally pregnant "field of tropes" appropriate to the individual's particular cultural situation. It should be noted that Jung often used mythology to augment and elaborate on active imagination, a technique he called "archetypal amplification" (Jung 1968b, 289; Salmon 1997, 65).

10. *Epiphanic* suggests that the hidden aspects of reality are revealed or, to use Durkheim's words, "reality imagined."

11. Adolf Bastian (1826–1905) was a German ethnologist who subscribed to the "psychic unity of mankind" theory, which held that a finite set of ideas, common to all of humanity, is at the root of all cultures (see Bastian 1860; 1895).

12. It is well to remember that, although he gave much attention to relatively dramatic archetypal imagery in his writings, Jung actually believed that there were as many archetypes as there are specieswide, typical perceptions ([1936–37] 1968, 48). For further discussion of neurognosis and archetypes, see Laughlin 1996.

13. We are using the term *eidetic* in the sense of Plato's *eidos*, meaning essential "form," "idea," or "type." Husserl used the term (as in "eidetic reduction") to denote the essential structure of any mental act (Spiegelberg 1982, 119). Unlike Plato, we do not suggest that the eidetic cosmology exists apart from the mediation of the human nervous system.

14. There is very likely penetration to unconscious structures as well, and in that case these "archetypal" elements and relations will not be experienced, at least not at the time of initial penetration. Unconscious structures may potentiate and develop but remain dormant from the point of view of the conscious ego of the developing person.

15. See the literature on the Telefolmin of Papua New Guinea (Jorgensen 1980), the Baktaman of New Guinea (Barth 1975), the Tamang shamans of Nepal (Peters 1982), the Tukano of Amazonia (Reichel-Dolmatoff 1971), the Dogon of Africa (Griaule 1965), and Tibetan lamas (Beyer 1973; Given 1986) for examples of societies with polypotentiating (that is, potentiating multiple neural systems), multiple-level mythopoetic systems.

16. It seems that the great German philosopher Wilhelm Dilthey was struggling to express a similar point in his insightful work on the poetic imagination. As Rudolf Makkreel explains, Dilthey argued that the poetic imagination "transcends reality precisely for the sake of uncovering the typical in reality" (1992, 108) while asserting that this function of the poetic imagination only fully emerges when our contemplation of particularities of reality in terms of "the mutual adaptation of self and environment is suspended" (1992, 105).

17. Nick Herbert summarizes some of these in his book *Quantum Reality* (1985).

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