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Dreaming and Reality: A Neuroanthropological Account

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In what sense is dreaming real to people of different cultures? How do they come to conclude that dreaming is real, and how do they use dreams to expand their knowledge and control of real events? The reader is introduced to dream anthropology and shown that there are universal patterns to how dreams are experienced, expressed, and used by societies. The distinction between monophasic and polyphasic cultures is described, the latter being the majority of societies that consider dreaming as being in some sense real. Neuroscience supports the notion that there is a natural realism behind the experience of reality in any and all alternative states of consciousness (ASC), and that whatever the ASC, there is a transcendental set of obduracies and affordances that condition the modeling, expression, and social interpretation of experiences, most especially those encountered in archetypal (or special) dreams.

Keywords: *dreaming, reality, ethnoepistemology, brain, neuroanthropology, culture*

The world of dreams is our real world whilst we are sleeping, because our attention then lapses from the sensible world. Conversely when we wake, the attention usually lapses from the dream-world and that becomes unreal. But if a dream haunts us and compels our attention during the day, it is very apt to remain figuring in our consciousness as a sort of sub-universe alongside of the waking world. Most people have probably had dreams which it is hard to imagine not to have been glimpses into an actually existing region of being...

—William James, *The Principles of Psychology*
(1890/2007, p. 294)

All human beings on the planet sleep, and while asleep they dream. The people in most of the 4,000-plus cultures on the planet pay close attention to their dreams and consider them to be in some sense real. In what sense is dreaming real to peoples? How do they come to conclude that dreaming is real, and how do they use dreams to expand their knowledge about, and their control over, real events? In this article I will explore the reality of dreaming and present a neuroanthropological account explaining why most peoples treat dreaming as veridical.¹ I will begin by making a crucial distinction between two types of culture, one of which predominates among the world's traditional cultures. Also, it will be necessary to explore the phenomenological elements that contribute to

experiencing dreaming as real before offering examples of such dream cultures and how they make use of the information obtained in dreams. I will conclude by suggesting a neuroanthropological explanation of why most peoples in the world consider dreaming as a domain of reality.

Monophasic and Polyphasic Cultures

Simply put, there are two types of cultures on the planet—monophasic and polyphasic (Laughlin, 2011, pp. 62-66; Laughlin, McManus & d'Aquili, 1990, p. 293). In modern materialistic, technocratic societies, children are typically taught to disattend to their dreams and to focus on waking interactions with the external physical and social world (see Mageo, 2003b; Wax, 2004). Children are taught from infancy that dreams are not real—that they are a fiction (“just a dream”)—and that they just happen for no apparent reason and can be ignored. Elementary schools typically do not address one's dream life (see King, Welt, & Bulkeley, 2011), and information obtained in dreams, if any, bears little or no relevance to the waking world. Dreams, therefore, tend not to inform culture all that much, especially with respect to people's spiritual life.² These societies manifest what is called *monophasic cultures* (Laughlin, McManus, & d'Aquili, 1990, p. 293; Laughlin & Throop, 2001; McManus, Laughlin, & Shearer, 1993; LaHood, 2007; Lumpkin, 2001; Saniotis, 2010; Rodd, 2006) which tend to skew the development of consciousness away from

alternative states of consciousness (ASC) like dreaming, trance, drug trips, meditative states, visions, and other ritually-driven spiritual states, and toward what is thought of as “normal” waking perceptual and cognitive processes oriented outward to the external world.

A monophasic orientation towards dreaming leaves its mark on sleep and dream research, as well as on the accounts of Western anthropologists for whom dreams usually have to be *demythologized* in some way in order for them to be meaningful—that is, the dream must make sense to rational thought in the waking state to make any sense at all (Tedlock, 1992b, p. 4; Bourguignon, 2003, p. 137). This Western bias in part explains: (1) why Freudian dream analysis has been so attractive to so many 20th century ethnographers, because one need not pay serious attention to the manifest content of dreams, or to the pragmatic, utilitarian repercussion of dreams, and (2) why a Jungian approach has generally been eschewed, for it requires some phenomenological sophistication on the part of the fieldworker to understand Jungian methods (see Laughlin, 2011; Laughlin & Tiberia, 2012).

Dreaming among people raised in the world’s modern industrial societies stands in sharp contrast to that of people living in most human societies on the planet—indeed, it stands in contrast to both Western society’s pre-industrial cultural history and that of other modern, industrial societies such as Japan, China, and Brazil, during which dreaming and dream interpretation were highly valued.³ Aside from these modern industrial societies, roughly 90% of traditional societies seek out and value experiences had in ASCs, and especially in dreams (Bourguignon, 1973; Bourguignon & Evascu, 1977). These traditional societies are called *polyphasic cultures*, meaning that they value experiences had in the dream-life and in other ASCs (see Locke & Kelly, 1985). There appears to be a kind of watershed between the two extremes, in which disattention to ASCs altogether will produce an extremely monophasic standpoint from which identity and culture are associated, most likely caused by the enculturation prescribed by an extremely materialistic political economy.

There are, of course, individuals—indeed there are even groups and professions—within Western society that are “into their dreams” to some extent, though usually in relation to one kind of psychotherapy or another (see, e.g., Edgar 1995). But polyphasic cultures are quite different from the ones to which

most Westerners belong. These are societies in which dream experiences are conceived by people as different domains of reality, not as *unreality*. Indeed, most people on the planet, even those in monophasic cultures, rarely if ever make a distinction between experienced reality and extramental reality in their everyday lives. Their sense of identity incorporates memories of experiences had in dreams and other ASCs, as well as those had in waking life. People may in fact have no word in their native tongue that glosses “dream” in our English sense (Basso, 1992; Merrill, 1992, p. 199). What Westerners call a “dream” may be considered by others to be the polyphasic ego (soul, spirit, shadow, etc.) of a person experiencing another domain of reality during sleep.⁴ Dream experiences, just as waking experiences, inform the society’s general system of knowledge about the self and the world, as well as the development of a person’s identity (see Ridington, Robin, & Ridington, 1970). One can thus understand why ethnographer Jean-Guy Goulet’s (1998) hosts among the Guajiro (a South American people) would not allow him to live with them unless he “knew how to dream” (p. 22). One may also understand why the anthropology of dreaming has for generations focused upon polyphasic cultures, perhaps because they are so at-odds with Western everyday, materialist expectations, and because the experiences they relate to from their alternative states appears so exotic to the Western perspective.

Phenomenology of Dreaming

Before examining the nature and experience of reality, and constructing an explanation of why peoples across the planet consider dreaming real, it is helpful to ground this discussion in the phenomenology of dream reality—that is, what is it about the experience of dreaming that people in so many societies find actual, compelling, informative, and useful. This can begin by delimiting aspects of dreaming that are universal to people everywhere.

Indiscernibility

If one brackets (i.e., sets aside one’s belief in) the reality of waking life and the unreality of dream life, the two life-worlds are “indiscernible” (Globus, 1987; see also Kirtsoglou, 2010, p. 323). Both dreaming and waking worlds are grounded in pure experience and solely on that basis one cannot tell them apart—they are equally domains of lived experience (i.e., they are *life-worlds*), and must be studied as such.⁵ This phenomenological finding makes a lot of sense neurophysiologically, for

both dream and waking experience are mediated by the same sensorium—that is, most of the brain systems that mediate waking experiences also mediate dream experiences (Pagel, 2008, p. 63).⁶ This finding also makes ethnographic sense because so many of the peoples ethnographers have lived amongst and studied consider dreaming to be just as real as waking.⁷

Is it possible to tell dreaming and waking apart on other grounds? Yes:

The answer here is that the differences [one's] reflection notes are not fundamental but related to sensory functions, which are highly restricted in sleep and open during waking. The dream life is like the wake life, except that there is no flowing array of sensory stimulation available to modulate it. *As lived*, the dream life is an authentic life, but reflection reveals that it is a peculiar unmodulated life because of the sensory restriction. (Globus, 1987, p. 65).

While dreaming, people actually perceive “people,” “plants,” “animals,” and “clouds” as being real. They are right there before the mind's eye. In the dream one reacts and interacts with these images because they are real in that life-world (Craig, 1987). What else can be discerned about dreams relative to waking experiences? Globus (1987) suggested that there is a distinct “single-mindedness” about dreams. Dreams tend to proceed along a single train of thought, as opposed to waking life where there are many more distractions and alternative possibilities.

Apodicticity

Ethnologists often speak of a people's “beliefs” with respect to the culture's local knowledge. Under certain circumstances, this way of referring to local knowledge makes sense, for it allows the fieldworker to dodge any question of the truth-value of the hosts' *ethnoepistemology*—that is, a people's own theory of how they come to know what they claim to know (see Hongladarom, 2002). Yet this approach to local knowledge also distorts the phenomenology of knowing, for the way Western English-speakers use the word “belief” tends to imply a hedge on certainty of knowledge—as in, “well, I *believe* so,” or “that was what she *believed* anyway.” One thing that is lost in using the term “belief” to label local knowledge is the sense of *apodicticity*⁸ that may accompany an act of knowing among the people who are studied. For most peoples, there is no suggestion that dreaming is fantasy or fiction. “Rather, they take

them to be literal experiences of the dreamer's soul—as [Edward B.] Tylor first proposed—the gripping reality of a dream while it is being experienced is certainly a powerful reinforcement of the idea in the waking afterthought” (Tuzin, 1975, p. 563).

Goulet (1987) took up the distinction between belief and knowledge with regard to Dene Tha ways of knowing:

Among the Dene Tha, as among other Northern Athapaskans, knowledge that has been mediated is regarded with doubt. True knowledge is considered to be that which is derived from experience. . . . This view has profound implications for what Dene consider the proper way to teach or inform not only their children and each other, but also the inquisitive ethnographer approaching them to learn about their ways and their religion. (pp. 115-116)

In other words, the Dene Tha value knowledge from direct experience, regardless of the state of consciousness during which the knowledge is derived. Only through direct experience can one achieve that sense of the apodicticity of knowledge. In Dene terms, if I know something, I know it because I experienced it, and an ingredient of the experience is the immediate sense of apodicticity—the certainty that “this is the case,” or “this is not the case.” This is less a logical and more an existential certainty.

The Dene Tha are quite forthright about the dependence of true knowledge upon experience—namely, they choose not to share knowledge with anyone unprepared to understand it.

Dene tend to exclude those who are not perceived as knowing from those among whom they discuss experiences of dreams, visions, and power. Such discussion occurs only between those who are “in the know.” To one who “knows” and understands, Dene offer a degree of explanation according to their estimation of his or her understanding. This estimation of the ethnographer's “knowledge,” more than the investigator's own research agenda, determines the flow of information between the two, information that most often takes the form of stories, the significance of which at first simply escapes the ethnographer. (Goulet, 1987, p. 114)

As Goulet (1994) put it, “true knowledge is personal knowledge” (p. 114) and the only access to knowledge

gleaned from dreaming is by way of learning the skills of the dreamer.

Revealing the Hidden

When one brackets the belief in the unreality of dreams, one is better able to appreciate one very significant and universal pattern in the phenomenology of dreaming cross-culturally—that in dreams, entities and forces that are normally invisible to waking life may become sensible, tangible, and even palpable during dreaming (see Sumegi, 2008, p. 31). For example, Meggitt (1962) noted that among the Mae Enga of New Guinea, ghosts are invisible while one is awake, but visible in dreams. There are innumerable examples of societies in which dead ancestors, mere shades or shadows during the waking state, become significant characters and causal agents in dreams. Irving Hallowell (1960/2002), in reflecting upon the world view of the Ojibwa Indians, spoke of “other-than-human persons” encountered within dreams. He noted, “While in all cultures ‘persons’ comprise one of the major classes of objects to which the self must become oriented, this category of being is by no means limited to human beings. In Western culture, as in others, ‘supernatural’ beings are recognized as ‘persons,’ although belonging, at the same time, to the other than human category” (p. 20).

Ethnographers often find that in their hosts’ world, they do not merely “believe” in other-than-human persons, but actually know them. They know them because they encounter them and interact with them in their dream life. This factor is of primary importance to cross-cultural dream research. It is what Goulet (1998) is getting at when he wrote:

I agree with [Clifford] Geertz that we can neither live other people’s lives nor magically intrude on their consciousness, whether members of our own culture or of another. But to see the task of the ethnographer as Geertz defines it precludes some of what we can do and learn in the field, not only about others but also about ourselves in our interaction with them. Ethnographic work can—but does not need to—go hand in hand with the anthropologist’s experience of dreams and visions. These often become part of interactions with others. . . . More than merely listen to what others say about their lives, then, anthropologists pay attention to their own lives, including their inner lives. They observe and listen

to other people’s responses to their accounts of their own dreams and/or visions experienced while living among these others. To do so is to become an experiential ethnographer. (p. 254)

Predicting the Future

Dreams are a ubiquitous source of information, not only about the self, but about future events (Goulet, 1998, pp. xxvii-xxix). People everywhere want to know what is going to happen before it does happen—thus removing a major source of uncertainty, anxiety, and stress.⁹ Some wake up in the morning and tune in to the weather report so that they do not go out into foul weather unprepared. Yet everyone knows how inaccurate weather reports can be. So too may the precognition of events in a dream be questionable. Many peoples evaluate the accuracy of divinatory dreams by waiting to see if the predicted results actually happen—in other words, they use *post hoc* reasoning (Krippner, 1994).¹⁰

The Lacandon Maya take a “wait-and-see” attitude toward such dreams. Robert Bruce (1975) demonstrated this attitude by recording dreams and then seeing how the people interpret the prediction relative to what happens later on—whether or not the dream is confirmed as “predictive.” For instance:

Dream: Mateo (Sr.) of Najá dreamed of two domestic pigs, and later of *kitam* (collared peccary).

Interpretation: Foreigners are coming, and there will be two of them. . . .

Confirmation: Not confirmed . . . unless (as is often the case) it was remembered long enough to be rationalized upon arrival of the next foreigners, weeks later. (p. 45)

Or again:

Dream: [On June 7] Antonio (first son-in-law of Chan K’in of Najá) dreamed of Augusto de la Cruz, of a Tzeltal family living in El Carmen, coming to sell bread.

Interpretation: The person in question is thought to be of the deer *Onen*, so may foretell seeing a deer.

Confirmation: June 9, K’in Bol (son-in-law in service to Chan K’in of Najá) killed a deer. (p. 49)

Goulet (1998; pp. 155-159) noted that the Dene Tha consider precognition in dreams as commonplace—what they call “knowing with the mind.” “Dreaming in this manner, one knows where to go to kill a moose,

discerns if a medicine fight has ended with the destruction of the power of the enemy, or learns that deceased relatives are well and happy in the other land” (p. 156). Goulet (1998) related an interesting story about a Dene Tha woman who quite suddenly suffered insomnia for two nights; she told her sister about it and her sister sent her to a local healer.

The healer responded with the narration of a dream he had had two nights before. The dream was for a woman who was to visit him for help. In the dream the healer set his snares for beavers. Beavers came up to the snares but did not get caught. In his dream he had seen lots of clothes just scattered around; some were burnt, and others were still smoking. There was also a wolf around the area. When he woke up he wondered why he had had that dream. He told the sick woman that most people in the community looked after their things well. (p. 160)

The patient then confessed that when her son had refurbished the attic of their house, he had thrown some of her old clothes downstairs. She was told to take care of them, but she didn't. Instead, some kids gathered them up and took them outside and burned them in the yard. The healer then told the patient that she had become ill because she should have done the proper thing, and not just what she felt like doing. In Dene Tha psychology, there is a close symbolic association between clothing and the self (Goulet, 1998, p. 99).

The very idea that dreams may actually foretell future events flies in the face of modern Western mechanistic and technocratic conditioning about causation. The notion that one can “see into the future” violates the commonsense model in which event A causes event B, where A happens before B, and not vice-versa. Yet, well-controlled scientific experiments have demonstrated both precognition (or “future sight”),¹¹ and causation at a distance and backwards causation.¹² For instance, psychologist David Ryback (1988) investigated precognitive dreaming in college students. He administered a questionnaire to over 433 subjects and found that 290 (66.9%) reported some kind of paranormal dream. Although he ended up dropping many of these claims as unfounded, he did conclude that 8.8% of the population did in fact have precognitive dreams (see also Rhine, 1969).

In a series of ingenious experiments, Dean Radin (1997b; see also 2006, Ch. 10) and D. J. Bierman

(Bierman & Radin, 1997, 1999) have demonstrated a robust precognition or “presentiment” effect using physiological indicators of “precognitive information” when subjects act before they are presented with a random stimulus. Here's how the experiments work. The subject sits alone in a room in a comfortable chair and is “wired-up” to machines that measure the activity of their autonomic system, and hence their emotional state. When the subject is ready, they push a button and around seven seconds later a random image is shown on a screen. The image may be of a calming nature, or may be highly emotional (violent or erotic). A computer decides which picture to show *after* the subject pushes the button. Each subject does this a set number of times. Results showed that subjects tend to respond emotionally several seconds *before* the picture appears, and the correlation between measures of emotional reaction and highly emotional imagery is significant. Bierman and Scholte (2002) took this research even further by carrying it out on subjects while their brains were being scanned using a functional magnetic resonance imaging (fMRI) machine. Again, they showed that areas mediating appropriate emotion (calm or intense feeling) became active before the randomized image was shown.

This kind of research is by its very nature controversial among Western academics. Arguments rage over whether or not a “presentiment effect” exists or not. It would be interesting to know with absolute certainty that precognitive dreams actually happen or not in experimental situations. But in the sense in which precognitive or “presentiment” dreams in anthropology are spoken of, it is less important whether they actually foretell events, and more important that informants and the societies being researched experience presentiments as real and act upon them—an ethnographic reminder of the old W. I. Thomas theorem: “It is not important whether or not the interpretation is correct—if men define situations as real, they are real in their consequences” (Thomas & Thomas, 1928, p. 572). As demonstrated here, most polyphasic societies do believe in and experience precognitive dreaming, however empirical or skeptical they may be of any particular incidence of it.

Ethnographic information is commonly anecdotal descriptions and self-reports. Take for instance ethnographer Edith Turner's (1996) precognitive dream experiences while doing fieldwork among the Iñupiat people of northern Alaska. On October 5th she recorded

a “waking” dream she had in which she “saw a man who was having to carry a whole pile of stuff like window glass—it had something to do with my house” (p. 38). On November 26th, she had an intruder who broke into her basement by breaking a window (p. 80), and then on December 7th the trash man arrived. “I showed him the sheets of broken glass in the furnace room. He lifted them carefully and carried them out of the house to the truck. Immediately my waking dream of October 5 came back to me—a distinct picture of a man carrying a whole pile of stuff like window glass” (p. 83). For Turner, this break-in and glass removal were a “disturbance” that was presaged in dream.

Special Dreams

Most peoples distinguish between normal everyday dreaming, and the occasional special dream that has much greater significance. J. S. Lincoln (1935) in his classic book, *The Dream in Primitive Culture*, called the latter type a *culture pattern dream* (p. 22), similar to what others have referred to as special, “big,” archetypal, titanic, significant, or memorable dreams. “These dreams may be rare in the dream lives of most people, yet they surely occur to many as memorable exceptions. Some, like [C. G.] Jung and tribal shamans, seem to dream in an archetypal style characteristically. The major defining feature of these dreams, part and parcel of their uncanny-numinous quality and aesthetically rich structure, is the powerful sense of felt meaning and portent conveyed directly within the dream” (p. 129).

Benjamin Kilborne (1992) has suggested that the degree of elaboration of dream classification in a society may be proportional to the importance of dreaming in that society. Although there are no holocultural data as yet to support this assertion, it does make some sense, for that is the strong impression one has from the ethnographic literature on polyphasic peoples. In any event, Kilborne shows that modern Moroccans hold the distinction between true dreams that are divinely inspired, and false or deceitful dreams derived from other sources (p. 185). Dream categories vary with the informant, but may seem to consider dreams divisible into: (1) message dreams—divinatory dreams dreamt in holy places; (2) warning dreams—messages received from ancestors, and others, offering advice and cautions about the future, essentially divinatory dreams; (3) preoccupation dreams—dreams driven by internal positive or negative emotions; and (4) normal (“day residue”) dreams—problem solving dreams, and

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so on. Only the first category is considered true beyond question, for they derive from Allah and true dreams are associated with safety and harmony, while false dreams may derive from the *djinn* spirits who may be good or bad, and may be harmful and destructive.

Neural Models and Dreaming

Psychological anthropologists have focused most of their attention upon the psychiatric, psychodynamic, spiritual, social-sharing, and self-oriented issues of dreaming. However, because ethnologists tend to be humanists and not natural scientists, their training in the neurosciences is usually minimal, at best. As a result, modern ethnological theories of dreaming are rather thin on the ground, and very few approaches are able to integrate evolutionary psychological and neurobiological perspectives into their formulations (Whitehouse, 2001, p. 1). There are refreshing exceptions, of course. Murray L. Wax (1998, 2004) has thought about dreaming in both its neurobiological and its sociocultural contexts and has noted that modern neuroscience removes the experience of dreaming from the limited context of the intimate social relations and ethos of the dreamer and re-frames dreaming as a cognitive process:

Current neuropsychological research addresses behavior and mental processes attributed to the brain regarded as a wet computer. . . . Research attention is deflected from the relationships and responsibilities of social interaction and toward cognitive process. Yet viewed historically, the facts are that human beings at all times and places have required sleep and engaged in dreaming. From an evolutionary perspective, this is striking. What functions are thereby being served? (Wax, 2004, p. 86)

This view is useful, for it acknowledges a perspective that can treat both the sociocultural and evolutionary neurobiological aspects of dreaming from a single vantage point. This is the approach my colleagues and I have used for the past forty years toward such problems as the relations between cognized and extramental reality (Laughlin & D’Aquili, 1974; Laughlin, McManus, & D’Aquili, 1990), ethno-epistemology (Rubinstein, Laughlin, & McManus, 1984), ritual (d’Aquili, Laughlin, & McManus, 1979), cultural adaptation (Laughlin & Brady, 1978) and dreaming (Laughlin, 2011). This approach offers a quite different angle on the relationship between dreaming and reality. This

relationship is not merely a philosophical issue, for, as seen above, *most human societies consider dreaming as real.*

Naturalist Realism

I approach mind-reality relations from a standpoint very similar to Clifford Hooker's (1995) *naturalist realism* (pp. 15-18). I do so a bit sheepishly, for I identify completely with Michael Devitt (1991) when he wrote, "There is something a little shameful about spending one's time defending something so apparently humdrum as the independent existence of the familiar world. But the provocations are so great, and my flesh is too weak" (p. vii). This chagrin is mirrored by philosopher Moritz Schlick (1991) when he noted: "I must confess that I should charge with folly and reject *a limine* every philosophical system that involved the claim that clouds and stars, mountains and the sea, were not actually real, that the 'physical world' did not exist, and that the chair against the wall ceases to be every time I turn my back on it" (p. 47). Critiquing those philosophers who would reduce reality to sensations, concepts, or experiences, Schlick went on to give an excellent definition of reality: "When [we realists] use the word 'reality,' we mean by it something quite different than you. Your definition of the real reduces it to experiences; but we mean something quite independent of all experiences. We mean [by reality] something that possesses the same independence that you obviously concede only to the data, in that you reduce everything else to them, as the not-further-reducible" (p. 48).

Brains Model Reality

It seems perfectly obvious that there is an independently existing *extramental reality*,¹³ a world within which *Homo sapiens* have evolved. It also seems obvious that human beings have brains in their heads, and like other animals with brains, their neural systems develop models of extramental reality and integrate those models within an experiential reality that informs knowledge and actions (Laughlin & Loubser, 2010; Laughlin, McManus, & D'Aquili, 1990; Koch, 2004). These models are clearly influenced in their development to varying degrees by inheritance and culture, as well as the interaction between models and reality (D'Andrade, 1995; Donald, 1991, 2002; Laughlin & d'Aquili, 1974; Laughlin, McManus, & d'Aquili, 1990; Shore, 1996; Sperber, 2001). Models of extramental reality consist of neural circuits that operate when individual neural cells make contact with each other and form a system or *network*. Neurons are cells that specialize in reaching

out, touching (synapsing upon) and influencing the electrochemical activity of other cells. In this way, neural circuits constitute neural networks that mediate mental objects (images, feelings, sensory patterns, phenomenal relations, etc.) and meaning.

Symbolic Penetration

All objects before the mind operate as symbols, for they *penetrate* into the fields of neural circuits mediating meaning associated with the object—what is called *symbolic penetration* (Laughlin, McManus, & d'Aquili, 1990, pp. 189-195). Sensory objects and mental images operate like a child's magnet that, when placed under a piece of paper upon which iron filings are sprinkled, magnetically connect with ("penetrate to") the iron filings and organize them, and then move them around as the magnet itself is moved. Turn the paper over and all one sees is the magnet (the image), yet below the surface of the paper there is the organization of iron filings—the field of meaning(s) associated with the magnet-as-symbol. Neural models are organic, of course, and operate both to assimilate information about reality (models determine perceptions and actions), and to accommodate themselves to the experience of reality (models are adjusted to information coming from reality feedback; Piaget, 1977, 1980; see also Block, 1982). This adjustment process, which may be called the *truing* of models, is ongoing from womb to grave, and is one that is inherited from a long phylogenetic past. Truing of models involves altering, eliminating, and strengthening the synaptic circuitry comprising the models (Changeux, 1985; LeDoux, 2003)—removing some iron filings and adding others. Over the course of development, the field of meaning that is the model becomes larger, more complex, more veridical, and more stable as the brain grows.

The neural modeling function of the brain is an ancient one. Indeed, the brains of all animals operate in much the same way, regardless of how primitive they may be. Neural models must both feed-forward into reality (anticipate events) and must be capable of plasticity, growth, and change in order to remain adaptive to a dynamic environment over time. For example, James L. Gould (1986; see also Seeley, 2010) has shown that honeybees operate upon an internal cognitive map of their landscape, and that the younger the worker bee, the closer it remains to the hive during the bee's foraging. It takes time for its cognized landscape to develop such that a worker can effectively forage further afield and

unfailingly find its way home. It would be immediately advantageous to an animal for a perceptual/pseudo-perceptual image to “stand for” and evoke its associated meaning in memory, and to be the basis of action, rather than have to seek more information from the environment before acting. As Seligman and Hager (1972) pointed out years ago, some images are already “wired into” the brains of animals so that only one or a few sensory encounters with the corresponding bit of reality will suffice to activate inherent meaning and response schemes, and set them on the course of development.

Neural models never develop from a random collection of nerve cells—that is, the brain is at no time in its ontogenesis a “blank slate” (see Pinker, 1997, 2003, on this issue). The neonatal brain is not a hodge-podge of cells all waiting to be assigned a function. Rather, the brain is organized from its first appearance in gestation, and just increases its vastly complex organization of neural networks as the fetus, neonate, infant, and child develop. Yes, there is plasticity (flexibility, ability to change) in all neural structures, but plasticity is always limited and varies in its pliancy depending upon how dedicated is the function of the model (see LeDoux, 2003, pp. 8-9) and the neurons that compose it (Ebbesson, 1984). For instance, networks comprising primary sensory association areas are less plastic than, say, networks in the secondary sensory association cortex of the brain that may get involved in mediating synesthesia or other higher functions.

Neurognostic Models

Virtually all neural models begin to operate as soon as they are organized—they are living cells that organize themselves into organic circuits, not microchips. Neural models begin as nascent structures that function in a rudimentary way as models, and those models that are involved with knowing reality begin life as what is called *neurognosis* (or *neurognostic models*)—as species-specific, primitive knowledge about the world and self that is “already there” in a very human way before enculturation begins (Carey, 2009, p. 67; Gazzaniga, 2000; Pinker, 1997). As neuroscientist Dale Purves (2010) noted:

the circuitry of nervous systems such as ours has evolved to contend with one fundamental challenge: How to generate useful perceptions and behaviors in response to a world that is unknowable directly

by means of sensory stimuli. The strategy that has emerged to deal with this problem is governed by history, not logical principles or algorithms. Based on feedback from the empirical consequences of behavior, accumulated information about operational success is realized over evolutionary time in inherited neural circuitry whose organization is then modified to a limited extent by individual experience. (p. 233)

This neural circuitry forms models that have been passed down through our human DNA and are configured during neurogenesis under the direction of genetic inheritance.¹⁴ Neurognostic models mediate the nascent cognitive-perceptual stance to experience, and from that stance begins active exploration of self and world—modifying, growing, and developing models in response to feedback from the world (Miller, Galanter, & Pribram, 1960). Neurognostic models are virtually synonymous with what C. G. Jung referred to as “archetypes” (Stevens, 1982).

Depending upon the physical and cultural environment, some neurognostic models will develop and others remain relatively undeveloped, and some may even die (Changeux, 1985; LeDoux, 2003, pp. 80-82; Katz & Shatz, 1996). Some models mediate thought while others mediate images, feelings, percepts, et cetera, and their respective development is highly influenced by culture. In a neurobiological sense, the anthropological term “enculturation” refers to the social influence upon neurocognitive development. For instance, a baby is born perceiving faces because there are areas of the cortex that are neurognostically structured to process faces. Enculturation molds the development of these models so that recognition of specific faces and meanings associated with various faces, and perhaps masks, become literally “in-formed” (Varela, 1979)—associated by way of neural growth and new synaptic connections with other cells mediating memory.

Reality as Obduracy and Affordancy

Human beings have evolved from a long line of social primates. All animals with brains operate upon their own inner cognized world—a world of experience mediated by their system of neural models (Laughlin & d’Aquili, 1974; see also Donald, 1991). Social animals are equipped with brains that are “wired” to know reality in a communal way (Dunbar, Gamble, & Gowlett, 2010). How then do humans know when an experience is

real—and know reality in a socially communal way? The answer is, the brains of all animals are neurocognitively “pre-wired” to accept the limits of extramental reality while they are awake—limits that exhibit the twin qualities of obduracy and affordancy. The term *obduracy* generally means the *characteristic of reality to resist the will and intentions of the psyche*. If one attempts to push a finger through a marble table top, one will come up against the obdurate nature of reality. While one may dream or fantasize that one is flying without mechanical help, attempts to do so while awake will prove disastrous. Much of early development in the baby has to do with exploring the somatosensory limits of obduracy—the obduracy of the baby’s environment and of her or his own body (Piaget, 1980).

The other quality of extramental reality is *affordancy*, a term coined by the great perceptual psychologist James J. Gibson (1979, 1982), for the interaction between experience and what is allowed by extramental reality. “Roughly, the affordances of things are what they furnish, for good or ill, that is, what they *afford* the observer” (Gibson, 1982, p. 401). Again, “the *affordances* of the environment are what it *offers* the animal, what it *provides* or *furnishes*, either for good or ill” (Gibson, 1979, p. 127). The development of knowledge about the world is in part a process of discovering and memorizing what things in reality *afford* the animal. What the brain comes to know are the particular qualities that further the animal’s ability to utilize its environment. Obviously then, what the world affords an animal depends upon the nature and structure of the animal. A stick lying over a stream may afford adequate support for a squirrel or an ant wishing to cross over, but not for a large dog. Flowers afford electromagnetic information in the ultraviolet range for honeybees, but not for people. Just consider the enormous variety of objects in the world that people call “chairs” because they afford sit-ability. If the object is not sit-able, then a person is not likely to perceive it as a “chair.”

Obduracy and affordancy are actually obverse qualities of extramental reality in relation to the structure and limitations of the animal’s body and its nervous system. Both the body and the world present obdurations and affordances that condition our intentionality, and thus operate to limit, guide and inform learning about one’s body and the world. One encounters these qualities daily, as do all animals with neurocognitive systems. One only become aware of them when running

up against either their resistance to one’s intentions or new opportunities. Once one has adapted to (trued the models of) obdurate and affording aspects of the world, one generally loses awareness of the distinction between one’s experience of reality and extramental reality itself. This is an extremely important factor, for most people consider *the world as experienced as real*—in other words, most people do not make a practical distinction between ontology and epistemology the way many philosophers and metaphysicians do.

Dreaming and the Transcendental Self

Being asleep in part means that the perceptual-behavioral circuits that operate in waking states shuts down during dreaming—that is of course what makes dreaming so “paradoxical.” But this does not mean that consciousness is freed from the press of reality. Far from it, for what the dreamer encounters are the obduracy and affordancy generated by her or his own *transcendental self*—that is, the internal neurobiological structures mediating the sleeping life-world of the brain, including the available, species-specific functions of the nervous system, its inherent creativity, and its imaging capabilities (e.g., honeybees may dream in ultraviolet and electric eels may dream of non-visual electromagnetic fields, whereas humans can do neither). While dreaming one experiences one’s own self-obduracy. Dreams for instance never lie. In all of the dreaming experiences and research I have done over a half century, I have never encountered a deceptive dream. I have of course encountered “trickster” elements that have operated to fuzzify, obfuscate, or even hide relations and distinctions. “Shape-shifting” elements may arise that appear to be one thing and then become another (e.g., the goddess who transforms before the dreamer into a demon). In addition, my interpretations of dream material may be downright wrong as later dream work may point up. And I have dreamed that “I” (my dream ego) attempted to dissemble, or to deceive others, but in all of these situations the dream itself unfailingly tells the truth about what is happening in my greater self at the moment.

In Douglas Hollan’s (2003, 2004) term, dreams are *selfscapes*—they are imagined depictions of what is happening in the self at the time of the dream. Also, baring extreme lucidity, one exercises very little if any control over dreaming—things just happen to one as a watcher or participant. One has little or no control over the course of dreamed events. Yet most people feel more or less in control of their waking lives, when much of what

is experienced is due directly to intentions and actions. Those who have experimented with lucid dreaming know that one can learn to have considerably more control over dream adventures and can form waking intentions to have certain experiences arise while dreaming (LaBerge, 1980)—and can even communicate in a crude fashion with researchers from within the dream state (LaBerge, Nagel, Dement, & Zarcone, 1981). There is considerable evidence that this kind of control is exercised by shamans and healers when they use dreams to enter other domains of reality (Winkelman, 2010). However, it is fair to say that most people do not seek and do not experience this level of dream control.

In addition, the images that arise in dreams tend to perfect themselves. Any blemishes, distortions, cracks, splotches, et cetera, that might be present in waking perception tend to disappear in dreams, be those archetypal images or “day residue” images. The image taken by spirits tend to be perfect in every way. If they are gods, goddesses, angels and the like, they may be *perfectly* beautiful. If on the other hand they are demons, nixies, monsters, et cetera, they tend to be *perfectly* horrible and terrifying. They are, in other words, the quintessence of whatever is being projected out of the unconscious, without the moderating and leavening effect of external perception.

Transcendental Obduracy and Affordancy in Dreams

Dreams afford revelation of the hidden, the invisible—the imagined causal connections between things that are normally unavailable to waking perception. Like the wind and ocean currents, causation may remain invisible to waking perception, but may become sensible in dreams because one can imagine them without bumping up against external sensory obduracy. Thus, in a sense, dreams afford us with cosmic confabulation, filling in the gaps in memories of waking experience. As one consequence, dreaming facilitates construction and rehearsal of alternative solutions to problems without immediate censure from outer extramental reality (Donald 1995; Nielsen, 2011; Revonsuo, 2000, 2006). Another consequence is that a broader range of information may be presented to dreaming consciousness pertaining to the transcendental self, material that might otherwise interfere with adaptation to the external world while awake. This is why Jung considered dream work so fundamental to advanced individuation. Everybody individuates, but those who take a conscious role in

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their own individuation become far more complex personalities.

Special dreams (culture pattern dreams) are commonly archetypal in content. Given freedom from external contingencies, the neurognostic structures of the brain are freed up to generate intuitions and images that represent the dynamic relations deep in the psyche of the dreamer (Laughlin & Tiberia, 2012). It is entirely possible that, because of cellular interactions with the quantum universe, archetypal dream imagery may be produced by events outside the brain of the dreamer, as in co-dreaming, prescient dreaming, and so forth (Laughlin & Throop, 2001).

Conclusion

Most societies on the planet consider dream experiences as being as real as waking experiences. Phenomenological evidence suggests a range of universal attributes of dream experiences upon which the reality of dreaming relies. The human brain is designed to operate by seeking and modeling patterns in experience, and to project those patterns upon the transcendental nature of reality, regardless of the ASC in which the experience arises. The ability of the psyche to generate intuitive and imaginal knowledge about causation, as well as anticipation of future events, and explanations of past events, operates to alleviate the uncertainty and anxiety people fear when causal relations are complex and hidden from everyday waking consciousness. Small wonder then that most traditional and non-technocratic peoples embrace their dream lives as a font of information of great relevance to the waking world. Not the least reason for this is the revelation for the dreamer of her or his own internal psychodynamics in an ASC which suspends the immediacy of external adaptations.

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Notes

1. Over the last several decades the anthropology of dreaming has taken firm hold and has to some extent systematized the wealth of ethnographic data on dreaming cross-culturally (Kennedy & Langness, 1981; Laughlin, 2011; Lohmann, 2003; O'Neill, 1976; Shulman & Stroumsa, 1999; Tedlock, 1992a).
2. See Blainey (2010) on "entheophilic" and "entheophobic" world views; see also Walsh (2007; Ch. 24).
3. "People in the medieval and early modern period often saw dreams as communications from God—or from the Devil. For the ancients, dreams were perhaps more like visitations. Dreams might predict the future or carry messages" (Pick & Roper, 2004, p. 3); see also Parman (1991; Ch. 2-3) and Kruger (2005).
4. For instance, see Herr (1981, p. 334) on fuzzy boundaries among Fijians between what Westerners call dream, hallucination, and vision; see also Merrill (1992) on this issue among the Ramámiru of Mexico.

5. This is, of course, Jamesian radical empiricism at work (Jackson, 1989).
6. Common to all experience is what Antonio Damasio (1999) has called *core consciousness* that “provides the organism with a sense of self about one moment—now—and about one place—here” (p. 16).
7. In a few cases, such as among Buddhist and some other ethno-psychologies, both states are considered equally illusory.
8. From the Greek for “capable of being demonstrated” or “absolutely certain”; see Laughlin (1994a).
9. See Horton (1982) and Peek (1991) on the African drive to know the future by dreaming and other forms of divination.
10. *Post hoc* reasoning, short for the phrase *post hoc ergo propter hoc* (“after this, therefore because of this”) is the fallacy of reasoning back from the conclusion to causation in the premise. The fallacy is that just because B follows A does not mean that A causes B.
11. Morris, 1982; Radin, 1997a, 1997b, 2006; Puthoff, Targ, & May, 1981; Jahn, 1981; Bierman & Radin, 1997, 1999; Ebon, 1966.
12. Radin, 1997a, 2006; Jahn & Dunne, 1987; Rao, 2001; Laughlin & Throop, 2008.
13. The world as it exists, independent of any brains sensing, experiencing, or knowing it.
14. Laughlin & d’Aquili, 1974, Ch. 5; Laughlin, McManus & d’Aquili, 1990, p. 43; Laughlin & Loubser, 2010; Pinker, 1997; LeDoux, 2003, p. 84; Ebbesson, 1984; Carey, 2009, Ch. 3.

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