

The Religious Mind and the Evolution of Religion

Matt J. Rossano

Southeastern Louisiana University

This article summarizes the literature on the religious mind and connects it to archeological and anthropological data on the evolution of religion. These connections suggest a three stage model in the evolution of religion: One, the earliest form of religion (pre-Upper Paleolithic [UP]) would have been restricted to ecstatic rituals used to facilitate social bonding; two, the transition to UP religion was marked by the emergence of shamanistic healing rituals; and, three, the cave art, elaborate burials, and other artifacts associated with the UP represent the first evidence of ancestor worship and the emergence of theological narratives of the supernatural. The emergence of UP religion was associated with the move from egalitarian to transegalitarian hunter-gatherers.

Keywords: evolution of religion, Upper Paleolithic, religious mind, shamanism

William James (1902/1961) argued that the mystical experience was the foundation for religion. Nearly a century after James, research into the neurological and cognitive basis of religion has advanced rapidly (Barrett, 2000; Boyer & Ramble, 2001; d'Aquili & Newberg, 1999; Lewis-Williams, 2002; Newberg, d'Aquili & Rause, 2001; Norenzayan & Atran, 2002; Ramachandran & Blaklee, 1998, chap. 9). Paralleling this work has been that addressing the evolutionary origins of religion (Atran, 2002; Boyer, 2001; Hayden, 2003; Sosis & Alcorta, 2003; Wilson, 2002). While archeological evidence and anthropological analogies can be used to formulate evolutionary models of religion, these models are limited by the fact that behavior and belief do not fossilize, and current hunter-gatherers cannot be uncritically accepted as relics of our hominid past. Using the religious mind as a basis for formulating evolutionary models provides another distinct and converging evidentiary line complementing those of archeology and anthropology. Though the mental lives of our hominid ancestors cannot be known with certainty, the cognitive capacities of chimpanzees (at one extreme) and humans (at

the other) provide reasonable boundaries for framing theoretical models.

The purpose of this article is to summarize the current research on the religious mind and connect it to archeological and anthropological data on the evolution of religion. The first section reviews the literature on and builds a general framework of the religious mind. The second section uses this framework, in conjunction with archeological and anthropological data, to construct a model of the evolution of religion. A three-stage model is proposed with supportive evidence and hypotheses for future testing outlined.

The Evolved Religious Mind: Mental Attributes Giving Rise to Religion

Defining religion is notoriously controversial. For present purposes, religion is defined as beliefs or actions predicated on the existence of supernatural entities or forces with powers of agency that can intervene in or otherwise affect human affairs. This definition is a slightly modified version of one used by sociologist Steve Bruce (2002, p. 2), which follows comfortably in the well-established conceptual tradition of religious anthropologists such as Edward B. Tylor (1871) and James George Frazer (1890/1941).

Recently, considerable research has focused on the mental attributes that incline humans toward religious beliefs (Alcorta & Sosis, 2006; Arglye, 2000; Atran, 2002; Boyer, 2001; Hayden, 2003; Hinde, 1999; Lewis-Williams, 2002). Though investigators vary in their per-

The author thanks Dr. David Sloan Wilson and two anonymous reviewers for thoughtful critiques of the manuscript.

Correspondence concerning this article should be addressed to Matt J. Rossano, Department of Psychology, P.O. Box 10831, Southeastern Louisiana University, Hammond, LA 70402. E-mail: rossano@selu.edu

spectives, they converge on four mental attributes that appear to provide the cognitive foundations for the emergence of religion: one, agency detection and causal attribution; two, the social and emotional commitments of group living; three, narrative formation and the emergence of existential anxieties; and, four, the ecstatic or mystical experience. Each of these attributes is an evolutionary extension, built upon precursors found in many other species, especially our nonhuman primate relatives.

Agency Detection and Causal Attribution

Determining cause-effect relations is an adaptive mental function found in many creatures (e.g., Hunt, 1996; O'Connell & Dunbar, 2005; Premack, 1976; Premack & Premack, 1994). Agency detection (or theory of mind) is a form of causal attribution whereby an organism assigns another's actions to an internal state such as a belief, desire, or intention. A rudimentary form of this mental capacity was likely present in our earliest hominid ancestors and may be present in great apes today (Byrne & Whiten, 1991; Gallup, 1970, 1982; Hare, Call, & Tomasello, 2001; however, see also Ponvinelli & Eddy, 1996; Ponvinelli & Prince, 1998 for a more cautious assessment).

Developmental studies have shown that the ability to attribute agency to others develops incrementally over the first five or six years of life (see Baron-Cohen, 2005; Gopnik, 1999, for reviews). By around 12 months, infants show dishabituation to the actions of agents who violate goal-directedness and, throughout most of infancy, youngsters appear to expect that human actions will be goal-directed (Baldwin, Baird, Saylor, & Clark, 2001; Meltzoff, 1995). At 14 months, infants work to establish and maintain joint attention and begin to develop an understanding of pretence. Two-year-old children show evidence of using mental state words and by age three they appear to understand the relationship between that act of seeing and the state of knowing. By age four or five, children have a sensitivity to another's mind in that they understand that another can have ideas that are incongruent with reality (Wimmer & Perner, 1983). These findings suggest that from a very early age humans treat other humans as intentional agents, whose actions are directed by mental constructs such as beliefs, desires, and

goals. Tomasello and Call (1997) have, in fact, argued that this is the critical cognitive distinction separating humans from other primates.

For our hominid ancestors, the ability to attribute agency to another would have been highly adaptive. From the time of *Homo erectus/ergaster* (about 1.8 million years ago), hominids were of a physical size and a level of technical and social sophistication such that their primary competitors were most likely other hominids (Alexander, 1989; Flinn, Geary, & Ward, 2005; Lewin, 1998). This competition would have encouraged the formation of larger groups with increasing numbers of non-kin, as well as the formation of coalitions and alliances both within and between groups (Aiello & Dunbar, 1993; McBrearty & Brooks, 2000). In this vastly complicated social world, the ability to read the goals and intentions of others would have been crucial. A distinct advantage would have gone to those of our ancestors who could quickly and accurately recognize the signals associated with others who intended to harm or help. Thus, we would expect predator/protector agency detection mechanisms to be trip-wired such that only partial or scant input is required to engage the mechanism. It makes considerable adaptive sense to overassign agency given that the false alarm cost would be far outweighed by the benefit of the occasional hit (Guthrie, 1993). For example, rustling leaves usually signal nothing more than the wind, but a single failure to recognize them as signaling the stealthy approach of a malicious enemy or hungry predator could be life threatening. Survival is better served by overassigning agency than underassigning.

Since it is by evolutionary design prone to overassignment, the human agency-detecting capacity was ripe for cultural manipulation and supernatural extension. Natural processes with no obvious explanation—storms, illness, animal behavior, and so forth—were all prime candidates for the actions of a supernatural agent. The notion of powerful natural, animal, and human/animal spirits is nearly universal in traditional, shamanistic religions (Hayden, 2003, pp. 57–60; McClenon, 1997; Winkelman, 1990). Evidence from Upper Paleolithic (UP) cave paintings suggests that these ideas may extend back tens of thousands of years (Clottes & Louis-Williams, 1998; Dickson, 1990; Leroi-Gourhan, 1968). Animal or ancestral spirits who monitor people's actions for moral integrity and punish those who offend (often through

acts of nature) are equally common motifs (Atran, 2002; Boyer, 2001; Hayden, 2003).

Social/Emotional Commitments

A second important aspect of the evolved religious mind is the capacity for social commitment—a capacity that in humans has reached the unprecedented level of subjective commitment to social norms (Dugatkin, 2001). A number of researchers have argued that certain emotions may be unique to humans and most likely evolved to enhance social cohesion (Barrett, 1995; Parker, 1998; Trivers, 1985). Self-conscious emotions such as embarrassment, pride, envy, guilt, and shame require cognitive evaluation of our behavior against an abstract (group-based) standard (Parker, 1998). These emotions inform us about the quality of our interpersonal relationships and often drive us to behave in ways that further the establishment, maintenance, and/or reparation of social bonds.

Humans also appear to possess an irrational tendency toward moralistic aggression, which also serves to strengthen social cooperation (Bingham, 1999). Ernst Fehr (Fehr & Gächter, 2002; Fehr & Tyran, 1996) has shown that humans are quite willing to engage in moralistic punishment of perceived freeloaders even when doing so goes against one's self interest. Thus it appears that empathizing with others, feeling guilty when letting others down or prideful when having fulfilled or exceeded others' expectations, and raging with righteous indignation against perceived cheaters are all essential elements of the human social regulatory psyche. These emotions help to build and maintain strong social bonds while curbing the self-interested behavior that can erode community spirit.

In the past (as is true today), religion very likely harnessed powerful social emotions to reinforce social unity and ostracize deviants. The religious rituals and ceremonies of traditional societies often involve rhythmic dancing, disturbing imagery, and the ingestion of psychotropic substances producing ecstatic emotional states that enhance social bonding (Atran, 2002, pp. 163–164; Hayden, 1987, p. 30, 2003, pp. 30–32; Rappaport, 1999, pp. 222, 228). Rituals of this nature have been shown to promote the release of brain opiates, which facilitate the formation of strong social and emotional bonds among participants (Frecka & Kulcsar, 1989).

Religious rituals can also serve as “costly-to-fake” signs of social commitment (Irons, 1996, 2001; Sosis, 2000; Sosis & Bressler, 2003; Sosis & Ruffle, 2003). For example, the initiation rituals of traditional societies frequently involve rigorous physical and emotional trials (Atran, 2002, p. 153; Boyer, 2001, pp. 243–246; Glucklick, 2001; Young, 1965). These trials publicly signal an individual's commitment to the group, its values, and to the spiritual forces governing it. Failure to live up to the group's standards brings both profound shame and potential retribution (both divine and human; see Hayden, 2003, p. 104).

Religion's signaling function remains relevant even in more contemporary settings. A person who regularly attends church and insists on a religious wedding ceremony may be viewed as committed to the principles of monogamy and fidelity and therefore more desirable as a mate. Irons (2001, p. 304) notes that Honduran men whose work requires prolonged separation from their wives, frequently express a preference for a religious wife whom they believe will be less likely to cheat. Individuals who unambiguously demonstrate a belief in ever-vigilant supernatural agents who monitor the morality of their actions are often perceived as more reliable by other group members and therefore worthy of enhanced trust and cooperation. Studies comparing religious communities to analogous secular ones confirm that, in general, the religiously based ones tend to be more socially cohesive and enduring (Sosis, 2000; Sosis & Bressler, 2003; Sosis & Ruffle, 2003). This supports the notion that religious signaling builds a level of intragroup trust and solidarity exceeding that typically found in secular settings.

Episodic Memory and Narrative Construction

Endel Tulving (1983) has argued for a distinction between episodic and semantic memory. Semantic memory refers to one's stored knowledge of facts, concepts, and general principles of how the world operates. Episodic memory is an autobiographic store of life experiences. It is context and time sensitive and allows one to mentally travel back in time to past personal events and to project into the future—a form of consciousness known as auto-noetic consciousness. Evidence for episodic

memory in animals is questionable and falls short of human capabilities, suggesting that it may be unique to humans (Roberts, 2002; Tulving & Lepage, 2000).

Auto-noetic consciousness, in conjunction with language, allows humans the capacity to produce two types of narratives integral to the religious mind: personal and theological. The personal narrative is a subjective, autobiographical story that unifies experience and provides a stable, coherent sense of self that penetrates across time. It also, however, brings with it a somber companion—existential anxiety or the knowledge of inevitable self-suffering and death. To some, religion represents an adaptation to mollify this anxiety (e.g., Bloom, 1992; Feuerbach, 1843/1972; Geertz, 1966; Malinowski, 1922/1961). Indeed, Atran (2002, pp. 177–181) has shown that religious sentiments are heightened when subjects are primed using stories that evoke existential anxiety. However, as Boyer (2001, pp. 19–22) has pointed out, religious beliefs are often as anxiety provoking (eternal damnation, curses, demonic possession, etc.) as they are comforting, and a blissful afterlife is not always (and has not always been) a part of religious doctrine (e.g., the Greek concept of Hades or Jewish notion of Sheol). While religion and existential stress are intertwined, their relationship is complex and may have as much to do with the ambiguities surrounding death and dead bodies as with the straightforward need to assuage mortal fears (see Boyer, 2001 pp. 222–228).

Theological narratives are the culturally derived concepts, myths, and stories that communities create and transmit in order to understand the relationship between the supernatural and earthly worlds. Recently, a number of scholars have elucidated the parameters guiding how the mind constructs and communicates religious myths and concepts (Atran, 2002, pp. 100–107; Barrett, 2000; Boyer, 2001, pp. 79–81; Boyer & Ramble, 2001; Kelly & Keil, 1985; Norenzayan & Atran, 2002). One important parameter is that religious concepts tend to be minimally counterintuitive rather than just odd. Counterintuitives are defined as exemplars that retain nearly all of their ontological assumptions with the exception of one (or a few) critical violation(s). This violation makes the exemplar distinctively interesting, but preserves its comprehensibility. Thus, the Virgin Mary is in most respects a typical member of her

category: human females. She eats, sleeps, marries, gets pregnant, gives birth, worries, visits relatives, works around the house, and so forth. She does, however, have one striking categorical violation: she can become pregnant without sex. Oddities, on the other hand, are just exceptionally strange category members, such as a man with seven toes or a woman who has 14 offspring.

Counterintuitives, as opposed to mere oddities, are good candidates for religious concepts by virtue of the fact that they are memorable yet comprehensible, thereby giving them an advantage in cultural transmission and preservation. It appears that the religious myths with the greatest likelihood of preservation are those that relate largely mundane and intuitive ideas with just a few counterintuitives mixed in to arouse attention and create anchors for recall.

Ecstatic States and Mystical Experiences

An ecstatic state is an altered state of consciousness typically brought on by some form of sensory deprivation, overstimulation, physical or emotional stress, and/or ingestion of psychotropic substances. It lies at the end of a spectrum of intensified conscious states that appear to be universal to humans (Lewis-Williams, 2002, pp. 121–130). Similar altered states of consciousness (although of lesser intensity, most likely) may be present in nonhuman animals as a means of coping with deprivation and stress (Hoskovec & Svorad, 1969; Marcuse, 1951; see also review in McClenon, 2002, pp. 23–28). Animals from rats to chimpanzees have been shown to be susceptible to hypnotic procedures that appear to induce altered states (Hoskovec & Svorad, 1969; Siegel & Jarvik, 1975; Volgyesi, 1969). However, it appears that no animal compares to humans when it comes to voluntarily inducing ecstatic states through meditative practices or religious rituals. Achieving this state is a key feature of shamanistic religions (see Hayden, 2003, chap. 3).

James (1902/1961) identified four qualities of the ecstatic or mystical experience. One, infallibility—the fact that the mystical experience cannot be adequately described in words. Two, noetic quality or enlightenment—the fact that while mystical experiences are profoundly emotional, they also provide deep insights to the individual involved. The individual believes that authoritative truths have been revealed through the mystical experience. Often these

insights involve an awakening to the unity and of all things and a deep sense of oneness with the divine. Three, transience—refers to the fleeting and temporary nature of the experience, rarely do they last longer than a few moments. Four, passivity—though mystical experiences can be facilitated through meditative practices, rituals, and other techniques, their actual occurrence is spontaneous and unpredictable. The person accepts the experience and cannot will it to occur. Since James's work other qualities such as realness and unusual percepts have been proposed as additional qualities (Farthing, 1992, pp. 442–443). Mystical states may occur in purely secular settings as well as in sacred rituals and are open to a variety of culturally and personally influenced interpretations (see Hinde, 1999, pp. 185–198, for a review).

Religious rituals that bring about ecstatic states, such as those involving rhythmic dancing, chanting, stressful initiations, and the ingestion of intoxicants are commonly used to establish social bonds among hunter-gatherers (Hayden, 1987). The release of brain opioids during ecstatic states may be integral to this process (Hayden, 2003, p. 31; Frecska & Kulcsar, 1989). All of this opens up the possibility that ritually induced ecstatic states provide not only enlightenment to the individual involve, but also help to form strong social alliances within and among groups.

A Model of the Evolved Religious Mind

What kind of mind does it take to be religious? The attributes just discussed provide a potential outline of just such a mind. The human mind is, first and foremost, a highly social mind with an elaborated set of emotions that promote interpersonal bonding. For good evolutionary reasons, the human mind promiscuously assigns agency to natural forces and objects giving rise to supernatural agency. Supernatural agency combined with our powerful social emotions incline us to envision ever-vigilant spiritual monitors. As societies grow larger and more complex, moralizing gods become increasingly prevalent and appear to help in maintaining social stability (Roes & Raymond, 2003). Exhibiting costly-to-fake signs of belief in these ever-vigilant gods and commitment to the group-based moral standards they represent can provide individual benefits in the form of en-

hanced opportunities for cooperative arrangements and access to important group resources. Our narrative capacity awakens in us both the disturbing awareness of inevitable suffering and death and the ability to formulate and transmit supernatural concepts about what might lie beyond them. Finally, ecstatic experiences offer not only compelling validation of the supernatural realm that we envision, but also a social bonding mechanism among those who share its affects.

The Evolution of Religion

We will likely never know when the first religious idea was born, but a substantial number of researchers have concluded that the art, artifacts, and burial practices of the Upper Paleolithic reflect religious sentiments (Breuil, 1952/1979; Dickson, 1990; Dowson & Porr, 2001; Hayden, 2003; Leroi-Gourhan, 1982; Lewis-Williams, 2002; Lommel, 1967; Mithen, 1996; Winkelman, 2002; see Hamayon & Francfort, 2001, for a contrary view). Given that the Upper Paleolithic peoples were anatomically modern humans and that religion is a human universal, it seems safe to conclude that religion was present by at least the time of the Upper Paleolithic in Europe. A key question becomes whether religion existed prior to the Upper Paleolithic and, if so, what form did it take? The next section reviews evidence for the existence of religion in pre-Upper Paleolithic times. It is argued that religion (or proto-religion) existed, but was restricted to ecstatic rituals used for social bonding.

Pre-Upper Paleolithic (UP) Religion

Nonhuman primates. There is no compelling evidence that nonhuman primates have religion. However, some foundational elements of religion such as ritual behavior and social emotions are present in our primate cousins. For example, rituals for establishing trust and building community are common among nonhuman primates. Male baboons engage in a stereotyped scrotum grasp which (apparently) serves as a trust-building signal (Watanabe & Smuts, 1999). Chimpanzees, bonobos, and spider monkeys live in fission-fusion societies where the larger community often breaks into a series of smaller foraging parties. When these parties en-

counter each other after a period of separation, members engage in ritualized greeting behaviors such as mutual embraces, kissing, group pant-hooting, and grooming (Goodall, 1986; van Roosmalen & Klein, 1988, p. 515). Among bonobos, sexual stimulation is often used to reduce tensions and allow food sharing even among members of different communities (de Waal & Lanting, 1997).

These ritualized welcoming, trust-building, and tension-reducing behaviors may induce a mental state conducive to social bonding that shares features in common with the ecstatic state. Grooming, for example, is known to cause the release of endogenous opiates, which act as a primary reinforcer contributing to social bonding (Keverne, Martinez, & Tuite, 1989). The origins of similar human greeting and re-integration rituals are likely found in these non-human primate rituals.

The foundations of the social emotions integral to human religion are probably also present in nonhuman primates. De Waal (de Waal, 1996; de Waal & Berger, 2000) has documented evidence for empathy, pride, and a primitive sense of fairness in monkeys and apes, while Goodall (1986) has reported that chimpanzees occasionally engage in extended and emotive “rain dance” or “waterfall” displays. All of this suggests that the foundations of religion and religious behavior were laid deep in the primate brain possibly prior to the onset of hominid evolution.

Three other lines of evidence suggest the presence of pre-Upper Paleolithic religion as well: (a) cannibalism, (b) early symbols including the use of red ochre and, (c) deep cave exploration. Each shall be discussed in turn.

Cannibalism. Among many hunter-gatherer societies, eating the flesh, especially the brain, of another was (is) tantamount to ingesting his or her spirit (Hogg, 1966; Sanday, 1986). This practice applied not just to enemies, but also (and more importantly) to relatives and fellow tribe members. A family or fellow tribe member might be consumed so that his or her strength and skills would forever remain within the tribe. For example, among the Wari’ of South America, it is considered far more respectful and compassionate to consume a loved one so that he or she is literally reincorporated into the tribe than to permit the remains to decay into the ground (Conklin, 2001).

Homo erectus skulls unearthed from the Zhoukoudien site near Beijing suggest that cannibalism among hominids may date back as far as half a million years. Many of these skulls were apparently broken open from the bottom in a manner similar to practices employed by more recent cannibals, suggesting that extraction and consumption of the brain might have been the goal (Hayden, 2003, pp. 96–97; Weidenreich, 1943). Even more intriguing is an *erectus* skull found in Bodo, Ethiopia dated to around 600,000 years ago. This skull contains 25 stone-tool cut marks, presumably incurred when the skin was removed (White, 1986). Facial skin removal would seem to have little practical purpose and therefore hints at possible symbolic or ritual significance. A skull fragment with evidence of defleshing was also uncovered at the roughly 100,000-year-old Klasies River site in South Africa (Klein & Edgar, 2002, p. 16; Singer & Wymer, 1982). Similar finds strongly indicative of cannibalism and possible ritual (i.e., multiple skulls with broken bases and/or cut marks) have been documented at Neanderthal sites in Kapina, Croatia, and Abri Moula in southeastern France (DeFluer, Dutour, Valladas, & Vandermeersch, 1993; DeFluer, White, Valensi, Slimak, & Cregut-Bonnoure, 1999). In many of these instances, cranial fracturing from natural processes or cannibalism resulting from nutritional stress cannot be ruled out (Arsuaga et al., 1997; Binford & Ho, 1985). Even so, the possibility remains that some of this cannibalism represents a spiritual sense that is hundreds of thousands of years old.

Red ochre and other early symbols. Red ochre is a soft iron oxide that easily pigments other surfaces. Among hunter-gatherers, red ochre has little practical value, but is used extensively in rituals and carries significant symbolic meaning (Power & Watts, 1996). Some have argued that red’s symbolic importance rises to the level of a universal human archetype for such things as blood, sex, life, and death (James, 1957; Marshak, 1981; Wreschner, 1980). The first indications of red ochre use date back to nearly one million years ago where its presence has been found at early Oldowan sites and South African caves (Bednarik, 1994; Leakey, 1971; Lorblancher, 1999). Red ochre is not uncommon at hominid sites dated between 200,000–100,000 years ago and was apparently being purposely mined and transported to them

(Knight, Power, & Watts, 1995; McBrearty & Brooks, 2000).

Evidence that red pigmentation was added to artifacts to enhance their appearance and possibly their meaningfulness can be found in the form of a 100,000-year-old mammoth-tooth plaque covered with red ochre unearthed in Tata, Hungary (Bednarik, 1995). Additionally, a red ochre cobble, carefully engraved with crosses and dated to 77,000 years old, was found in the Blombos cave of South Africa—a find that some have referred to as the oldest piece of art on record (Henshilwood & Sealy, 1997; Lewis-Williams, 2002, pp. 98–99). The presence of red ochre in the archeological record coupled with the effort being expended for its acquisition suggest that it was a valued commodity despite its nonutilitarian nature.

Apart from the presence of ochre, there are but a few, scattered examples of what might be symbolic artifacts dating from 100,000 years ago or more. A three-million-year-old jasper cobble in the form of a human face was uncovered from a site near Makapansgat, South Africa. The nearest source for this item was 10 km from the recovery site, leaving open the possibility that it was intentionally transported presumably by a hominid who was intrigued by its anthropomorphic quality (Dart, 1974). A similar anthropomorphized artifact was found at Berekhath Ram in the Golan Heights. This was a 233,000-year-old human-figure-shaped stone that showed evidence of intentional modification—possibly the earliest known example of sculpture (d’Errico & Nowell, 2000; Marshak, 1997). Finally, many items recovered from late Lower and Middle Paleolithic sites (from 300,000 to 35,000 years ago) contain what appear to be intentional zigzagging, parallel, or radiating markings that may represent the entoptic experiences of altered states of consciousness (Bednarik, 1995; Horowitz, 1964; Kluver, 1942).

Deep cave rituals. A few Neanderthal deep cave sites provide possible evidence for ritual behavior. About a quarter of a kilometer deep in the Bruniquel Cave of southwestern France, Neanderthals apparently arranged broken stalagmites into two circles, one of which surrounded the remains of a fire (Rouzaud, Soulier, & Lignereaux, 1996). These remains have been dated to around 50,000 years old. Additionally, Hayden (2003, pp. 108–115) has made a spirited

case for bear-cult rituals at the Neanderthal site of Regourdou cave in southwestern France. Remains of a bear skull, bones, and other possibly intentionally arranged and manipulated materials dated to between 60,000–70,000 years old have been found here. Other deep cave sites associated with Neanderthals, such as Galerie Schoepflin at Arcy-sur-Cure in France (Baffier & Girard, 1998; Farizy, 1990), Cognac, and Grotta della Barura (Lorblancher, 1999) may also have been locations of ritual activities.

Defining Pre-Upper Paleolithic (UP) Religion

None of the evidence reviewed is conclusive regarding the presence of religion in pre-Upper Paleolithic times. However, taken in total, it strongly suggests some manner of behavior transcending utilitarian concerns—a proto-religion of sorts. The challenge becomes one of setting the possible parameters for such a proto-religion. The current model contends that these parameters can be found by identifying the likely social and cognitive context of late Lower and Middle Paleolithic peoples. Socially, while there is evidence showing that population densities may have been increasing through the Middle Paleolithic, it is only after the transition to the Upper Paleolithic that social stratification and inequality becomes evident (Dunbar, 1996, p. 114; Hayden, 2003, p. 122–131; McBrearty & Brooks, 2000; O’Shay & Zvelebil, 1984; Vanhaerena & d’Errico, 2005). Therefore, we should expect that pre-UP religion falls within the social context of egalitarian hunter-gatherers of increasing group size.

Cognitively, pre-UP religion most likely falls somewhere between the ape mind and the Neanderthal mind. Evidence reviewed earlier indicates that apes have a variety of rituals used for social bonding and these rituals may bring about a mental state partially overlapping with the ecstatic state of humans. As for Neanderthals, no firm consensus exists concerning their cognitive capacities. The Neanderthal brain was slightly larger than that of modern humans and some remains suggest highly intelligent behavior and possibly symbolic thinking (d’Errico, Zilhao, Julien, Baffier, & Pelegrin, 1998; Grayson & Delpech, 2003; Trinkhaus & Shipman, 1992).

On the other hand, the wealth of differences in tools, grave goods, tailored clothing, built shelters, hunting technologies, and artistic remains suggest important cognitive differences between Neanderthals and *Homo sapiens* (Chase & Dibble, 1987; Gargett, 1989, 1999; Hoffecker, 2002; Lieberman & Shea, 1994; Mellars, 1996, pp. 366–391). Lewis-Williams (2002, pp. 89–96) has recently reviewed the archeological evidence associated with the Chatelperronian Neanderthals who, for thousands of years, shared space in southwestern France and northern Spain with *Homo sapiens*. The Chatelperronians showed evidence of tool technologies, personal adornments, and some burial practices similar to their Cro-Magnon neighbors (which Lewis-Williams' attributes to Neanderthal borrowing). However, unlike their neighbors, the Chatelperronians showed no evidence of image-making, burials with elaborate grave goods, or sophisticated hunting strategies. For Lewis-Williams, this marks a key cognitive difference in memory capacity and consciousness between the two populations.

According to Lewis-Williams (2002, pp. 89–96), Neanderthals, unlike their human counterparts, could not intentionally recall, cognitively restructure, and socially manipulate the images or experiences they had in altered states of consciousness. In other words, the images seen in dreams, hallucinations, and other forms of contemplation could not be recalled later and constructed into an alternative view of reality. This deeply abstract manner of concept formation was the mode of consciousness that supported image-making, elaborate burial rituals, and even more sophisticated hunting practices (numerous studies have shown that the anthropomorphizing practices of hunter-gatherers are as effective a means of predicting animal behavior as scientific models, see Gubser, 1965; Marks, 1976; Mithen, 1996, p. 168; Silberbauer, 1981). Thus, Neanderthals did not envision (and therefore create images of) a supernatural world.

The point of this discussion, however, is not to pronounce final judgment on the Neanderthal capacity for symbolic thinking or religious imagination. Instead, it is this: if these cognitive attributes are at least questionable in Neanderthals then it seems most prudent to conclude that, by and large, pre-UP religion did not involve a conception of the supernatural.

The cognitive context of pre-UP religion, therefore, appears to be one where rituals of social bonding were present, but without an overarching supernatural framework. As group sizes increased over the course of the Middle Paleolithic, Neanderthals and other hominids faced the increasingly difficult challenge of maintaining stability in larger groups with greater numbers of distantly related and nonrelated individuals. This leads to the following proposal for stage one of the evolution of religion: *the earliest form of religion would have involved putting the ecstatic mental state in service to group cohesion using rituals of social bonding*. This proposal is similar to that of Hayden (1987, 2003, pp. 31–34) who has argued that the original function of religion and religious ritual was to create reciprocal alliances between different groups as a buffer against resources shortages. Hundreds of thousands of years ago, those hominids who managed to create more socially cohesive groups and more reliable intergroup alliances may very well have had a distinct selective advantage over their more isolated, individualistic counterparts. Ecstatic rituals may have been a critical mechanism for constructing those groups.

These ecstatic rituals need not have involved any supernatural elements. Instead, they might find their modern analogues in purely mimetic community activities such as coordinated group dance (square dancing, e.g.), marching, drill team, some team sports, participatory spectator events (rock concerts, football games, etc.), and possibly some fraternity/sorority rituals (Donald, 1991). McNeill (1995, p. 1) contends that such rhythmic, group-coordinated actions bring about a euphoric state and a “muscular bonding” among participants that serve to enhance group cohesion and cooperation. Physically and emotionally engaging group-coordinated activities were the essence of pre-UP religion. From the perspective of the religious mind, pre-UP religion involved two of its four aspects: the ecstatic state and social emotions.

Testing stage one. A number of testable hypotheses emerge from stage one, some of which already have supportive evidence. First, relative to subsequent stages, this stage should be associated with the evolutionarily oldest brain areas. Evidence to date is consistent with this prediction, as areas of the limbic system have been implicated in both emotional func-

tioning and ecstatic experiences (Mandell, 1980; Ramachandran & Blakeslee, 1998, pp. 177–179; Winkelman, 1997, 2002). Winkelman (1997, 2002) for example, attributes the altered state of consciousness associated with ritual to high-voltage, slow-frequency activity of the hippocampal-septal region acting as a driver synchronizing activity across the frontal lobe. The fact that many nonhuman animals also appear to experience altered states of consciousness adds further support to notion that evolutionarily older brain structures are involved (Goodall, 1986; Hoskovec & Svorad, 1969; Keverne, Martinez, & Tuite, 1989; Marcuse, 1951; Volgyesi, 1969). A second related hypothesis is that the brain areas activated by group-based religious ritual (such as rhythmic chanting and dancing) would be similar to those associated with secular group-based activities such as square dancing and marching band, especially where it involves older, subcortical structures.

Finally, this model predicts that the psychological effects of group-based religious rituals and secular group-coordinated activities are the same. Evidence confirming this can be found in the fact that both community religious rituals and secular group-coordinated activities can bring about deindividuation or the loss of a sense of personal identity as one becomes enmeshed in the crowd (d'Aquili & Newberg, 1999, pp. 95–103; Watson, 1973). Community-based rituals, whether secular or religious, encourage the release of brain opiates which promote social bonding (Freckska & Kulcsar, 1989; Prince, 1982). Moreover, Levenson (2003) has found that activities that synchronize autonomic functions among individuals (whether secular or religious in nature) correlate positively with measures of empathy, thus providing a pathway for enhanced social bonding.

The Transition to Upper Paleolithic Religion

Genetic and fossil evidence indicate that modern humans arose in Africa about 150,000 years ago (Cann, Stoneking, & Wilson, 1987; Ingman, Kaessmann, Paabo, & Gyllensten, 2000; Lewin, 1998, pp. 385–411; Ruvolo, 1996). As to when human-like culture and behavior emerged, the situation is murkier. While evidence for sophisticated tools, hunting prac-

tices, and symbolism seem to appear “suddenly” in the archeological record in Europe beginning about 40,000 years ago, evidence from Africa indicates a more gradual transition dating back to about 250,000 years ago (Klein & Edgar, 2002; McBrearty & Brooks, 2000; Mithen, 1996).

The emergence of anatomically modern humans brought with it the modern human brain and its full range of conscious experience. The intensified altered states of the *Homo sapiens*' brain combined with its (most likely) unique capacities for remembering, manipulating, and interpreting the experiences of those states brought forth something new on the evolutionary landscape: the supernatural. The current model contends that these new supernatural visions marked the emergence of shamanism. While attaching a precise definition to shamanism can spark controversy (see, e.g., Vitebsky, 2000), in the current context the term is meant to indicate the attainment of altered states of consciousness for the purpose of interacting with the spirit world for the benefit one's community (Hultkranz, 1973; Townsend, 1999). Furthermore, the ability to achieve and manipulate altered states may very well have been under selection pressure. Religious visions may have been adaptive.

McClenon (1997, 2002) has marshaled considerable evidence in support of the notion that shamanistic healing rituals were fitness enhancing in our ancestral past. Those of our ancestors who were most susceptible to the beneficial physical and psychological effects of shamanistic rituals had a selective advantage over others in surviving illness, overcoming debilitating emotional states, and enduring the rigors of childbirth. (Note: This would have been an individual fitness advantage, which in this context means an advantage over others in the same group. This, over time, could have produced a group fitness advantage in the sense that one group with a larger proportion of individuals susceptible to shamanistic healing may have had higher overall fitness compared to another with a lower proportion; see Wilson, 2002, pp. 12–25 for discussion).

McClenon's “ritual healing” theory is based on a number of converging lines of evidence. This evidence includes:

1. The universality (or near universality) of

ritual healing practices across traditional societies;

2. The fact that ritual healing always involves hypnotic processes and altered states of consciousness;
3. The finding that ritual healing is often highly effective for a range of maladies where psychological factors are involved such as chronic pain, burns, bleeding, headaches, skin disorders, gastrointestinal disorders, and the discomforts and complications of childbirth;
4. The evidence from comparative and archaeological studies indicating the existence of ritual, altered states of consciousness and care of the sick among our primate cousins and hominid ancestors;
5. The fact that the earliest medical texts (from Mesopotamian and Egyptian civilizations) closely connect healing with religious ritual;
6. The finding that anomalous events associated with ritual, such as “miraculous” healing, are effective in inducing supernatural beliefs.

The connection between shamanism and the emergence of modern *Homo sapiens* also finds support in Upper Paleolithic cave art. Following in the tradition of Lommel (1967), a number of researchers have argued that Upper Paleolithic cave art reflects the experiences and rituals of early shamanism (Dowson & Porr, 1999; Eliade, 1972; Halifax, 1982; Hayden, 2003; Lewis-Williams, 1986, 2002; Winkelman, 2002). Though speculative, this suggests that shamanism predates the art since the depictions represent an already present system.

Collectively, these observations lead to the following proposal regarding stage two in the evolution of religion: *shamanistic healing rituals constituted the bridging step from pre-Upper Paleolithic religion to Upper Paleolithic religion*. In the millennia between the emergence of modern humans and the Upper Paleolithic in Europe, ecstatic rituals for social bonding evolved into (but were not entirely supplanted by) shamanistic healing rituals. This was the religion that modern humans brought

with them to Europe, which itself began to transform under the dynamic social and ecological conditions of the Upper Paleolithic.

Religious healing rituals would appear to necessitate notions of supernatural agency. The supernatural world not only exists, but it exerts willful causal force. This spiritual force is accessed and directed by a prescribed, ritualized mode of encounter. Apart from the need for ritual, however, it seems unlikely that any deeper theological understanding of the supernatural would be required (at least not initially). Only minimal linguistic skills would be needed (if at all) to add to the persuasive impact of the ritual (“relax,” “heal,” etc.). Furthermore, both anecdotal accounts and experimental evidence indicate that specific ideologies are unnecessary to the physical and psychological affects of healing rituals (McClenon, 2002, pp. 10, 79–83). Among the !Kung hunter-gatherers, ritual healing is caused by a powerful, but mysterious spiritual energy called *n/um* (Katz, 1982, p. 34). *N/um* itself bears some resemblance to the very ancient and widespread notion of a pervasive, but equally mysterious spiritual force called *mana* (Smart, 1976). This transition then, necessarily entails the emergence of the supernatural agency aspect of the religious mind, but not necessarily narrative capacity.

Testing stage two. Two lines of testing arise from stage two of the proposed model. First, this model predicts that shamanism has more direct individual fitness benefits compared to later-emerging religious elements such as myths and ancestor worship. A number of observations offer support for this hypothesis. For instance, though shamanistic practices vary widely across the globe, they always include some type of healing (both individual and community based). This is consistent with the idea that in its primordial form it directly impacted fitness (McClenon, 2002; Winkelman, 1992).

Furthermore, though today the shaman is seen as a rare, gifted individual, there is reason to suspect that they were far more prevalent in the past. Among the !Kung, for example, it is estimated that half the men and a third of the women are (or were) shamans (Lewis-Williams, 1982). Among the Crow and Cheyenne of North America, spiritual visions were considered essential to success in hunting and warfare, so much so that those gifted with spiritual insight sometimes sold portions of their prowess to

their less talented brethren (Lowie, 1963, p. 175). Finally, its prevalence and value suggest that altered states bestowed real physical and psychological benefits to their practitioners, and recent studies of meditation appear to confirm this (Davidson et al., 2003; Orme-Johnson & Herron, 1997). The fitness benefits of subsequent elements of religion (if present at all) were likely more indirect, relating to increases in group stability and cooperation.

A second line of testing pertains to the brain mechanisms involved in agency detection and supernatural agency attribution. This model predicts that agency detection is an evolutionarily newer function (relative to ecstatic states and social emotions) restricted to larger-brained animals such as primates. Furthermore, it predicts that newer brain structures, very likely in the cerebral cortex, are involved in these functions. A number of lines of research provide evidence for these predictions.

There is controversy over whether apes ascribe internal mental states as causal factors for other's behavior (Byrne & Whiten, 1990; Gallup, 1970, 1982; Hare, Call, & Tomasello, 2001; Ponvinelli & Eddy, 1996; Ponvinelli & Prince, 1998). Human infants, however, seem predisposed to interpreting behavior in terms of intentional agents (Baldwin, Baird, Saylor, & Clark, 2001; Meltzoff, 1995). Furthermore, supernatural agency appears to require an ability to engage in second-order theory of mind reasoning ("I know that you know that I know"), something that emerges only in later childhood (seven year olds as opposed to five year olds; see Bering, 2005, p. 433). Finally, Baron-Cohen (1995, p. 91, 1997, pp. 91–95) has reviewed studies using both brain damaged patients and neuroimaging of healthy subjects that implicate the orbital frontal cortex in theory of mind. All of this is consistent with the idea that agency detection and its extension to supernatural agency are likely to have emerged after ecstatic states and social emotions and may be restricted to humans.

Upper Paleolithic Religion

The last stage in the evolution of religion emerges from the interaction of two elements: human minds and complex societies. A number of researchers have discussed the close connection between population density, social com-

plexity, and cultural and religious evolution (e.g., Dickson, 1990, pp. 84–92, 199–20; Hayden, 2003; Klein & Edgar, 2002, pp. 166–167, 230–232, 237–240). Archeological evidence indicates that not only were Cro-Magnon *Homo sapiens* (in all likelihood) cognitively more sophisticated than their Neanderthal counterparts, but their communities were larger and socially more sophisticated as well (see review in Dickson, 1990, pp. 84–92, 180–189). In Upper Paleolithic Europe, one of the important factors driving increasing populations and social complexity was resource abundance. Bone remains indicate that large game animals such as deer, horses, and mammoth were prevalent and tooth-wear studies confirm that Upper Paleolithic peoples were consuming large amounts of hunted meat (Butzer, 1971; p. 463, Dahlberg & Carbonell, 1961). Dickson (1990, p. 182) argues that in terms of resource availability and acquisition, Upper Paleolithic peoples were more analogous to the equestrian bison hunters of the American Plains or the medieval reindeer-hunting Saami (Lapps) of Scandinavia than pedestrian hunter-gathers such as the !Kung of southern Africa.

Thus, Upper Paleolithic societies had moved from being generalized, egalitarian hunter-gatherers to complex, transegalitarian ones (Hayden, 2003, pp. 122–131; O'Shay & Zvebil, 1984; Vanhaerena & d'Errico, 2005). Transegalitarian or complex hunter-gatherers typically use more sophisticated technologies for harvesting and storing seasonally abundant resources (e.g., nets or traps to catch large quantities of fish during spawning season). This leads to a more sedentary lifestyle with greater private ownership of resources and increasing social inequalities. As will be shown shortly, the move to a more transegalitarian society in Upper Paleolithic times brought with it more exclusive religious rituals and an increasing emphasis on the ancestors. Exclusive rituals and ancestor worship required the construction of a coherent narrative—a religious mythos about how the supernatural world related to the earthly one. Social complexity, therefore, brought the fourth aspect of the religious mind fully into view: narrative formation and existential concerns.

Ancestor worship and narrative formation. As with shamanism, ancestor worship is a universal or near universal trait of traditional reli-

gions (Harvey, 2000; Lee & Daly, 1999; Par-rinder, 1976, p. 24). The ancestors played a prominent role in Greco-Roman paganism and continue to be of central importance to Eastern religions such as Confucianism and Shinto (Ching, 1993; Shelton, 1998; Tsundona, 1986). As will be discussed shortly, ancestor worship also entails the construction of a coherent, collective narrative that is essential to social cohesion and relevant to existential concerns. The ancestors represent a continuity of existence that extends beyond earthly death and interconnects the supernatural and human worlds.

The private ownership of resources present in transegalitarian societies includes the resource-rich territories (e.g., streams abundant with fish, certain migration routes, etc.) responsible for the entire community's well-being and prosperity. Claims to these critical territories typically belong to certain families within the tribe by virtue of their ancestral lineage. These families form the elite strata of an increasingly differentiated society. For example, among the Tlingit of North America's northwest coast, the *anyeti* or nobles of society are typically from clans who claim ownership to the fishing weirs (traps) in the most prized territories (Ober, 1973). Social elites typically justify their privileged status through their filial link to powerful ancestors in the supernatural realm, whose benevolent proprietorship over resource-rich territories generously provides for the entire tribe. Special rituals and sacrifices open only to elites are necessary to intercede with and properly placate these powerful ancestors so that the entire tribe's prosperity and security can be ensured (Woodward, 2000).

This divine justification may have served an essential dual purpose in establishing and maintaining the elites' privilege status within the community. Boehm (1999) points out how hunter-gatherer egalitarianism is aggressively enforced by coalitions that vigorously resist attempts at individual domination. Furthermore, Turner (1969) argues that community rituals often serve as a restraining force against high status individuals exploiting others within the group. By appealing to the supernatural, resource-holding elites cloaked their status in divine legitimacy. This divine legitimacy may have functioned as an effective countermeasure against aggressive egalitarianism while at the same time forcing elites to incur a degree of

supernatural constraint and ritual control on their privileges—thus making their positions more palatable to lower-status community members. Mayan priests and kings, for example, were required to engage in ritualized acts of brutal self-mutilation, puncturing their penises or tongues and tugging objects through the open wounds, as signals of their divine worthiness (Schele & Freidel, 1990). The divine ancestors fractured the community and held it together at the same time. To accomplish this would seem to require a compelling, unifying myth.

The veneration of elite ancestors entails the construction of a conceptual framework for the supernatural, or put another way, a coherent theological narrative connecting the ancestors, the supernatural, and the earthly realm. Its elements would go something like this: (a) the supernatural world exists (a holdover from early shamanism), (b) the ancestors reside in the supernatural world after death, (c) the ancestors can affect conditions in their former earthly tribe, (d) the ancestors maintain a special relationship with their kin descendants in the tribe, (e) the ancestors must be placated with certain rituals and sacrifices by their kin descendants so as to maintain their good favor, which is beneficial for both their direct kin and the tribe as a whole. From this skeletal framework, more elaborate stories and myths explaining why all this is true, how it originated in the history of the tribe, and other important cultural lessons and facts can be constructed to create a compelling story passed on from generation to generation (the mythic stage in cultural evolution; see Donald, 1991). The full flowering of the narrative element in religion provides the cultural myth that sustains the tribe against social disintegration and buffers individuals against the inevitable travails of life.

The first evidence of ancestor worship. Evidence from the Upper Paleolithic is consistent with the notion of an elite social class increasingly concerned with ancestry and legacy. For example, elaborate burial sites such as Sungir (White, 1993), Dolni Vestonice (Klima, 1988), and Saint-Germain-la-Riviere (Vanheren & d'Errico, 2005) attest to the presence of an elite class whose members were laid to rest with great ceremony and lavish grave offerings. Among more recent complex hunter-gatherers, funeral rites of this character typically occur

under the expectation that the deceased is soon to take his or her place as a powerful ancestor in the supernatural realm (Hayden, 2003, p. 239; Sandarupa, 1996).

While the ancestors provided wealth, descendants were necessary to insure it. Thus, as might be expected, the Upper Paleolithic also provides evidence of an increasing concern with progeny and fertility. Nearly 200 Venus figurines—small artifacts carved in ivory, bone, or stone depicting naked, headless, female forms with exaggerated breasts, buttocks, and abdomen have been unearthed and dated to Upper Paleolithic times. Other sculptured, carved, and graphic depictions of naked females and female body parts as well as phallic symbols have also been found (Hayden, 2003, p. 154; Hutton, 1991; Soffer, 1985). Given the amount of effort and resources required to create these images, the likelihood that they simply represent Stone Age pornography seems remote. Instead, as numerous researchers have argued, they more likely reflect concerns over fertility and child-bearing (Eliade, 1958; Wymer, 1982; see, however, Harding, 1976 and Rice, 1982 for alternative interpretations). Furthermore, the Upper Paleolithic marks the first time in history where a substantial number of females were buried with elaborate grave goods, indicating an elevation in their social status (Harrold, 1980). This would be expected if fertility and progeny were becoming increasingly valued.

Exclusive rituals. One of the unique and puzzling aspects of Upper Paleolithic parietal art is the fact that much of it is located in remote, isolated cave chambers. While many spectacular examples of cave art are in relatively open, accessible areas; it is, nevertheless, intriguing how frequently cave artists intentionally selected tiny, tight, difficult-to-reach recesses for their work. At various cave sites, some painted chambers can only be accessed after: a mile-long trek through frigid waters (Montespan Cave), a harrowing climb up a sheer rock face (Nerja cave in Spain), a 16 foot rope descent (the shaft at Lascaux), or a 200 m climb after traversing a 450 m passage (Salon Noir at Niaux cave in France). While the larger, more accessible cave sites were likely used for community-wide rituals, these remote sites were probably used for exclusive rituals and/or individual vision quests (Hayden, 2003, pp. 142–153; Lewis-Williams, 2002, pp. 228–267).

Often these deep caves sites contain the footprints or handprints of adolescents and children (see Clottes, 1992). Owens and Hayden (1997) provide ethnographic evidence showing that among complex hunter-gatherers ecstatic rituals involving young people are often for the purpose of initiation into elite secret societies. These individual or exclusive rituals represent an important change in religion in the Upper Paleolithic.

Popular versus elite religion. Deep cave sites in combination with the evidence for elaborate burials and fertility concerns suggest that the Upper Paleolithic marks the emergence of something new in religion: exclusive rituals that existed alongside community-wide ones. This leads to the following proposal regarding the third stage of the evolution of religion: *Upper Paleolithic religion marks the beginning of a divergence of religion into a community-wide popular form and an exclusive ancestor-based elite form.* This proposal is consistent with that of Dickson (1990, p. 199), who argues that the Upper Paleolithic ushered in a move from shamanistic cults to communal cults of greater social complexity. Hayden (2003, pp. 209–211), as well, has argued for a popular/elite distinction emerging in Upper Paleolithic religion. This division laid the groundwork for future ones characterizing classic paganism such as the high gods or state gods of the ruling classes versus the minor gods of the field and forest, exclusive temple-based rituals versus public feasts and festivals, state sponsored cults versus familial or domestic ones, and so forth. The highly mythologized and socially stratified religion that would characterize the first great civilizations was taking shape.

Testing stage three. This model predicts that narrative formation and existential concerns are uniquely human attributes. Evidence to date appears to confirm this. Brain areas involved in linguistic abilities, episodic memory, and other related functions appear to be part of the executive brain of the frontal lobe where many of our highest abstract reasoning functions take place. For example, according to the HERA model of memory (Nyberg, Cabeza, & Tulving, 1996; Tulving, Kapur, Craik, Moscovitch, & Houle, 1994), the left prefrontal cortex is critical for the encoding of information into episodic memory, while the right prefrontal cortex is critical for retrieval from episodic

memory. In discussing the role of the frontal lobes in episodic memory Tulving and Lepage (2000) state the following:

The point is that the establishment, maintenance, and switching of these frontal sets require massive and presumably highly complex neuronal activity of a kind possible only for highly developed brains, such as that of humans and possibly other higher primates. This is where the story of episodic memory as a very recent evolutionary adaptation comes in. (Tulving and Lepage, 2000, p. 222)

The construction of a coherent personal narrative that integrates experience and accounts for our sense of self appears to be related to left hemisphere linguistic functions (Gazzinga, 1995; Ramachandran & Blakeslee, 1998, pp. 134–137). Structures of the left hemisphere of the cerebral cortex involved in memory and language weave experiences together into a sensible story about the self, its actions and motivations. Gazzinga, Irvy, and Mangun (1998, p. 543) refer to these functions as the interpreter—those aspects of the brain that collectively make sense of our actions and experiences. Using language as a vehicle for constructing a personal narrative and a coherent framework for integrating experience appears to be a uniquely human attribute. Language trained apes are far more utilitarian in their use of language. Kanzi, the most language-skilled ape to date, uses 96% of his linguistic utterances to make requests (Greenfield & Savage-Rumbaugh, 1991). Turning rituals into supernatural stories was the last decisive step in the evolution of religion from its primordial origins and the first step in the creation of book religions as we know them today.

Summary

The model being proposed can be summarized succinctly in three stages.

1. Pre-UP proto-religion dating roughly from 300,000 ya and involving ecstatic states/rituals for social bonding.
2. Transitional religion dating from roughly 150,000 ya and involving pre-UP religion plus shamanistic healing rituals.
3. UP religion dating from roughly 35,000 ya and involving all past forms plus elite rituals and ancestor worship.

In terms of the religious mind, ecstatic states and social emotions (present beginning with pre-UP proto-religion) are hypothesized to form the foundational basis for the emergence of religion. Sometime later, supernatural agency (present in transitional religion) and then, finally, narrative capacity (present in UP religion and onward) were added to this foundation. This model falls generally in line with other proposals of human cognitive evolution such as that of Donald (1991) and Nelson (2004) where mimesis precedes mythic or narrative capacity both ontogenetically and phylogenetically. It also accommodates well with that of Mithen (1996), where social intelligence comprises the bulk of stage one, with interactions between social, technical intelligence and natural history intelligence occurring in stage two and linguistic intelligence being added in the last stage.

Continued progress in unraveling the evolutionary origins of religion will very likely depend on cross-fertilization among varied disciplines. The current model offers an approach framed on the religious mind. Interaction with models from other disciplines and perspectives are necessary to further illuminate the human penchant for the supernatural.

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Received September 5, 2005

Revision received February 14, 2006

Accepted February 28, 2006 ■