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An Ecological Theory of Gods' Minds

Benjamin Grant Purzycki and Rita Anne McNamara

Introduction

While the space between the cognitive and evolutionary sciences of religion appears to be shrinking (Watts and Turner 2014), some strains of the cognitive science of religion remain theoretically marginalized from the other evolutionary fields. This is due, in part, to three interpenetrating commitments. First is the view that religion is a functionless or even maladaptive by-product of evolved psychology. Rather than assessed as a hypothesis to be tested, this view was treated as a truism to be repeated (see Alcorta and Sosis 2005; Bulbulia 2008; Sosis 2009; Purzycki et al. 2014). Second, some strains of the field maintain an emphasis on universal cognitive systems as a starting point for inquiry rather than attending to actual religious thought and its variation (cf. Johnson et al. in press). When it does examine explicit thought, it is with the express intent to determine how it conforms or runs counter to universal cognitive architecture or various systems of memory (e.g., Boyer 2001; Barrett 2004; see Appendix). Aside from these commitments, the field pays notably little attention to how religious thought corresponds to features of natural and social environments. As such, there remains a significant—but fillable—void in the field. In this piece, we explore this void and argue that understanding representational models of gods' minds is crucial to understanding religious systems, how they evolve, and how they confront pressing local problems. We present a sketch of a model of the evolution of gods' minds, followed by a scheme by which to test hypotheses about the cross-cultural space that gods' minds appear to occupy.

Evolution of religious systems

According to Sosis and Bulbulia (2011), the field of human behavioral ecology uses "variation in environmental variables to explain variation in human behavior. [Social and natural e]nvironments are vital to the study of adaptive design because traits are only adaptive in relation to a specific environmental context" (343). The behavioral ecology of religion, then, examines how contexts and religious behaviors covary, and whether or not certain behaviors provide fitness benefits in certain contexts. Human behavioral ecologists readily admit to ignoring cognition and are "largely agnostic about the principal mechanisms of adaptive responses." Rather, "behavioral ecologists assume that selection has produced behavior-generating mechanisms that enable organisms to respond optimally—given design constraints and tradeoffs—to environmental conditions" (Sosis and Kiper 2014, 261; see also Smith 2000; Laland and Brown 2011).

Cognitive ecology, however, attends to how variation in social and natural environments explains variation in human cognition (Hutchins 1995, 2010). Real (1993) notes that the goals of cognitive ecology are to "elucidate the underlying psychological and cognitive processes that enter into ecological decision-making, to determine the degree to which these mechanisms are the product of adaptive evolutionary change, and to ascertain the degree to which existing cognitive information-processing schemes constrain potential characterizations of the environment of the organism" (415). An evolutionary cognitive ecological account of religion, then, would ask whether or not, how, and why: (a) contexts and religious *thought* covary, and (b) the content and processes involved in religious thought function to produce adaptive responses to pressures of our social and natural environments (Purzycki et al. 2014).

Anthropologists have long observed that around the world, societies' religious cosmologies often reflect their modes of subsistence and distribution of political or decision-making power (Swanson 1960; Wallace 1966; Peoples and Marlowe 2012). In other words, people often model their religious pantheons on how their societies are structured. However, if religion contributes to the minimization of local problems borne out by subsistence and sociality (Alcorta and Sosis 2005; Purzycki and Sosis 2009, 2010, 2011), then religious beliefs[1] and behaviors should correspond in specific ways that minimize such problems. More specifically, beliefs and practices should predictably change according to shifting socioecological conditions in ways that better manage those conditions, not merely as reflections of other aspects of our societies. The collective action

and coordination required to manage these conditions require communication. The content of that communication must motivate others to collaborate, and appeals to gods are excellent candidates for motivating others.

We wager that changing local social and ecological problems that stem from the complex interactions between humans and their natural environments will predict the content of representational models of gods' minds. This model encompasses individual (e.g., *God wants me to do the very best I can do in school*) and collective models of gods' minds (e.g., *The gods don't like it if you disrupt these sacred places*) as discussed below. Religion is a dynamic system; while models of gods' minds might stimulate corresponding behaviors, people are also remarkably adept at rationalizing their behaviors with post-hoc appeals to supernatural agents. This dynamic coupling corresponds to and affects socioecological problems, which in turn feed back to the reinforcement, stabilization, and expression of this coupling (Purzycki and Sosis 2013). Religious cognition largely follows from complex interactions between social and ecological environments not merely as a matter of "learning," "memory," or "transmission," but *as a function of* adaptive behaviors that minimize the costs that local social problems impose. Religion is not a closed system, of course, since other cognitive systems, ontogenetic processes, and external ecological factors influence religious systems and claims of what gods know and care about. Yet, as we discuss below, crucial components of religion often independently converge. Gods' minds are one such component.

Précis of an ecological theory of gods' minds

Boyer (2001, 144) made the observation that when people mention the gods, they tend to be more focused on gods' minds rather than on other features such as appearance. Of course, gods are often visually represented through imagery and statues, but their knowledge and concerns are what make them particularly salient. What makes gods' knowledge and concerns so compelling is the fact that, even though they may be represented as flawed or even powerless in some domains, they are nevertheless more powerful than humans in many respects and therefore worth serious consideration regarding what they want of us (Garcia 2015). People often claim that gods' powers can provide and take away things that natural agents find difficult to achieve on their own (e.g., fertility of crops, rain, and offering supernatural punishment and rewards), and our behavior can alter theirs by virtue of their knowledge and concern.

Gods are often associated with what Boyer calls "socially strategic information," "the subset of all the information … that activates the mental systems that regulate social interaction" (Boyer 2000, 152, 2002). Defined in this fashion, socially strategic information can be virtually anything given the context. Things as trite as the color of someone's shoes after Labor Day, the careless way one dresses at a job interview, who was having coffee with whom, and so forth are all pieces of information that may activate "the mental systems that regulate social interaction" (Boyer 2000, 152) insofar as someone actually explicitly or implicitly values such things. Gods, however, do not necessarily care about every possible thing that activates social cognitive systems. Rather, specific domains of socially strategic information are more ubiquitously represented as chief among the concerns of specific gods. A more nuanced view that does not rely on the convenience of post-hoc characterization, therefore, needs to account for why this is; which in turn requires a closer look at the *content* of those concerns and the breadth of knowledge people attribute to their gods.

Why gods' minds matter

Psychologically, gods' minds matter to people by virtue of the mentalizing systems that handle them and ongoing developmental psychological research continues to examine how such systems function in relation to beliefs about gods (Heiphetz et al. in press). Drawing on Guthrie's landmark works (1980, 1995), current trends largely maintain the position that making sense of the gods requires making sense of other minds. Presumably, the same evolved systems that allow us to reflect, predict, and act upon the mental states of other people allow us to do the same to the gods (Norenzayan et al. 2012; cf. Reddish et al., 2015). These systems are variously referred to as "theory of mind," "mentalizing," and/or "agency detection" (Premack and Woodruff 1978; Baron-Cohen 1995). Additionally, when primed with agency—regardless of whether or not the agent is a human, ghost, god, or an image of two eyes—people appear to be more likely to follow rules or behave better (Haley and Fessler 2005; Bateson et al. 2006; Waytz et al. 2010; Piazza et al. 2011; Gray et al. 2012; Powell et al. 2012; Nettle et al. 2013). Even though people sometimes do not *explicitly* claim their gods care about human moral behavior, moral cognition still might operate latently, and thus curb antisocial behavior regardless (Purzycki 2011, 2013; Purzycki et al. 2012). Just as pictures of eyes above an office coffee pot might keep people cleaning it more often (Ernest-Jones et al. 2011), indices of gods (e.g., icons, statues, sacred space and place) may prime deeper moral

faculties, regardless of gods' culturally specific concerns. We focus here on the explicit content of these faculties' operations.

Socially, religion functions as an organizational strategy, and the gods serve as particular tactics within this strategy (Purzycki and Sosis 2011). In other words, religion can facilitate the reduction of variation in behavior that can contribute to the deterioration of fitness-enhancing relationships. In terms of gods' minds, people appeal to gods in order to manipulate others (e.g., *If you keep doing x, the ancestors will make you ill*; Lee 2003; *if you don't go to the menstrual hut, you'll be struck by lightning because you offended the spirits*; Strassman 1992), to rationalize or justify their actions (e.g., *We give offerings here because the local spirit appreciates it*; Purzycki 2010; *I go to church because God wants me to*), and to motivate behavior (e.g., *I'd better do this so the spirits don't get upset*).

Appeals to gods' minds steer people toward fitness-relevant behaviors; it is striking how closely tied religion and problems of our social and natural environments actually are. More specifically, if we assess representational models of gods, they should, in principle, tell us about much more than how a population thinks about their gods. It should also tell us: (a) how and what people communicate with each other about their gods, (b) why this communication matters to people, (c) the range of local thought that limits the possible content of socially transmitted information, and (d) if and how this information points to shared, local, fitness-relevant problems. If they do, then what gods know and care about should therefore shift accordingly.

What gods know: Relative omniscience

Not all gods are represented as omniscient. Even the omniscience of those popularly held as such (e.g., the Abrahamic god) is often questioned by theologians and devotees alike (Brown 1991; Kapitan 1991; Abbruzzese 1997; see section "Synchronic vs. diachronic beliefs" in Appendix), and the Bible is inconsistent regarding God's omniscience as well. Nevertheless, the breadth of supernatural agents' knowledge (i.e., absolute omniscience being on one end of this scale) has been associated with greater social complexity (Swanson 1960; Wallace 1966; Bering and Johnson 2005; Shariff 2011). Further, supernatural omniscience appears to be cognitively intertwined with gods' concern for morality; the more gods know, the more they appear to care about moral behavior (Purzycki 2013; see below). Yet, whether or not gods around the world are assumed or thought of to be more knowledgeable than normal humans is

unknown. Quite likely, the breadth of knowledge people attribute to the gods is a function of the interaction between gods' jurisdiction and the knowledge of the world beyond believers' communities.

What gods care about

Gods appear to be concerned with a limited set of things, including but not necessarily limited to: ritual, moral and immoral behavior, etiquette, and management of resources (Purzycki and Sosis 2011). Unfortunately, however, rich, systematic, quantifiable, and comparable cross-cultural work on beliefs is woefully impoverished. Consequently, we must rely on generations of qualitative ethnographies with low methodological rigor that can lead to suspect generalizations, cross-cultural databases relying on such accounts, and cultural psychologists relying on survey and experimental instruments deployed among western university students (Sears 1986; Henrich et al. 2010) that often assume Christianity as a baseline for generalizations. Drawing from ethnographies and our ongoing research, we class gods' concerns in three general categories: (1) things that people do toward each other, (2) things that people do toward the gods, and (3) things that people do toward nature. In many cases, these domains of gods' concerns are likely to overlap (e.g., the gods do not like it if you hunt on someone else's land). For the sake of organization, we examine each of these categories with this caveat in mind.

Toward people: Morality, virtue, and etiquette

While it is common to assume or claim that religion provides a moral code from which people draw their good behavior (see Zuckerman 2008), cross-cultural evidence suggests that only *some* gods are explicitly associated with behaviors that approximate to the "moral." "Moralistic" gods have been explained ecologically in various ways by virtue of social complexity (e.g., moral gods minimize costs of breaching moral codes; Swanson 1960; Wallace 1966; Botero et al. 2014), resource scarcity (e.g., moral gods foster equitable distribution of resources; Snarey 1996), subsistence and economy (e.g., moral gods build strong bonds for herders who engage in internecine warfare over land; Peoples and Marlowe 2012; cf. Baumard et al. 2015).

At least three related questions should immediately arise when evaluating such studies: (1) whose *morality do such studies refer to?*, (2) *"moral" as compared to what?*, and (3) *what is the source of such data?* (see section "Emic vs. etic"; Johnson in press; Purzycki n.d.). In his assessment of forty-three ethnographies

of eighteen different foraging societies, Boehm (2008) distinguishes between moral behaviors and "nonmoral taboos" sanctioned by the gods. Such taboos revolve around "behaviors [that] do not involve being predatory on fellow band members." Among others, these include various violations of food, ritual, birth, and death taboos. His conclusions were that with his sample, foraging societies' deities are far more concerned with "nonmoral taboos" than "morality."

We use "morality" here as explicitly represented, reflective models of interpersonal social behaviors *emically* characterized as "good" or "bad" and/or *etic* characterizations of the moral as normalized behaviors with a cost benefit to others (Turiel 1983; Smetana 2006; Haidt 2008; Rossano 2008; Gray et al. 2012; Greene 2013; Purzycki 2011, 2013). Such *behaviors* might be thought of as distinct from "virtues," which are intrinsic *qualities* of individuals that may or may not have obvious social ramifications or behavioral corollaries. So, killing someone is a moral affair whereas being lazy might be more a matter of virtue. Both of these domains are obvious candidates for universal models of what constitutes a "good" or "bad" person; such qualities and behaviors clearly contribute to human sociality.

Supernatural agents believed to be monitors and/or punishers of violations of morality, and virtue may be particularly effective in promoting cooperation and suppressing antisocial behavior (Johnson and Krüger 2004; Johnson 2005; Shariff and Norenzayan 2007, 2011; Atkinson and Bourrat 2011; Schloss and Murray 2011). The effects of supernatural monitoring and punishment cognition may be especially important in situations where other institutionalized, secular forms of social control are ineffective or absent (Norenzayan 2013).[2] And again, such models should correspond to highly complex societies with greater anonymity and affordances to engage in "immoral" behavior.

Take, for instance, religious advocacy of violence. Matthews and colleagues (2013) find that religious advocacy of violence among Anabaptists corresponds less to the transmission of theological positions than to local contexts. Incorporating this finding into the model requires inclusion of the effects of out-group members' behaviors, rhetoric, and so forth. These feed into socioecological problems by way of the complex relationship between subsistence, natural environment, and features of populations. Beliefs about whether gods care about how we treat other people are also often highly dependent upon who might be the target of one's actions. Socio-environmental threats that societies face, including disease burden and threat of intergroup violence, may be particularly important in influencing whom God thinks believers should be nice to. Believing that the Abrahamic God condones violence may correspond to aggressive responses

(Bushman et al. 2007), while belief that He is powerful and in control can suppress both individual action in punishing others as well as individual support for worldly punishments through secular institutions (Laurin et al. 2012).

Etiquette—arbitrary behavioral conventions—often conveys social influence and control and functions as behavioral badges and reliable indicators of costs involved in social inclusion (Strassman 1992; Sosis and Bressler 2003; Sosis 2006). Appeals to the gods' concerns of etiquette may function as a means to maintain "appropriate" social conduct and reap benefits to which those behaviors may correspond. In Fiji, for instance, local deified ancestor spirits care when one wears hats in the village or shouts in the village at night. Though these may seem trivial, these kinds of etiquette violations convey the violator's disrespect and contempt for the traditional kin-based hierarchy. Such violations are met with disrespect and anger from the living, which has its own dimension of supernatural danger, as well as more direct supernatural dangers from ancestor spirits' retributive curses of bad luck and illness (Katz 1999; Gervais 2013). These proscriptions against etiquette violations corroborate the sacredness of interpersonal obligations within traditional Fijian social structures that are essential to successful subsistence in a sometimes risky environment (Anae 2010; Gervais 2013; McNamara et al. in press). Supernatural sanctions that compel menstruating women among the Dogon of Mali to temporarily reside in public menstrual huts similarly cue social information that may support traditional societal structures. Premenopausal women's periodic residence in these menstrual huts reliably signals their current reproductive status as well as the strong influence that men (and the gods) exert on married women's lives. This in turn leads to reduced cuckoldry and increased paternity certainty (Strassmann 1992; Strassmann et al. 2012).

Toward the gods: Belief and ritual

While "belief" (i.e., propositional faith) is undoubtedly important in some Abrahamic and Buddhist theologies, and often assumed to be a central facet of religion, it is not central to most traditions (Fernandez 1965; Sosis and Kiper 2014). Emphasis on "belief" in gods is likely increasingly important in large-scale societies with stronger, worldly social controls, nonethnic, universalizing religious traditions, and those traditions under threat of dissolution (Purzycki and Sosis 2011). Relatively secular, socially complex societies provide nonreligious and non-kin sources of ordering social interactions, giving individuals more freedom to act as autonomous agents. This individual autonomy can break down the communicative force of public ritualized behavior in favor of showing

other signs of proper internal orientations to the divine (Armstrong 2006; Taylor 2007; Cavanaugh 2011; Lanman 2012). In these cases, declaring one's belief or faith becomes essential. Thought may become increasingly equated with action and indicative of what it means to be appropriately "religious" (Cohen and Rozin 2001; Cohen et al. 2003).

Ritual, however, is central to many—if not most—gods' concerns. While rituals might correspond to various kinds of memory stores (Whitehouse 2004), and while we might expend important, locally available resources to pay our respects (e.g., gods prefer sacrifices of pigs rather than grass), a more profound possibility is that rituals (and the gods to whom these rituals are devoted) might also evolve in specific ways that minimize the deleterious effects of certain social and ecological challenges (Purzycki and Sosis 2009; Atkinson and Whitehouse 2011). Of the former, this is indicated primarily by variation in ritual costs, timing, and location.

Paying ritual costs publicly conveys a reliable sense of otherwise inaccessible private mental states (Rappaport 1999). By engaging in ritual, people convey how committed they are to both the gods and social partners. These costs translate to more reliable and sustained cooperation that is facilitated by trust (Sosis and Bressler 2003; Sosis and Ruffle 2003; Sosis 2005; Soler 2012; Purzycki and Arakchaa 2013; Xygalatas et al. 2013). It follows that local variations in threats to bonds should correspond to variation in the costs and spatiotemporal distributions of rituals.

When groups face threats that make disbanding from the group increasingly tempting (e.g., warfare), rituals increase in risk and cost (Sosis et al. 2007). Places with high warfare frequency engage in genital mutilation, tooth extraction, scarification, and other tests of mettle more often than more peaceful societies. Ritual costs do not always have to be extreme, but even relatively cost-free rituals communicate to observers. Rituals also mark the passage of time and revolve around important life stages cross-culturally (Reynolds and Tanner 1995; Shaver and Sosis 2014; Shaver, in press). They also are timed when resources require management (Rappaport 1984; Lansing 1987, 2007; Lansing and Kremer 1993). And, ritual places are often spatially located at territorial borders (Jordan 2003; Purzycki 2010). Notably, localization of spirits via ritual places corresponds to the breadth of moral knowledge attributed to spirits (Purzycki 2013).

Cross-culturally, many herding and hunting groups appear to have independently evolved a ritual system where spirits are associated with travel and territory (Sierksma 1963). For example, the Hopi traditionally viewed one particular deity's role "as owner and guardian spirit of the earth … [who] assumes

protectorship of those who travel on his land. To be granted a good journey the Hopi traveler formerly would leave a votive offering at one of the god's shrines" (Malotki and Lomatuway'ma 1987, 84). As "owner of the land," this spirit gave humans his permission to live on it (Waters 1963, 22). Compare this to many Inner Asian groups, where local "spirit-masters" are also thought of as "owners" of the earth. During travelling, people make ritualized offerings to these spirits at cairns located on territorial borders. They also do this for safe passage.

Nonlocal visitors to Ainu villages required permission from local leaders and spirits to hunt and fish. Permission was granted through ritual performance, and trespassers were brought before leaders and required to apologize to the spirits for their offense (Watanabe 1972). Fisher-horticulturalists in Fiji also require ritual offerings for local spirits' approval whenever anyone enters or exits a village for any extended time. The ancestors are the traditional protectors of the *vanua* ("people" and "land"), or the inseparable interdependence between Fijian clans and their ancestral lands. Seeking the ancestor's blessing in these entrance and exit rituals corroborates spacio-social connections by acknowledging the inherent danger in entering another clan's territory or distancing oneself from the kin network one is obliged to support. The Khanty of western Siberia are a hunter-gatherer-fisher population living in small communities. Each community has its own traditional hunting grounds. While they seasonally move around in these territories in order to exploit particular resources, they always return to riverside base camps and engage in collective religious rites. If an individual enters someone else's community or hunting territory, one must make offerings to the local spirits (Jordan 2003, 146). Given the social effects of ritual and the priming of supernatural agency, these ritual patterns that reliably convey submission to local expectations may minimize the costs involved in conflict over territory and resources (see Sosis 2011; Johnson and Toft 2014).

Toward nature: Ecology and resource maintenance

Gods also often care about how we treat natural resources. Indigenous intellectuals consistently emphasize the sacred in discussions of humanity's relationship to nature (LaDuke 1999; Battiste and Henderson 2000; Deloria, Jr. 2003), and the burgeoning field of "eco-theology" is refashioning how people in the Abrahamic traditions talk about their relationship to God and the preservation of the natural world (White 1967; Sponsel 2014). While cultural ecological works detail evidence that religion can contribute to ecological knowledge in a variety of ways (Klubnikin et al. 2000; Atran et al. 2002; Berkes 2012), too few examine whether or not religious postulates reflect adaptive ecological behavior.

Among the hunters and herders in the Tyva Republic of southern Siberia, local "spirit-masters" are primarily angered when people sully, pollute, and overexploit natural resources that "belong" to them (Purzycki 2011). Additionally, some areas are off-limits to hunting because they are considered to be spirits' territories (see Donahoe 2003, 111–146). This may indeed function to preserve game. Again, however, such beliefs do not necessarily mean that people actually engage in these prescribed behaviors. Indeed, there is considerable skepticism toward the view of the "native environmentalist" (Smith and Wishnie 2000; Hames 2007). However, there is some evidence that religiously rationalized and motivated resource management can provide fitness benefits for constituents.

Rappaport (1984) famously investigated the relationship between intergroup conflict, religion, and pig-rearing practices among the Tsembaga in Papua New Guinea. As pigs eat the same resources as people, having too many creates strain on gardens and contributes to environmental degradation that result in conflict over territories. Pigs are slaughtered predominantly during spiritual devotions timed during stressful territorial conflicts. More recent studies show that religiously prescribed behaviors show significant effects on caloric returns in hunting practices that contribute to biodiversity (Bliege Bird et al. 2013; Codding et al. 2014). According to Bliege Bird and colleagues (2013), the Australian Martu "believe that if they do not continue to reenact the Jukurrpa [sacred law] through emulating the creative forces of the ancestral beings across the landscape—hunting, collecting, burning and caring for family—those plants and animals that depend on their actions will cease to exist" (2).

Conclusion

Representational models of gods' minds are the content of human communication with respect to the things about which the gods care. They may point to the behaviors that alter the chances that one reproduces, but they are not the behaviors (or absence of behaviors) themselves which may or may not provide fitness benefits. As such, getting a sense of gods' minds is a useful research strategy to further investigate specific case studies and contribute to the discussion of whether or not and how religion evolves because it confers fitness advantages. Behavior and its effects that accompany beliefs are crucial for any satisfactory account of the adaptiveness of religiosity.

Considerable work suggests that while not unidirectional, humans' interactions with their natural and social environments predict the kinds of

beliefs and rituals people have. If this is the case, we predict that components of religious beliefs and cognition will vary as a function of these complex interactions. Representational models of gods' minds are one such component. Our outline of how to approach the study of beliefs about gods' thoughts, concerns, and abilities can give a meaningful structure to decode the dizzying array of variation in religious forms that are often still treated as noise by much existing scientific work on religion. This approach requires extensive and deliberate documentation of how people talk about their gods, what they agree upon, and, equally important, what they do not say or agree about when it comes to these supernatural agents. We posit further that it is necessary but not sufficient to include the cognitive and broad, human universal aspects of psychology and cultural transmission biases. Rather, a thorough approach to understanding the form and function of gods' minds includes the socioecological challenges that societies face. Arguably, this is not merely an obvious candidate for further research. Rather, it is crucial and significant for cognitive, cultural, and evolutionary sciences of religion.

Acknowledgments

Appendix

Curiously, the methodological and theoretical tools of cognitive anthropology (D'Andrade 1995; Kronenfeld et al. 2011) have yet to fully penetrate the cognitive science of religion. This is likely due to the latter's general commitment to understanding the biological bases for religious thought. Cognitive anthropology has a lot to contribute on this front given its emphasis on the structure and content of explicit and implicit thought. In this appendix, we discuss the focal kinds of beliefs discussed in the literature to highlight those

which the cognitive science of religion largely attends and those which cognitive anthropology would examine.

Emic versus *etic*

Consider the case of gods' moral concern (section "Toward people: Morality, virtue, and etiquette"). Despite the volume and importance of these studies seeking to address the social and ecological contexts that give rise to moralistic gods, not a single one of them draws from data systematically collected from people about what their gods care about. Moreover, how representative this moralism is among any given sample is unknown. Additionally, whether or not the determination of gods' "moralism" is drawn from *etic* or *emic* models of morality remains unclear. Indeed, the Standard Cross-Cultural Sample, a database often used for such studies, defines "moralistic High God" as: "a spiritual being who is believed to have created all reality and/or to be its ultimate governor, even though his/her sole act was to create other spirits who, in turn, created or control the natural world" that people view as "Present, active, and specifically supportive of human morality." One interpretation of this is that a specific god *cares about* human morality. If so, the obvious question is: *moral to whom*?

A classical distinction in cultural anthropology is that of the *etic* and *emic* (Pike 1967; Harris 1976; Headland et al. 1990). Crudely put, *emic* data is that which participants (i.e., informants, subjects, interviewees, etc.) offer. So, when we ask people to tell us what the gods care about, they give us *emic* data on their views of the contents of gods' minds. *Etic* information, however, is external to the participant. Theories, typologies, definitions, interpretations, re-characterizations, and so forth are *etic* constructs; our informants are not likely to appeal to such characterizations when they answer our questions, but the data they do provide are *emic*.[3] If *emic* representations are representations of participants' worlds, then *etic* representations are representations of participants' representations. If we are interested in variation in religious beliefs, collecting *emic* data is crucial. This raises another question related to gods' moralism: *what do all of the gods that aren't "specifically supportive of human morality" care about?* One simple way to satisfactorily answer these questions is to ask people what gods care about, craft representative models of these attributed concerns, examine these models' cross-cultural variability, and determine whether or not this variation corresponds to variation in local problems. To do this requires

examining accessible, or "reflective" beliefs, not merely the coding of text materials that reflect the methodological limitations and biases of its authors and subsequent coders.

Reflective versus intuitive beliefs

Some (Sperber 1997; Barrett 2004; Slone 2004) emphasize the distinction between "intuitive" and "reflective" beliefs, which often correspond to "naturalness" and "unnaturalness" of religion (Barrett 2000; Bloom 2007; Geertz and Markússon 2010; McCauley 2011). As a result, much effort has focused on identifying how religious belief is effortless and often beyond conscious control. For example, such intuitive, heuristic models of gods' minds should be anthropomorphized to suit evolved social cognitive mechanisms used to understand human agents. This focus on intuitive religious belief also assumes that any representation of a supernatural agent that does not fit the effortless, heuristic model of gods' minds will necessarily only arise due to effortful, reflective thinking (e.g., Barrett and Lanman 2008; Bering 2010). This model may well represent how most people experience gods' minds—either due to lack of ability or interest in thinking more reflectively about gods, or to the fact that all humans use such unreflective, implicit processing for a majority of our basic cognitive functions. Therefore, the majority of psychological work thus far has focused on the unconscious, heuristic model of the Abrahamic god's mind rather than the reflective model.

By way of illustration, Figure 8.1 represents a hypothetical belief set of one aspect of God's concerns. Assume that someone has collected naturalistic data from a sample regarding what the Abrahamic God dislikes (i.e., "Please list 10 things that make God angry"). Numerical values on the model indicate proportionate frequency or salience of each item for the sample as a whole (see Quinlan 2005), and the eight nodes represent the eight most frequent or salient items listed by a sample. This in turn functions as a predictive model of what any single individual within a sample will say, in what order, what kinds of information gets engaged when thinking about God, and perhaps indicative of what kind of deeper cognitive systems get recruited during this event. Such a model allows us to directly compare—both quantitatively and qualitatively—representational models of gods' concerns across individuals, traditions, contexts, time, and other dimensions we might have some theoretical reason to manipulate. This kind of belief set is our dependent
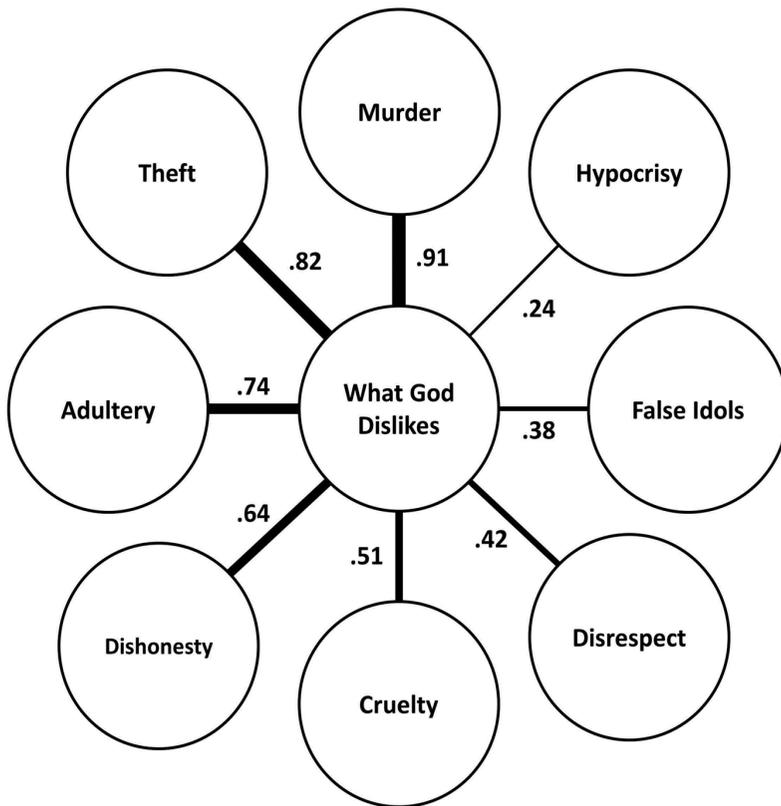
Figure 8.1 Hypothetical representational model of what the Abrahamic God dislikes.

variable (see Purzycki n.d.). Of course, such belief sets change through time, a point to which we now turn.

Synchronic versus diachronic beliefs

Consider the popular notion of "theological correctness" (Barrett 1998, 1999; Slone 2004). While one might say Christians believe that "God knows everything," evidence suggests that our minds do not consistently operate as though they believe this, and we often say things that are inconsistent with this (Purzycki et al. 2012; Purzycki 2013; Lane et al. 2014). What determines this "correctness" is a matter of authorities and experts (including holy books); our

minds produce theologically "incorrect" statements by virtue of other cognitive systems' default, intuitive operations. However, authoritative sources are *not* consistent. In other words, we are *supposed* to say that "God knows everything," but even the Bible is not consistent about this point, let alone theologians. Additionally, in many cases, there is no such central doctrine, no central authority, and no written text by which to appeal in order to determine what people are "supposed" to believe.

So, such a notion presupposes—rather than tests—that there is some model out there to which people are expected to conform. As such, we emphasize the importance of "cultural consistency" as a matter of representational consensus rather than "correctness." Cultural or representational consensus models are predictive models of what individuals are likely to or should believe (i.e., ought to believe) given the variance of the sample (Romney et al. 1986; Oravecz et al. 2014). Thus, there is a method that accounts for: (a) individual models, (b) shared models, (c) variation across sharedness for both individuals and groups, and (d) provides scores for how close individuals approximate to those shared models (see Purzycki 2013).

Nevertheless, we have to come to terms with the variety of ways people appeal to gods, the relative stability of the content of such appeals, and the methodological tools required to appropriately characterize any given sample's belief sets, however internally inconsistent they may be. Such beliefs and their stability fluctuate through time and space synchronically and diachronically (Purzycki and McNamara in press). Synchronic reflective beliefs are religious appeals that have a relatively short life span and are highly dependent on situational contexts. So, one might claim that God helped them score a winning basket, but ideas like "God cares about basketball," or "God helps specific people shoot baskets," are neither widespread nor sustained outside of such contexts and times. However, if one were interviewing recovering drug addicts about what God cares about, "God wants me to conquer my addiction," might be a consistent feature of their models and indicative of a sample's shared, persistent problems. Diachronic reflective beliefs are those that have staying power; they are more likely to be shared and are not simply situational postulates. Any ecologically oriented theory of gods' minds predicts that sustained models of what the gods care about will correspond to sustained social and ecological problems, and short-term ecological pressures may correspond to synchronic beliefs about gods' concerns. Therefore, in order to properly situate beliefs in local contexts, we must be careful about the distinction between *when* and *where* people express such beliefs.

Notes

1   We refer to "belief" in two general senses. In some cases, we simply use it to refer to any mental representation. However, we primarily use it to refer to explicit and reflective representational models of spiritual content. In other words, when we say that gods care about X or Y, we are saying that people P's consensus models of gods' minds consist—or should consist—of X or Y. Our present argument is that X or Y should in some way point people to social and ecological challenges to fitness in specific contexts. Note that this argument neither requires nor assumes that individuals actually believe (i.e., hold something to be true) the content of their religious postulates. Rather, we refer to representational models. What we wish to examine is whether or not those representational models (specifically gods' minds) qualitatively correspond to behaviors that moderate challenges to fitness and if so, how and why. Empirically examining such a question requires examining actual belief sets, something to which the cognitive science of religion has largely not attended. See the Appendix for further discussion.

2   This is not to say that societies with weak secular institutions for maintaining cooperative social norms will necessarily develop beliefs in supernatural agents that observe and punish norm violators. Rather, once these beliefs are present, they should be very successful in supporting maintenance of prosocial behavior.

3   *Etically*, it is easy for us to characterize data however we wish. So, one could easily characterize such data as obviously "moral" or "socially strategic information" (see below) in a post-hoc fashion.

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