Chapter 5
Our Gods: Variation in Supernatural Minds

Benjamin G. Purzycki and Richard Sosis

Abstract In this chapter we examine variation in the contents of supernatural minds across cultures and the social correlates of this variation. We first provide a sketch of how humans are capable of representing supernatural minds and emphasize the significance of the types of knowledge attributed to supernatural agents. We then argue that the contents of supernatural minds as represented cross-culturally will primarily rest on or between two poles: knowledge of people's moral behavior and knowledge of people's ritualized costly behavior. Communities which endorse omniscient supernatural agents that are highly concerned with moral behavior will emphasize the importance of shared beliefs (cultural consensus), whereas communities which possess supernatural agents with limited social knowledge who are concerned with ritual actions will emphasize shared behavioral patterns (social consensus). We conclude with a brief discussion about the contexts in which these patterns occur.

5.1 Introduction

Wilson remarked that "religions are like other human institutions in that they evolve in directions that enhance the welfare of the practitioners" (Wilson 1978, p. 182). Here, we attempt to detail one such way in which religious traditions change in order to maximize the benefits reaped from participation. We are probably the only species on Earth capable of pondering the existence of 'spiritual agencies', as Darwin considered religion (Darwin 1871/2004, p. 117), so we begin our discussion with the cognitive mechanisms required to conceive of these agents. However, we do not limit our representations of these agents to their minds. We also concern ourselves with their movements and mental states. More specifically, we commit ourselves to

Benjamin G. Purzycki
Department of Anthropology, University of Connecticut, 354 Mansfield Road, Storrs, CT, USA,
e-mail: benjamin.purzycki@uconn.edu

Richard Sosis
Department of Anthropology, University of Connecticut, 354 Mansfield Road, Storrs, CT, USA,
e-mail: richard.sosis@uconn.edu

these agents and consequently either refrain from or perform a host of behaviors to appease and please them. These commitments to supernatural agents form the core of the human religious system. This system evolved to overcome significant adaptive problems of human sociality, particularly problems of coordination and cooperation (Alcorta & Sosis 2005; Purzycki & Sosis 2009; Rappaport 1999; Sosis 2009a).

Here, we focus our attention on the ability to attribute mental states to supernatural agents, the way knowledge attributed to supernatural agents motivates behavior, and why such knowledge and concomitant behaviors vary across communities in specific ways. To summarize our argument, supernatural agents vary widely in form across cultures: some are people-like, others are animal-like, and some are conceived of as bodiless forces. The knowledge attributed to these varying forms seems to be constrained between two poles. Some supernatural agents are believed to be omniscient, but in fact these agents are primarily concerned with human moral behavior. Other agents are believed to possess limited social knowledge and are not concerned with human morality, but rather are concerned with ritual performance. Societies develop along these divergent trajectories depending on the ability of communities to monitor behavior.

5.2 Representing Supernatural Minds

5.2.1 The Mindreading System and Attributed Domains

Supernatural agent concepts are found in every human society. From gods and ghosts to ancestor and animal spirits, supernatural agent beliefs exhibit not only many essential similarities but also remarkable differences across cultures. The similarities frequently suggest pan-human cognitive biases, whereas the differences are often considered to be merely cultural byproducts of evolved cognitive mechanisms (Atran 2002; Atran & Norenzayan 2004; Boyer 2001; Kirkpatrick 2006, 2008). One such bias is the ability to explain events and rationalize behavior in terms of supernatural agents. We begin our chapter with a sketch of the human attribution of mental states to other entities and objects in the world. In contrast to the dominant view in the cognitive science of religion (Boyer & Bergstrom 2008), we have argued that, in the context of religion, such attributions show evidence of functional design (Purzycki & Sosis 2010; Sosis 2009a). Here we further develop this argument by exploring the variation in the types of knowledge attributed to supernatural minds around the world.

Detecting mental states has often been characterized as an exclusively human characteristic, although there are indications that other primates have the ability to do so as well (Call & Tomasello 2008). This ability to detect and represent mental states has come to be known as 'theory of mind' or ToM (Premack & Woodruff 1978). Even though we ultimately lack direct, solid evidence of each others' minds — let alone their contents — we nevertheless cannot help but attribute in-

ternal motivational states to animate entities. Baron-Cohen (1997) characterizes the mindreading complex as composed of subsystems that infer internal motivational states driving the observable behavior of other animate entities. One such subsystem is the intentionality detector, which "interprets motion stimuli in terms of the primitive volitional mental states of goal and desire" (Baron-Cohen 1997, p. 32). The intentionality detector "is activated whenever there is any perceptual input that might identify something as an agent. [. . .] This could be anything with [apparently] self-propelled motion. Thus, a person, a butterfly, a billiard ball, a cat, a cloud, a hand, or a unicorn would [activate this mechanism]" (Baron-Cohen 1997, p. 33; see Gelman et al. 1996). Baron-Cohen (1997) suggests that the intentionality detector's "value lies in its generality of application: it will interpret almost anything with self-propelled motion, or anything that makes a non-random sound, as a query agent with goals and desires" (Baron-Cohen 1997, p. 34).

Barrett and Keil (1996; Barrett 2004) argue that we have a mental mechanism, similar to Baron-Cohen's intentionality detector, which interprets objects and events in terms of agency. They refer to this mechanism as the hyperactive agency detection device (HADD). HADD is hyperactive insofar as it attributes agency even to agent-less events and things such as rustling bushes, moving dots on a computer screen, surprising events, and most importantly for our discussion, the gods and spirits of the world's religious traditions. HADD can of course be overridden by *post hoc* conscious reflection. What makes Barrett's account significant for religious cognition is that the hyperactivity of this device triggers the ToM to explain events and other phenomena in agentive terms. But the specific *form* of the agent causing a mysterious event systematically varies cross-culturally (see below). The subsystems of the mindreading system, including HADD or the intentionality detector, share most of the features of Fodor's conservative definition of cognitive modules (Baron-Cohen 1995, pp. 57–58; Fodor 1983, 2000). As input-only mechanisms with operations we cannot consciously manipulate (i.e., it is difficult *not* to detect internal states upon seeing animate entities with the minimal features/inputs which trigger the device), our ability to attribute mental states to other things allows us to 'make sense' of much of our world without noticeable effort. It is at this modular level of human cognition that we interpret our world by way of the 'intentional stance' (Dennett 1971, 1987).

It is not, however, at this level of processing that we categorize specific mental states. In addition to detecting others' mental states, we also attribute *particular domains* of knowledge and feelings to other minds (Bering 2002; Bering & Shackelford 2004; Johnson 2005). What makes the human mindreading system particularly remarkable is that it works together with our learned repertoire of different *kinds* of beliefs, desires, and perceptions, as well as our inferences about objects. While there is evidence suggesting that non-human primates have the ability to mentally represent others' mental states, it is uniquely human to be able to know and state the differences between someone's feeling melancholy or sad, for instance, knowing the difference between Beethoven and Copeland, or feeling vindictive and experiencing *schadenfreude* and so forth. Our external environment provides information about our internal environments; we learn how to make distinctions between types of men-

tal states and accredit others with various concerns and understandings. As such, we can attribute very specific kinds of mental states to others that are exclusive to the human experience (e.g., she is performing calculus in her head). Moreover, we attribute particular domains of knowledge to others as well (e.g., he knows a lot about computers). Domains consist of closely related units of information. One intriguing aspect of religion is that people have even less definite evidence of the contents of supernatural agents' minds than we have of each others', yet throughout the world people act in ways which suggest they have confidence in their assumptions about the concerns and wishes of the supernatural agents that inhabit their lives.

5.2.2 Supernatural Minds, Variation, and Counterintuitiveness

In his classic text *The Golden Bough*, Frazer notes the difficulty in attributing belief in God to 'the lower races' (Frazer 2006 [1890], p. 51):

> If we civilised men insist on limiting the name of God to that particular conception of the divine nature which we ourselves have formed, then we must confess that the savage has no god at all. But we shall adhere more closely to the facts of history if we allow most of the higher savages at least to possess a rudimentary notion of certain supernatural beings who may fittingly be called gods, though not in the full sense in which we use the word. That rudimentary notion in all probability represents the germ out of which the civilised peoples have gradually evolved their own high conceptions of deity; and if we could trace the whole course of religious development, we might find that the chain which links our idea of the Godhead with that of the savage is one and unbroken.

It is immediately clear that Frazer's language is ethnocentric, but if anything his sentiments are an attempt to argue, not that 'savage religion' was savage, but that 'high' conceptions of the gods were simply more refined versions of the same concepts found in non-Western societies. He sees an 'unbroken chain' which links the two traditions. This chain — though not by any means unilinear or unidirectional — is the attribution of mental states to agents without readily apparent bodies.

Our religious thinking can be influenced by mundane cognitive operations. Attributing agency to otherwise non-agentive things may be the best bet for an organism's fitness, because failing to detect agency when an agent exists, such as a predator, may mean the organism's demise (Guthrie 1980, 1993, 1995). However, as discussed above, the bulk of our agency attribution is not religious in nature. For example, we readily talk about omnipresent, omniscient gods as though they are not much different than people. Such inconsistencies in thought are considered 'theologically incorrect' (Barrett 1998,1999; Barrett & Keil 1996) insofar as we often process concepts of the gods as though there was nothing particularly supernatural about them at all.

Theologically incorrect thinking is the output of other 'best bet' computations. As such, the distinction between theologically correct and incorrect religious ideas tells us more about the nature of the human mind (and perhaps dogma) than about the nature of religion. We effortlessly attribute agency to material as well as immaterial objects. Statements such as "the University doesn't like it when we drink

alcohol on campus" or "the government just wants your money" reflect such a tendency. Our propensity to anthropomorphize has arguably even made it possible for the modern corporation (root: *corpus*) to have the status of a legal person! Not only do we naturally think of collections of people as single agents, but we also design laws enforcing such a trend, allowing the individual constituents of the organization to have limited personal liability for their collective decisions.

What, then, distinguishes 'religious' agency attribution from everyday agency attribution to other bodiless agents such as institutions? One possible answer is that, even though we may readily think in terms of their agency, we can recognize that corporations, universities, and the like are comprised of individuals and lack most features of people, whereas religious concepts are not as easily unpacked as this. In other words, the agency of institutions is a perceived emergent property of a collection of bodies. While there is nothing particularly salient about thinking of a group of people as one person, there is something remarkable about believing in an agent that is not grounded in the empirically verifiable world.

If the tendency to grant minds to so many things is a mundane feature of our species, what then makes concepts religious? Many current approaches characterize religious concepts as essentially 'counterintuitive': these concepts violate deep assumptions we have about our essential categories of objects in the world (Atran 2002; Boyer 1994, 2001; Pyysiäinen 2004). Although these approaches assume that agency is not something we normally attribute to plants or artifacts, we in fact explain what plants and artifacts 'do' in terms of agency all the time. Consider the following statements drawn from Dennett's (1987, p. 59) discussion of the intentional stance:

1. My jade plants appreciate the love I give them.
2. My jade plants prefer Mozart to the Melvins.
3. My jade plants know of all the bad things you did as a child.
4. My jade plants know where the sun is.
5. This block of Wisconsin Cheddar appreciates your fine tastes.
6. The thermostat knows how warm it is in here.
7. "Lightning [...] always wants to find the best way to ground, but sometimes it gets tricked into taking second-best paths" (Dennett 1987, p. 65).

Attributing mental states to a plant because it moves towards sunlight or grows better when it is loved (1) or 'listens' to Mozart or the Melvins (2) is perfectly intuitive when explaining movement and change with a preference and interpreting two sequential events as linked by a causal force (presumably 'listening' to one or the other makes them grow better). Attributing mental states to a stationary block of cheese (5), on the other hand, applies agency to an inanimate entity rendering the statement counterintuitive. Yet the thermostat (6) is inanimate and has effects on the world; it seemingly acts on its own (preprogrammed) accord, as does lightning (7). Indeed, there is an intuitive–counterintuitive continuum (Norenzayan et al. 2006): while (1), (2), and (3) attribute agency to plants and are therefore counterintuitive in the technical sense, (1) and (2) *make intuitive sense*, whereas (3) does not. Suggesting that a plant is cognizant of all the awful things one did as a child does not

necessarily violate our basic ontological intuitions; rather it attributes a particular domain of knowledge to plants that they are not normally accredited with.

Compare (3) and (4). In both cases *the capacity for knowledge* is applied to plants, but (4) makes far more intuitive sense than (3). Why? In the case of (3), it is *the particular domain of knowledge attributed* to the jade plant that makes this statement so striking, not the attribution of mental states. It is not, then, the simple attribution of agency to an agentless object that renders an idea counterintuitive (in the technical sense). Since humans are not capable of knowing everything that someone else did wrong, attributing such knowledge to plants is a violation of our expectations about the knowable (i.e., 'counterschematic'; see Barrett 2008; Purzycki 2006, in press a; Purzycki & Sosis 2010). Likewise, if we accredit dogs with the capacity to have such knowledge, it is a violation of our inferences about the knowable, not about animals. Granting a non-agent agency is not necessarily counterintuitive without qualifying what *kind* of agency is attributed to a non-agent and the attributed domains of knowledge. As we discuss below, it is these attributed domains that make supernatural agents particularly salient concepts for people.

The central religious concepts of many traditions are not anthropomorphized supernatural beings (see Guthrie 1980; 1985), but rather supernatural forces or animals. Vine Deloria Jr. (1992) notes that:

> The overwhelming majority of American Indian tribal religions refused to represent deity [sic] anthropomorphically. To be sure, many tribes used the term *grandfather* when praying to God, but there was no effort to use that concept as the basis for a theological doctrine by which a series of complex relationships and related doctrines could be developed. While there was an acknowledgment that the Great Spirit has some resemblance to the role of a grandfather in the tribal society, there was no great demand to have a 'personal relationship' with the Great Spirit in the same manner as popular Christianity has emphasized personal relationships with God (79).

Rather (Deloria Jr. 1979, pp. 152–153; see Powers 1975, pp. 45–47):

> [...] it is with the most common feature of primitive awareness of the world — the feeling or belief that the universe is energized by a *pervading power* [emphasis added]. Scholars have traditionally called the presence of this power *mana*, following Polynesian beliefs, but we find it among tribal peoples, particularly American Indian tribes, as *wakan* [Sioux], *orenda* [Iroquois], or *manitou* [Ojibwe]. Regardless of the technical term, there is general agreement that a substantial number of primitive peoples recognize the existence of a power in the universe that affects and influences them.

Such forces are characterized as creative and intelligent, and often attributed with intentionality in order to transmit ideas more effectively. From a cognitive perspective, however, it is not surprising that Christian missionaries translated such concepts regularly as a personified 'god'. The Sioux concept of *Wakan Tanka*, often translated as 'Sacred Vastness', 'Big Holy', or 'Great Incomprehensibility' (DeMallie 1987, p. 28):

> [...] was the sum of all that was considered mysterious, powerful, or sacred. [...] *Wakan Tanka* never had birth and so could never die. The *Wakan Tanka* created the universe. [...] Rather than a single being, *Wakan Tanka* embodied the totality of existence; not until Christian influences began to affect Lakota belief did *Wakan Tanka* become personified.

However, it seems likely that it was not Christian influence that resulted in American Indians *talking* about sacred forces *as though* they were anthropomorphized and/or attributed with mental states (see Cohen 2007, pp. 104–114 for another example in the case of spirit possession). Evolutionary theorists often do the same when they talk about 'selection', knowing full well that Nature lacks both intentionality and any discriminating taste for the more fit.

In animistic traditions, there are certainly supernatural agents, but not necessarily "culturally postulated *superhuman* agents" (McCauley & Lawson 2002, p. 8; emphasis added). In Tuva, for example, there are many mineral springs (*arzhaannar*) and each spring has its own 'spirit master', as all features of the natural world are believed to be animated by such agents. These spirits take various forms. One of Purzycki's (in press b) informants noted that:

> Everyone prays to the *arzhaannar*. Because they are alive. All of the *arzhaannar* have their spirits. The spirit of Adargan Arzhaan of Sagly [village in southwestern Tuva] is a small marmot. It appears to shamans and lamas. It protects that place. So a man should pray to it. They say there is a bird in this *arzhaan*. It also appears. We notice it in the night when it makes noise. All of these *arzhaannar* have their spirits. That is why every Tuvan prays to his *arzhaannar*, his lands. If we take, for example, Ubsa-Khol [a lake on the border between Tuva and Mongolia], its spirit is a big bull. Each place has its spirit. That is why a Tuvan prays when he is on the road, even if he can't see the spirits. It's the Tuvan people's good ritual.

In this case, spirit masters of these various places are all represented as animal spirits. These spirits animate features of the natural world with life. Even though they cannot see the spirit, people pray to them because these spirits have a protective power over their domains of governance.

To summarize thus far, there is considerable variation in how supernatural agents' forms are represented; some agents are conceived with bodies, others are not, and some supernatural agents are conceived with bodies in some contexts while in other contexts they are believed to be bodiless. It does not appear to be the case that counterintuitiveness or attributions of agency make ideas religious. What makes supernatural agents specifically religious (i.e., worth committing to) are their *attributed* domains of knowledge and concern. In other words, as discussed below, in contrast to other non-agents that we attribute agency to, such as institutions and fictional characters, supernatural agents possess relevant social knowledge and are conceived of as acting upon this knowledge. It is this knowledge and concern which informs — and is informed by — religious behavior.

5.3 Variation in Domains of Supernatural Agents' Knowledge and Concern

5.3.1 Omniscience with Heightened Concern: Prosocial Behavior

> Believing that there are many spirits makes more sense than believing in one god. There are a lot of rivers and mountains. How can one god watch over everything? — Anatoli Kuular, Tuva Republic (Levin 2006, p. 29)

Just as we attribute particular domains of knowledge to other humans, we do the same to our deities. While some supernatural agents know everything we do and think, others are not concerned with such matters, and their knowledge is limited. We can test each others' knowledge about particular domains, but we have no concrete evidence regarding the minds of supernatural agents, let alone what types of knowledge they possess. We find, however, that there are patterns in the mental contents attributed to deities. Some have argued that throughout history people have committed themselves to 'the gods', rather than countless other supernatural beings (e.g., cartoon characters, leprechauns, goblins, etc.) precisely because the gods are accredited with access to valuable social information (Atran 2002; Boyer 2001).

Recent evolutionary theories of religion claim that supernatural agents that evoke religious commitment and devotion are particularly concerned with certain types of social knowledge. This knowledge primarily consists of breaches of prosocial responsibilities (i.e., moral behavior). As such, commitment to supernatural agents may function to inhibit self-interested behavior, and thus in turn contribute to the evolution and persistence of human cooperation (Bering & Johnson 2005; Johnson 2005; Norenzayan & Shariff 2008). Populations differ both in the sets of values they maintain and in the importance they attribute to different types of prosocial behavior, and we would thus expect the concerns of supernatural agents to vary accordingly. What the gods know is an interesting question, but what the gods are *concerned with* is something that is more likely to motivate us to act in socially prescribed ways. The Abrahamic God might not like it if you steal, for instance, but if you live in a small community where little value is held on the accumulation of personal property, then your deity may be more concerned with stinginess.

Boyer (2002, p. 75) argues that it is the perceived access of supernatural agents to socially relevant (i.e., socially strategic) information which makes them salient in our minds. Boyer makes a distinction between agents with 'perfect' and 'imperfect' access to such information. While there is cross-cultural variability, Boyer suggests that supernatural agents are typically granted 'perfect access' to socially strategic information — a very specific domain of all conceivable knowledge. A number of studies have examined the distinctions between what people are supposed to attribute to God, known as theological correctness, and how people actually think about God. Whereas people say that God is omniscient and omnipotent when asked about this explicitly, more subtle measures of how people think about God's powers show

that people tend to implicitly attribute certain human limitations to God, such as the inability to be in two places at once (Barrett 1998; Barrett & Keil 1996).

In a response time task, we (Purzycki et al., n.d.) found that individuals took a significantly longer time to respond to questions regarding God's knowledge of *positive*, prosocial behavior than those regarding *negative*, antisocial behavior. Moreover, socially insignificant knowledge (e.g., whether God knows how many pickles there are in Seth's refrigerator?) yielded even longer response times. Despite God's proclaimed omniscience, we seem to process God's knowledge about negative social information more quickly than other knowledge we attribute to God.

Not all supernatural agents, however, are concerned with the general moral behavior of people. For example, when religious traditions are bound to local ecologies, there is a greater stress on sacralizing particular areas which require resource management (e.g., Lansing 2007; Lansing & Kremer 1993) and defense (Sosis, in press). Such agents are acutely concerned with specific behaviors directed towards them in the form of costly rituals. This suggests that there may be no pan-human cognitive bias for supernatural agents concerned about prosocial behavior.

5.3.2 Imperfect Access with Acute Concern: Ritual Behavior

We find significant variation across populations regarding the way people represent their deities' knowledge and concern. Barrett (2002) discusses a number of predictions regarding the relationship between the knowledge and ritual behavior of supernatural agents. If spirits, for example, have imperfect access to human affairs and "can only discern intentions based on a person's actions, then the particular action will have relatively greater importance" than a person's intentions (Barrett 2002, p. 104). On the other hand, "having the right intentions" will be more important during ritual performances directed toward omniscient gods. We suggest that cross-culturally, omniscient supernatural agents will be primarily concerned with general moral behavior, whereas supernatural agents who are limited in their social knowledge of human affairs will be conceived of as acutely concerned with the performance of ritualized acts that are costly to perform. In short, what spirits and gods know may not be nearly as important for religion as what they care about.

For instance, in the highly complex traditional Lakota (Sioux) religion, if one dreamt of the *Wakinyan* (lightning/Thunderbirds/beings) or one of its associates (e.g., rabbits, barn swallows, etc.), one had been chosen by the Thunderbeings to become a *heyoka* — or sacred clown (see Plant 1994; Wallis 1996 for further discussion). Thomas Tyon noted that "the *Wakinyan* often command the man who dreams of them to do certain things" which are typically quite embarrassing for the initiate. If they fail to do whatever they are instructed to by the Thunderbirds, "*Wakinyan* will surely kill them" by lightning strike (Walker 1991, pp. 155–156). In sum, the Thunderbirds will present the dreamer with an embarrassing scenario that he or she must act out in public — in some cases, it is claimed that the conditions and people in the dream are also revealed, making the act quite specific. In this particular case,

the supernatural agents — the Thunderbirds — are primarily concerned with whether or not the 'chosen' individual carries out the act as detailed in the dream, and lives as a clown until his or her tenure is completed. Individuals fulfill the wishes of the Thunderbeing to avoid reprisals from them. In this case, specific concentrations of the Sioux supernatural force *Wakan Tanka* (discussed above) are beings accredited with acute concerns and knowledge of the ritual behaviors of those 'chosen' to be clowns.

In Tuva, local 'spirit masters' of specific areas are also not accredited with concern for general human conduct. Rather, they are exclusively concerned with human conduct *towards them*. They are neither concerned with, nor do they punish people for antisocial behavior towards one another, or even for leaving garbage around a sacred site. Although there is no obligation to do so, one pays respects to (i.e., 'feeds') spirit masters by making offerings of food, money, and/or tobacco, as well as by tying a prayer tie to the place where they are honored. Interestingly, there appears to be no consensus regarding the breadth of knowledge of these spirits. Most suggest that spirit masters only know what happens in their areas of governance, and few claim that they are omniscient.

However, there is virtual unanimity when it comes to the question of what spirits care about. After a barrage of questions regarding the moral concerns of spirit masters, one rather exasperated informant told Purzycki (in press b): "They don't *care* about litter, they don't care about how you behave, outside of paying attention to them and 'feeding' them, otherwise they get angry." This suggests that there is not necessarily an evolved, cognitive bias toward representing supernatural agents as morally concerned minds, but rather a necessary flexibility in the domains of knowledge and concern accredited to deities. We also expect these attributed domains of knowledge to correlate with the particular types of behavior prescribed ritually.

In both the Sioux and Tuvan cases, we see the attribution of agency to vague and often inconsistently conceived bodies. A Thunderbeing is often described as "shapeless, but He has wings with four joints each; He has no feet, yet He has huge talons; He has no head, yet has a huge beak with rows of teeth in it" (Walker 1917, cited in Brown 1989 [1953]). The spirit masters in Tuva will frequently manifest themselves in various physical forms, but they are often described as "taking the form of X" rather than being perpetually material. The Abrahamic God is often conceived of as being everywhere, but is attributed a body, not only in present day thinking (Barrett & Keil 1996), but in sacred scriptures as well.

Conceptualizations of these supernatural agents are particular to their respective traditions. Each tradition, however, delimits the range of worldly affairs that these entities are particularly concerned about. Such specific domains of concern are not essential components of our basic ontological categories, and nor can they be produced by innate modules. When we entertain the concept of God, the Thunderbeings, or spirit masters, our mindreading system allows us to attribute a mind to these entities. God concepts and the anthropomorphic spirit masters may violate default expectations about people, and the Thunderbirds and animal spirit masters may violate default expectations about animals. Experimental studies suggest that these violations make such concepts easier to remember than intuitive ideas (Boyer

2000; Boyer & Ramble 2001). However, these supernatural agents vary considerably in their forms, concerns, and abilities. This variance represents differences in our cognitive models or schemas of our particular deities (for further discussion of the distinction between templates and schemas in the context of understanding religious concepts, see Barrett 2008; Purzycki in press a; Purzycki & Sosis 2010). So where and why do we find these divergences between what supernatural agents care about?

5.3.3 Emphases on Faith, Practice, and Social Complexity

Many influential thinkers have claimed that religion results from a deep-rooted need to understand humanity's place in the universe (Darwin 2004/1871; Durkheim 2001/1915, pp. 170–171; Geertz 1973, pp. 108, 140; Russell 1961, pp. 574–575). Elsewhere (Purzycki & Sosis 2009), we suggested that an individual's satisfaction in his or her religious worldviews derives from confirmation by peers. In other words, our religious cohorts confirm our convictions with the predicted prosocial behavior inherent in religious groups. Perceived sharedness has mediating effects on judgment and compliance (Zou et al. in press), and it also affects behavior towards members of out-groups (Sechrist & Stangor 2001, 2007).

However, religious models (i.e., beliefs) may lack consistency between individuals in a religious community. This may be offset by an emphasis on consistency in behavior. We would suspect, then, that under particular conditions, some religious communities will emphasize faith, whereas others will emphasize practice. Fernandez (1965) made a crucial distinction between what he calls *social* and *cultural consensus*. Social consensus is an emphasis on the shared "agreement to orient action towards one another. This acceptance and agreement involves the acceptance of a certain set of signals and signs which give direction and orientation to this interaction permitting the coordination and co-existence of the various participants. A good example of social consensus is found in ritual action" (Fernandez 1965, p. 913). Cultural consensus, on the other hand is an emphasis on shared beliefs or the measurable degree to which individuals share cognitive models (Romney et al. 1986).

In his analysis of a newly emerging trend among the Fang, Fernandez (1965) observed very little cultural consensus regarding the claimed function of their religious rituals. In fact, among his informants he found "a feeling that too great a concern with [cultural consensus] might actually interfere with social consensus — the readiness to orient actions toward one another and engage in ritual activity" (Fernandez 1965, p. 914). It is the sharedness, or at the very least *perceived* sharedness, which needs to be maximized and exploited in order to motivate individuals to cooperate. Nevertheless, without appeals to supernatural agents, such ritual action would not be as long-lived as secular costly rituals (Sosis & Bressler 2003).

On the other hand, outside of a few traditions, faith or belief in religious concepts is often not of fundamental importance. Cohen (2002) found that belief was a strong

predictor of life satisfaction, and significantly more so for Christians than for Jews. Also, Cohen et al. (2003) demonstrated that, while Jews and Protestants placed similar emphasis on practice, Protestants were significantly more likely to emphasize faith as an indicator of religiosity. The authors predict that the emphasis on practice and not on faith is probably correlated with how tightly religions are bound to ethnicity (e.g., Hinduism). Faith is a central tenet of Buddhism (see Rahula 1974, p. 8) for example, yet many forms of Buddhism do not endorse the idea of an omniscient deity.

As discussed above, there seem to be two primary domains of behavior that supernatural agents are concerned about: general moral behavior and ritually prescribed behavior. These correlate with emphasis on behavior and belief. These polarities may also correlate with group size. There is an ever-growing literature on the signaling value of religious behaviors (Alcorta & Sosis 2005; Bulbulia 2004; 2009; Henrich 2009; Sosis 2005; Sosis & Alcorta 2003; Sosis & Bressler 2003). The results of such studies suggest that religion evolved to overcome the inherent challenges of cooperation. Human communities are vulnerable to individuals who may exploit others for personal gain. If some members of a group shirk their duties, yet reap the benefits of others' work, the community may ultimately become overrun by exploiters. Religious traditions provide the rationalizations and motivations to engage in the ritualized behaviors that can signal commitment, thereby increasing trust and cooperation within communities. In traditional societies, religion was not something experienced on a particular day or during particular times; it was integrated with all domains of human experience. Large societies complicate these patterns.

Stark (2001) demonstrates that moralizing gods are found primarily among large societies with higher degrees of economic specialization (i.e., agricultural). The more complex a society is, the more likely a population is to worship a high, moralizing deity (Johnson 2005; Lahti 2009; Rappaport 1999; Sanderson 2008; Swanson 1960; Wallace 1966). As group size increases and occupations become more specialized, religion also becomes more diversified, institutional, compartmentalized, and doctrinal (Boyer 2001; Whitehouse 2004). While there is variation in religious thought and practice in non-state societies, there are fewer competing traditions than in state-level societies. As the size of a population grows, social accountability is impaired, and thus the form of a population's religion must change to counter the problems of religious diversity, anonymity, and accountability. It becomes more taxing for communities in larger populations to monitor commitment. Someone may reap the benefits of the group, and when threatened with sanctions for not reciprocating, he or she may simply seek opportunities elsewhere. Yet badges of religious affiliation are reliable signals of trustworthiness to individuals, even though members might not know each other, or may even be of the same tradition (Sosis 2005). Omniscient deity concepts are attempts to curb such problems of social complexity. Emphasis on cultural consensus at the expense of social consensus probably emerges in contexts where religious traditions are:

- intertwined with imperial expansion,
- not an ethnic religion,
- not rooted in a specific ecological area, and/or
- in competition with one or more traditions.

5.4 Conclusion

This chapter began with a description of the pan-human ability to attribute mental states to all sorts of entities. There is abundant variation in the *kinds* of supernatural agents we believe in, but limited variation in the types of *knowledge* we attribute to them. The knowledge and concern attributed to supernatural agents seem to vary across two domains: moral actions and ritual actions. Any evolutionary account of religion must be able to explain the considerable cross-cultural variation in religious expression and belief. While the religious system can be maladaptive (e.g., suicide cults, exclusive reliance on faith healing, etc.), if it evolved to promote cooperation, then variation will only be sustained inasmuch as it effectively overcomes problems of defection. The ability to monitor the behavior of other group members will influence the concerns of a community's supernatural agents. Nonetheless, supernatural agents concerned with either moral or ritual actions are likely to motivate cooperative behavior among constituents in the form of social support. The concerns of supernatural agents, whether moral, ritual, or both, will be systematically associated with other elements that comprise the religious system, including the importance of faith, practice, ethnicity, proselytization, and ecology. Given particular constraints, the religious system will respond to diverse socio-ecological conditions and generally adapt to ensure group cohesion and prosocial behavior.

References

Alcorta CS, Sosis R (2005) Ritual, emotion, and sacred symbols. Human Nature 16(4):323–359

Atran S (2002) *In Gods We Trust: The Evolutionary Landscape of Religion*. Oxford University Press, Oxford

Atran S, Norenzayan A (2004) Religion's evolutionary landscape: Counterintuition, commitment, compassion, communion. Behavioral and Brain Sciences 27(6):713–770

Baron-Cohen S (1997) *Mindblindness: An Essay on Autism and Theory of Mind*. The MIT Press, Cambridge

Barrett JL (1998) Cognitive constraints on Hindu concepts of the divine. Journal for the Scientific Study of Religion 37:608–619

Barrett JL (1999) Theological correctness: Cognitive constraint and the study of religion. Method and Theory in the Study of Religion 11:325–339

Barrett JL (2002) Dumb gods, petitionary prayer, and the cognitive science of religion. In Pyysiänen I, Veikko A (eds) *Current Approaches in the Cognitive Science of Religion*. Continuum, New York

Barrett JL (2004) *Why Would Anyone Believe in God?* AltaMira Press, New York

Barrett JL (2008) Coding and quantifying counterintuitiveness in religious concepts: Theoretical and methodological reflections. Method & Theory in the Study of Religion 20:308–338

Barrett JL, Keil FC (1996) Conceptualizing a nonnatural entity: Anthropomorphism in god concepts. Cognitive Psychology 31:219–247

Bering JM (2002) The existential theory of mind. Review of General Psychology 6(1):3–24

Bering JM, Johnson DDP (2005) "O Lord … you perceive my thoughts from afar": Recursiveness and the evolution of supernatural agency. Journal of Cognition and Culture 5:118–142

Bering JM, McLeod KA, Shackelford TK (2005) Reasoning about dead agents reveals possible adaptive trends. Human Nature 16:360–381

Boyer P (1994) *The Naturalness of Religious Ideas: A Cognitive Theory of Religion*. University of California Press, Berkeley

Boyer P (1996) What makes anthropomorphism natural: Intuitive ontology and cultural representations. Journal of the Royal Anthropological Institute 2(1):83–97

Boyer P (2000) Functional origins of religious concepts: Ontological and strategic selection in evolved minds. Journal of the Royal Anthropological Institute 6(2):195–214

Boyer P (2001) *Religion Explained: The Evolutionary Origins of Religious Thought*. Basic Books, New York

Boyer P (2002) Why do gods and spirits matter at all? In Pyysiänen I, Veikko A (eds) *Current Approaches in the Cognitive Science of Religion*. Continuum, New York

Boyer P, Bergstrom B (2008) Evolutionary perspectives on religion. Annual Review of Anthropology 37:111–130

Boyer P, Ramble C (2001) Cognitive templates for religious concepts: Cross-cultural evidence for recall of counterintuitive representations. Cognitive Science 25:535–564

Brown JE (1989 [1953]) *The Sacred Pipe: Black Elk's Account of the Seven Rites of the Oglala Sioux*. MJF Books, New York

Bulbulia J (2009) Why 'costly-signalling' models of religion require cognitive psychology. In Geertz A, Jensen J (eds) *Origins of Religion, Cognition, and Culture*. Equinox, London

Bulbulia J (2008) Meme infection or religious niche construction? An adaptationist alternative to the cultural maladaptationist hypothesis. Method and Theory in the Study of Religion 20:67–107

Bulbulia J (2004) Religious costs as adaptations that signal altruistic intention. Evolution and Cognition 10(1):19–38

Bulbulia J, Frean M (2009) Religion as superorganism: On David Sloan Wilson's Darwin's Cathedral (2002) in Stausberg, M (ed) *Contemporary Theories of Religion: A Critical Companion*. Routledge, New York

Bulbulia J, Mahoney A (2008) Religious solidarity: The hand-grenade experiment. Journal of Cognition and Culture 8(3-4):295–320

Call J, Tomasello M (2008) Does the chimpanzee have a theory of mind? 30 years later. Trends in Cognitive Sciences 12(5):187–192

Cohen AB (2002) The importance of spirituality in well-being for Jews and Christians. Journal of Happiness Studies 3:287–310

Cohen AB, Siegel JI, Rozin P (2003) Faith versus practice: Different bases for religiosity judgments by Jews and Protestants. European Journal of Social Psychology 33(2):287–295

Cohen E (2007) *The Mind Possessed: The Cognition of Spirit Possession in an Afro-Brazilian Religious Tradition*. Oxford University Press, New York

Darwin C (2004 [1871]) *The Descent of Man*. Penguin Classics, New York

Deloria Jr. V (1979) *The Metaphysics of Modern Existence*. Harper & Row Publishers, New York

Deloria Jr. V (1992) *God is Red: A Native View of Religion*. Fulcrum Publishing, Golden

DeMallie RJ (1987) Lakota belief and ritual in the nineteenth century. In DeMallie, RJ, Parks DR (eds) *Sioux Indian Religion*. University of Oklahoma Press, Norman

Dennett DC (1971): Intentional systems. The Journal of Philosophy 68(4):87–106

Dennett DC (1987) *The Intentional Stance*. The MIT Press, Cambridge

Durkheim E (2001 [1915]): *The Elementary Forms of Religious Life*. Oxford University Press, New York

Feierman JR (2009) *The Biology of Religious Behavior: The Evolutionary Origins of Faith and Religion*. Praeger, Santa Barbara

Fernandez JW (1965) Symbolic consensus in a Fang reformative cult. American Anthropologist 67(4):902–929

Fodor J (1983) *The Modularity of Mind: An Essay on Faculty Psychology*. MIT Press, Cambridge

Fodor J (2000) *The Mind Doesn't Work that Way: The Scope and Limits of Computational Psychology*. MIT Press, Cambridge

Frazer JG (2006) *The Golden Bough: A Study of Magic and Religion*. NuVision Publications, Sioux Falls

Geertz C (1973) *The Interpretation of Culture*. Basic Books, New York

Gelman R, Durgin F, Kaufman L (1995): Distinguishing between animates and inanimates: Not by motion alone. In Sperber D, Premack D, Premack A (eds) *Causal Cognition: A Multidisciplinary Debate*. Plenum Press, Oxford

Guthrie SE (1980) A cognitive theory of religion. Current Anthropology 21(2):181

Guthrie SE (1995) *Faces in the Clouds: A New Theory of Religion*. Oxford University Press, Oxford

Haley KJ, Fessler DMT (2005) Nobody's watching? Subtle cues affect generosity in an anonymous economic game. Evolution and Human Behavior 26(3):245–256

Henrich J (2009): The evolution of costly displays, cooperation, and religion: Credibility enhancing displays and their implications for cultural evolution. Evolution and Human Behavior 30(4):244–260

Johnson DDP (2005): God's punishment and public goods: A test of the supernatural punishment hypothesis in 186 world cultures. Human Nature 16:410–446

Johnson DDP, Bering JM (2006): Hand of God, mind of man: Punishment and cognition in the evolution of cooperation. Evolutionary Psychology 4:219–233

Kirkpatrick LA (2006) Religion is not an adaptation. In McNamara, P (ed) *Where Man and God Meet: How Brain and Evolutionary Studies Alter Our Understanding of Religion*. Vol. 1: *Evolution, Genes, and the Religious Brain*. Praeger, Westport

Kirkpatrick LA (2008) Religion is not an adaptation: Some fundamental issues and arguments. In Bulbulia J, Sosis R, Harris E, Genet C, Genet R, Wyman, K (eds) *The Evolution of Religion: Studies, Theories, and Critiques*. Collins Foundation Press, Santa Margarita

Lahti DC (2009) The correlated history of social organization, morality, and religion. In Voland E, Schiefenhövel W (eds) *The Evolution of Religious Mind and Behavior*. Springer, New York

Lansing JS (2007) *Priests and Programmers: Technologies of Power in the Engineered Landscape of Bali*. Princeton University Press, Princeton

Lansing JS, Kremer JN (1993) Emergent properties of Balinese water temple networks: Coadaptation on a rugged fitness landscape. American Anthropologist 95(1):97–114

Levin T (with Süzükei V) (2006) *Where Rivers and Mountains Sing: Sound, Music, and Nomadism in Tuva and Beyond*. Indiana University Press, Bloomington

McCauley RN, Lawson ET (2002) *Bringing Ritual to Mind: Psychological Foundations of Cultural Forms*. Cambridge University Press, Cambridge

Norenzayan A, Shariff AF (2008) The origin and evolution of religious prosociality. Science 322:58–62

Norenzayan A, Atran S, Faulkner J, Schaller M (2006) Memory and mystery: The cultural selection of minimally counterintuitive narratives. Cognitive Science 30:1–30

Plant J (1994) *Heyoka: Die Contraries und Clowns der Plainsindianer*. Berlag für Amerikanistik, Germany

Powers WK (1975) *Oglala Religion*. University of Nebraska Press, Lincoln

Premack DG, Woodruff G (1978) Does the chimpanzee have a theory of mind? Behavioral and Brain Sciences 1:515–526

Purzycki BG (2006) *Myth, Humor, and Ontological Templates: A Study of the Retention and Transmission of Mythical Religious Ideas*. Unpublished MA thesis, University of Nebraska, Lincoln

Purzycki BG (in press a) Humor as violations and deprecation: A cognitive anthropological account. Journal of Cognition and Culture 10(1/2)

Purzycki BG (in press b) Spirit masters, ritual cairns, and the adaptive religious system in Tyva. Sibirica

Purzycki BG, Finkel DN, Shaver J, Wales N, Cohen AB, Sosis R (submitted) What does God know? Supernatural agents' perceived access to socially strategic and nonstrategic information

Purzycki BG, Sosis R (2009) The religious system as adaptive: Cognitive flexibility, public displays, and acceptance. In Voland E, Schiefenhövel W (eds) *The Biological Evolution of Religious Mind and Behavior*. Springer, New York

Purzycki BG, Sosis R (in press) Religious concepts as necessary components of the adaptive religious system. In Frey U (ed) *Evolution and Religion: The Natural Selection of God*. Tectum Verlag, Marburg

Pyysiäinen I (2004) *Magic, Miracles, and Religion: A Scientist's Perspective*. AltaMira Press, Walnut Creek

Rappaport RA (1999) *Ritual and Religion in the Making of Humanity*. Cambridge University Press, Cambridge

Rahula W (1974) *What the Buddha Taught*, revised edn. Grove Press, New York

Romney AK, Weller SC, Batchelder WH (1986) Culture as consensus: A theory of cultural and informant accuracy. American Anthropologist 88(2):313–338

Russell B (1961) *The Basic Writings of Bertrand Russell*. Simon & Schuster, New York

Sanderson SK (2008) Religious attachment theory and the biosocial evolution of the major world religions. In Bulbulia J, Sosis R, Harris E, Genet R, Genet C, Wyman K (eds) *The Evolution of Religion: Studies, Theories, and Critiques*. Collins Foundation Press, Santa Margarita

Sechrist GB, Stangor C (2001) Perceived consensus influences intergroup behavior and stereotype accessibility. Journal of Personality and Social Psychology 80(4):645–654

Sechrist GB, Stangor C (2007) When are intergroup attitudes based on perceived consensus information? The role of group familiarity. Social Influence 2(3):211–235

Shariff AF, Norenzayan A (2007) God is watching you: Priming God concepts increases prosocial behavior in an anonymous economic game. Psychological Science 18:803–80

Smetana JG (2006) Social–cognitive domain theory: Consistencies and variations in children's moral and social judgments. In Killen M, Smetana J (eds) *Handbook of Moral Development*. Lawrence Erlbaum Associates, Publishers, Mahwah

Sosis R (2005) Does religion promote trust? The role of signaling, reputation, and punishment. Interdisciplinary Journal of Research on Religion 1(7):1–30

Sosis R (2006) Religious behaviors, badges, and bans: Signaling theory and the evolution of religion. In McNamara P (ed) *Where God and Science Meet: How Brain and Evolutionary Studies Alter Our Understanding of Religion*. Vol. I: *Evolution, Genes, and the Religious Brain*. Prager Publishers, Westport

Sosis R (2009a) The adaptationist-byproduct debate on the evolution of religion: Five misunderstandings of the adaptationist program. Journal of Cognition and Culture 9:339–356

Sosis R (2009b) Why are synagogue services so long? An evolutionary examination of Jewish ritual signals. In Golberg R (ed) *Judaism in Biological Perspective: Biblical Lore and Judaic Practices*. Paradigm Publishers, Boulder

Sosis R (submitted) Why sacred lands are not indivisible: The cognitive foundations of sacralizing land

Sosis R, Alcorta C (2003) Signaling, solidarity, and the sacred: The evolution of religious behavior. Evolutionary Anthropology 12:264–274

Sosis R, Bressler ER (2003) Cooperation and commune longevity: A test of the costly signaling theory of religion. Cross-Cultural Research 37(2):211–239

Sperber D (1996) *Explaining Culture: A Naturalistic Approach*. Wiley Blackwell, Malden

Stark R (2001) Gods, rituals, and the moral order. Journal for the Scientific Study of Religion 40(4):619–636

Swanson GE (1960) *The Birth of the Gods: The Origin of Primitive Beliefs*. University of Michigan Press, Ann Arbor

Walker JR (1917) The sun dance and other ceremonies of the Oglala division of the Teton Dakota. Anthropological Papers of the American Museum of Natural History XVI, Part II, New York

Walker JR (1991) Lakota belief and ritual. DeMallie RJ, Jahner EA (eds). University of Nebraska Press, Lincoln

Wallace AFC (1966) *Religion: An Anthropological View*. McGraw-Hill, New York

Wallis WD (1996) *Heyoka: Lakota Rites of Reversal*. Lakota Books, Kendall Park

Whitehouse H (2004) *Modes of Religiosity*. Alta Mira Press, New York

Wilson DS (2002) *Darwin's Cathedral: Evolution, Religion, and the Nature of Society*. University Of Chicago Press, Chicago

Wilson EO (1978) *On Human Nature*. Bantam Books, New York

Zou X, Tam K, Morris MW, Lee, S, Lau IY, Chiu, C (in press) Culture as common sense: Perceived consensus vs. personal beliefs as mechanisms of cultural influence. Journal of Personality and Social Psychology. SSRN preprint. `http://ssrn.com/abstract=1392170`. Accessed 15 September 2009