

“O Lord . . . You Perceive my Thoughts from Afar”: Recursiveness and the Evolution of Supernatural Agency*

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ABSTRACT

Across religious belief systems, some supernatural agents are nearly always granted *privileged epistemic access* into the self's thoughts. In addition, the ethnographic literature supports the claim that, across cultures, supernatural agents are envisioned as (1) incapable of being deceived through overt behaviors; (2) preoccupied with behavior in the moral domain; (3) punitive agents who cause general misfortune to those who transgress and; (4) committed to an implicit social contract with believers that is dependent on the rules of reciprocal altruism. The present article examines the possibility that these factors comprise a developmentally based, adaptive information-processing system that increased the net genetic fitness of ancestral human beings living within complex social groups. In particular, the authors argue that fear of supernatural punishment, whether in this life or in the hereafter, encouraged the inhibition of selfish actions that were associated with “real” punishment (and thus real selective impairments) by actual group members.

KEYWORDS

Evolutionary theory, theory of mind, cognitive development, morality, intentionality, cooperation, reciprocal altruism.

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When you close your doors, and make darkness within, remember never to say that you are alone, for you are not alone; nay, God is within, and your genius is within. And what need have they of light to see what you are doing?

Epictetus

O Lord, you have searched me and you know me. You know when I sit and when I rise; you perceive my thoughts from afar, you discern my going out and my lying down, you are familiar with all my ways.

Psalm 139

I will govern my life and thoughts as if the whole world were to see the one and read the other, for what does it signify to make anything a secret to my neighbor, when to God, who is the searcher of our hearts, all our privacies are open?

Seneca

If only God would give me some clear sign! Like making a large deposit in my name in a Swiss bank.

Woody Allen

Mental states are highly labile and volatile abstract entities, comprised of all the self's continually changing intentions, desires, beliefs and emotions that are often responsible for its observable behaviors. Although inferences regarding others' mental states are frequently plagued with errors, the human mind is expert at taking into account the information that affects others' subjective views of the world (Baron-Cohen 1995; Dennett 1987; Lillard 1998). Because having causal knowledge of others' behaviors may be adaptive in that it enabled ancestral individuals to control events that had important consequences for one's own genetic fitness (e.g., through implanting false beliefs, repairing false beliefs, manipulating emotions), such a mental representational system might have been subjected to intense selective pressures in evolutionary history (Cosmides & Tooby 2000; Tomasello 1999).

However, it is hard to fathom *any* evolutionary conditions that would have given rise to a completely infallible mental representational system, one in which agents could literally read the minds of social others (indeed, the selection pressures on mechanisms to deceive others were likely as strong as those for detecting them). Rather, we bear witness to the overt actions and consequences of what we presume are other people's

mental states, but we cannot perceive others' mental states directly. As the philosopher Bertrand Russell (1948) pointed out in his exposition of solipsism, we cannot be certain that other minds exist at all – all we can do is logically infer that others experience as we do. Philosophical arguments aside, an observer can attempt to explain the self's overt behaviors and may be fairly successful in predicting its future actions, but only the self enjoys the conscious derivatives of its neural systems and gains *privileged epistemic access* to its own mental states (e.g., Damasio 1999; Humphrey 1992).

Privileged Epistemic Access and Supernatural Agents

Perhaps, however, there are specialized culturally-postulated agents that also enjoy such access. Enter supernatural agents. Although there may currently be insufficient ethnographic data to formally test the hypothesis, we submit that a central component of religious systems are concepts of supernatural agents that have privileged epistemic access to the self's mental states. The idea is a prominent one in Judeo-Christian thought – both in formal theology (“Before a word is on my tongue you know it completely, O LORD.” Psalm 139) and in folk conceptions of God's omniscience. Although in any culture there may be a host of deities, spirits, and demons populating a common religion, religious scholars would be hard-pressed to find a religious system that does not have within its ranks some supernatural agent that, among other impressive feats, is envisioned as *knowing*, rather than merely inferring from observable behaviors, the self's true intentions. Consider Pettazzoni's (1955, p. 20) analysis of this topic:

Divine omniscience has another field of activity; besides the deeds and besides the words of mankind, it examines even their inmost thoughts and secret intents. In the prophecies of Jeremiah we are told that the Lord tries “the reins and the heart” (Jer. Xi, 20). The same thought is found among many other peoples, savage and civilized. Karai Kasang, the Kachin Supreme Being, “sees” even what men think. The Haida say that everything we think is known to Sins sganagwa. The Great Manitu of the Ankara knows everything, including the most secret thoughts. Tezcatlipoca knows men's heart; Temaukel, the Supreme Being of the Ona-Selknam, knows even our thoughts and most private intentions. In Babylonia, the god Enlil knows the hearts of gods and men, and Shamash sees to the bottom of the human heart. Zeus likewise knows every man's thought and soul.

Such cross-cultural and cross-temporal evidence raises important questions about the relations between cognitive development and religious concept acquisition and also about the evolutionary history of supernatural causal beliefs. If implicitly granting some supernatural agents privileged epistemic access is in fact a culturally recurrent phenomenon, then perhaps it has played a more important role in human social cognition than psychologists have thus far bothered to consider (Bering, in press). It is striking that epistemic access seems both universal among cultures and unique within them (supernatural agents are the *only* ones to be attributed such powers).

The psychological mechanisms that underlie representations of supernatural omniscience are seemingly dependent on social-cognitive and motivational factors that emerge during development. Young children may not automatically perceive supernatural agents as having a direct link to all their hidden thoughts, at least not in the same manner older children and adults do. This suggestion may strike some readers as implausible because young children frequently are portrayed as operating on the basis of an egocentrism that should lead them to view supernatural agents as sharing their own private perspectives (*cf.* Bovet 1928). Recent findings by Barrett, Richert, and Driesenga (2001), for example, show that 3-year-olds who have not yet developed a comprehensive belief-desire psychology reason that God does not harbor false beliefs and does not suffer from the mundane epistemological rule that seeing leads to knowing. According to the authors, the fact that children this age also reason about natural agents in the same way does not compromise their controversial position that “children may be better prepared to conceptualize the properties of God than for understanding humans” (Barrett et al. 2001, p. 60). This is because although children’s conceptions of human beings change with the emergence of a representational theory of mind, allowing them to view others as being susceptible to false beliefs, children’s “theologically correct” conception of God’s infallible knowledge is in place from the start.

However, although these findings convincingly demonstrate that young children overextend their knowledge to other agents, both natural and supernatural, the data may not display children’s cognitive readiness for religious concepts as the authors wish to argue. This is because notions

of supernatural omniscience are inextricably tied up with moral sanctions; they seldom, if ever, are associated with amoral questions such as the ones that are at issue in the study by Barrett et al. (2001) (e.g., “If God wanted to show you some crackers, what would God show you the inside of?” “What does God see inside the darkened box?”; Atran 2002; Boyer 2001; Hinde 1999; Reynolds & Tanner 1995). Rather, even a modest glance at the comparative religion literature shows that people are much more concerned with what supernatural agents know about their moral behaviors than they are about anything else. Following Boyer (2001), we may say in theory that people implicitly assume that God knows what is inside of their refrigerators or that the cat is hiding in the attic, but unless the refrigerator contains the severed head of an enemy or the cat is hiding in the attic because it is afraid of its abusive owner, it is unlikely that people would ever stop to consider whether God knows these trivial facts.

Strategic Social Information and the Moral Domain

When dealing with the attribution of epistemic access to the self’s private mental states, what is really at stake is the strategic information that can be barred from social others through deceptive behaviors but that is envisioned to be transparent to special agents such as ancestral spirits and gods. From an evolutionary perspective, strategic information is that which must be fully retained from public exposure or only selectively shared with specific social others because of its capacity to interfere with or facilitate genetic fitness (Bering & Shackelford, in press; Dunbar 1993). Because social adaptations are ontogenetically “fixed” to fit the demands of particular socioecological conditions, what is considered to be strategic information is somewhat variable across cultures. Nonetheless, developmental psychologists have shown that children are intuitively equipped to differentiate *moral imperatives* (e.g., thou shalt not hit or steal), which protect the mutually agreed upon rights of social others, from *social conventions* and customs (e.g., one should remove one’s hat upon entering a church; it is impolite to eat spaghetti with one’s hands), which deal with expectations for cultural behaviors (for a recent review, see Turiel 2002).

Generally speaking, the former are acquired earlier and with much less effort than the latter, which because they are more culturally versatile come

only with enculturation and training. In addition, breaching moral rules is accompanied by feelings of guilt and shame on the part of the child and harsher punishment on the part of the parents, whereas violations of social conventions, while they may cause embarrassment, are handled with more tolerance by both the child herself and by her parents (see also Gilbert 1998; Tangney 2001). They are far less consequential for both the perpetrator and “victim,” and only loosely related to fitness.

Thus, it is typically information dealing with moral breaches that is the stuff of secrets and social anxieties. Nevertheless, it oftentimes requires more effort for both children and adults to obey moral imperatives than to participate in social conventions because impinging on the rights of others often means immediate gains in resources and enhanced opportunities for the self. Yet because the benefits of living in social groups significantly outweigh the disadvantages, desires to engage in selfish behaviors (e.g., stealing from others, aggressing against enemies, sexual coercion, and so on) that can reap immediate rewards must be kept in check by adaptations for group living (Alexander 1987; Axelrod & Hamilton 1981; Hamilton 1964; Humphrey 1976; Trivers 1981; Williams 1992).

The Problem of Other Human Minds

Unlike other species, the intentionality system, which made the human organism aware of the existence of other minds and therefore highly sensitive to what others “know” or “do not know” about the self, rendered humans’ reproductive success contingent upon the opinions of others (for a general comparative review of the intentionality system, see Povinelli, Bering & Giambrone 2000). As such, human behaviors have come to bear little resemblance to actual human desires. For members of other social species, such as most nonhuman primates, whether such short-term strategies are deployed appears solely a function of who is in the immediate environment. When faced with dominant social others or those who might recruit dominant others to the scene through various alarm calls, nonhuman primates tend to inhibit selfish actions that can lead to direct punishment (e.g., see Cheney & Seyfarth 1990). However, when such conditions are not present, many primate species capitalize on their surroundings and rape and plunder with equal ease. This makes sense in light of the absence of an intentionality system in other species – a

system that functions in large part to allow individual group members to collect, retain, and share strategic social information. Without such a system in place, strategic decisions should resemble those a thief makes when refraining from his thieving because there is a Doberman Pinscher in the room, but paying no mind to the cat on the sofa.

In the short run, stealing from a neighbor may be an adaptive decision – we may use the stolen money, for instance, to buy ourselves expensive jewelry and thus capture the attention of potential mates by falsely advertising our available resources. In the long run, however, risking the possibility of detection and the consequent social exclusion and tarnishing of our reputation by engaging in this short-term reproductive strategy makes this a very poor decision indeed (e.g., see Schelling 1960; Johnson, Stopka & Knights 2003; Ketelaar & Au 2003; Frank 1988; Wedekind & Malinski 2000). This is not to say that we do not *want* things that are not ours, and it certainly does not mean that we are not tempted to cheat. Rather, such impulsive desires are merely tempered – usually – by human intelligence, which weighs in on the costs and benefits of risky moves. Any psychological mechanism capable of aiding our ancestors in escaping ancient social adaptations that evolved prior to the emergence of the human intentionality system would have therefore been adaptive because it was capable of striking a careful balance between the old and the new.

Supernatural Agents Helped Individuals Cope with the Problem of Other Human Minds

At first blush, it might not appear that concepts of supernatural agents endowed with privileged epistemic access would provide any aid. For example, of what evolutionary significance is it that the gods and spirits are privy to all the perfidious and felicitous motives that happen to pop into our heads, so long as our overt behaviors are maladaptive or adaptive in the eyes of the group? Our social success, after all, is defined by our treatment by other group members, who have real epistemic limitations, not in any veridical sense by what culturally postulated supernatural agents “know” about us. Therefore, the fact that supernatural agents are seen as having privileged epistemic access, in and of itself, does not pose much of a threat because these agents have no direct means by which to communicate

potentially damaging social information about the self with other ingroup members.

However, the fact that they cannot gossip or, for that matter, the fact that they may not even exist does not make supernatural agents perceived to be any less dangerous. On the contrary, they are the source of tremendous worry and fear because they are considered to have the unique power to cause general misfortune for social transgressors, and this was likely the case in the ancestral past just as it is in contemporary times. Following W.I. Thomas' Dictum, people's behavior is explained not so much by what is real, but rather by what they believe is real. Johnson and Krüger (2004) have argued that the threat of supernatural punishment, whether in this life or in the hereafter, induces cooperation because religious beliefs often serve as literal truths, and this deterrent effect was likely especially strong for societies for whom many natural phenomena remained inexplicable. Supportive evidence for this line of reasoning comes from a recent study by Roes and Raymond (2003), who demonstrated that group size is positively correlated with the presence of "moralizing gods," supernatural agents interested in human moral affairs and who adjudicate upon such matters through vengeance toward the disobedient. As evolutionary psychologists, however, we must explain not only the theoretical biology underlying adaptive processes, but we must also understand the cognitive hardware – the information-processing systems – that are designed to engage organisms in adaptive behaviors. Moralizing gods can only find their way into large social groups insofar as individuals are capable of envisioning these gods as enforcing their morals through the occurrence of positive and negative events. A moralizing god who fails to "communicate" with its followers would not be a very effective one.

This is not an entirely new theoretical concept. In his book *Primitive Law*, the early anthropologist Hartland (1924) wrote that "the general belief in the certainty of supernatural punishment and the alienation of the sympathy of one's fellows generate an atmosphere of terror which is quite sufficient to prevent a breach of tribal law (p. 214)." Social ostracism may have devastating fitness consequences within socially dependent hunter-gatherer cultures.¹ What is novel about our current thinking on this topic

¹There is reason to believe that religious commitment on the part of individual group members serves as an important signal of commitment to the group more generally. For

is that it attempts to reconcile such recurrent causal beliefs with the fundamentals of evolutionary biology and natural selection. If such current thinking is able to explain group processes by focusing on the adaptations of individual group members, or more specifically by concentrating on the level of the gene, it may lead to the most successful account of supernatural causal beliefs to date.

Supernatural Agents and Moral Regulation: Ethnographic Literature

Although it is impossible to cover all such beliefs in the present article, following is a very small sampling of punitive religious causal beliefs as reported in the Human Relations Area Files (eHRAF). For example, among the Ndyuka of South America, “all misfortunes afflicting the community, ranging from illness and death to scarcity of game and poor harvests, are due to the withholding of divine favor occasioned by sin” (van Velzen & van Wetering 1988, p. 197). For the Chuuk of Oceania, death and illness are almost always attributed to supernatural causes. “True, the bite of a fish may be the actual cause of your death, but then [one] would not have been bitten, says the native, if women had not been along on the fishing trip” (Fischer 1950, p. 52). Among the Lao Hmong, much human illness and injury was attributed to “the wrathful punishment of an ancestral spirit for social impropriety” (Scott 1986 [1990], p. 99). For Ugandans around the turn of the last century, “cases cited of behavior which was liable to anger a spirit were failure to pay a debt or to make some gift, particularly in connection with marriage ceremonies” (Mair 1934, p. 229). The Bemba of Zambia “are deeply convinced that relatives who die with a sense of injury have the power to return and afflict the living with misfortune, illness, and even a lingering death from a wasting disease . . . there is no doubt that the fear of supernatural punishment is a very strong sanction enforcing the sharing of food and the provision for

example, Atran (2002) argues that religious behaviors act as a “green beard” advertising to others that the individual is unlikely to defect from the group or become prone to jeopardizing the genetic fitness of other members (see also Bulbulia 2003; Sosis 2003). Thus, for someone to reject the notion of supernatural punishment should raise a red flag that such a person is more likely than a religious adherent to threaten the genetic fitness of other ingroup members by engaging in morally proscribed activities.

dependents” (Richards 1939, p. 199). Associating moral violations with the subsequent occurrence of physical illness is a pattern of causal belief that appears among many traditional peoples. For example, “The notion that a human being may be struck by enchantment or sorcery is quite common in America. The conception that the disease is caused by transgression of a taboo is found among the Eskimo, Athabaskan, Ge, and Tupi peoples, and within the high cultures, among others. The disease is often abolished after the patient’s ‘confession’ of the taboo offense to the medicine man” (Hultkrantz 1967, p. 88).

In many societies, not only does supernatural punishment fall upon the heads of the wicked, but is also sanguineous in nature and ostensibly disastrous for fitness because supernatural agents are often seen as unforgiving and merciless, inflicting lasting and far-reaching punishments. That is, perhaps the worst punishment of all would be to have biological relatives, including one’s own children, cursed for the self’s misdeeds. Thus, in many cultures, supernatural punishments extend down the generations. For the Lepcha of Asia, “anti-social acts are graded by the number of people they may affect; only for acts of minor importance is there personal and individual punishment which falls on the evil-doer” (Gorer 1938, p. 183). The threat of calamity affecting one’s own offspring for criminal behavior is a particularly recurrent theme and is illustrated very clearly in the following brief passage on the Pagai from a Dutch missionary publication. “A missionary once acted emphatically against various prohibitions in order to demonstrate their inefficacy. Actually this made a totally wrong impression on the people because they said: ‘The man knows perfectly well that he himself won’t be punished but that the punishment will fall on his children’” (Anonymous 1939, p. 9). The Okinawans similarly believed that “the group exists in time as well as space; current living generations are centrally placed on a continuum extending from the earliest ancestors through generations as yet unborn. Accountability, in the final analysis, encompasses the entire range of the collectivity through time; thus, a child may suffer punishment for the action of his parents or ancestors” (Lebra 1966, p. 42). Because human behaviors are unconsciously motivated by genetic interests, individuals should have evolved to be motivated to refrain from any behaviors that are believed to threaten inclusive fitness (i.e.,

the representativeness of one's genes in current and future generations) (Alexander 1987; Dawkins 1976; Trivers 1981).

In addition, if threats of supernatural punishment indeed serve to socially regulate group norms, foster cooperative behaviors, and discourage antisocial behaviors, then it should be salient in (and thus promoted by) parenting practices as well. In that parents and other biological kin are heavily invested in the reproductive success of offspring, they should be highly concerned about children's ability to abstain from engaging in socially disapproved actions, particularly behaviors deemed immoral by the group. Failure to indoctrinate a child in this regard may ultimately contribute to the offspring's antisocial behaviors and, as a result, various forms of social exclusion, both for the child and possibly for biological relatives as well. As in the foregoing analysis, there are negative consequences for inclusive fitness, here as a result of the offspring's misdeeds rather than those of the individual him- or herself.

To find evidence of parental threats of supernatural punishment, we need only take a cursory look at the ethnographic data once again. The Delaware Indians of North America, for example, informed their children that "supernatural powers punished disobedient children by causing them to become weak and sickly" (Newcomb 1956, p. 34). A formerly delinquent Hopi recalled the corporal punishment he received as a boy. "His parents beat him, held him over a smoky fire, threatened to leave him in the dark to be carried off by a white, or by a Navaho, or a coyote. His grandfather whipped him twice. His father's brothers stood ready to punish him at the request of either parent" (Aberle 1951, p. 33). And still, "it was the threats of supernatural punishment that were considered most frightening" (p. 33).

Intuitive Moral Contracts with Supernatural Agents

Deontic expressions of how one *ought to behave* and what one *should do* are deeply embedded within the world's social frameworks and are often believed to stem directly from the expectations of the gods. Precisely *why* the gods should want us to engage in particular behaviors has never been the subject of much scrutiny by practitioners of religion. Rather, the gods simply have their expectations for human behaviors – it is their policies that we follow, and to transgress is to directly challenge their authority. In that the relationship is an entirely social one, the gods must therefore seek

retaliation when confronted by moral failings. The relationship appears to function via the basic principles of reciprocal altruism, when people live up to their end of the bargain they expect to be rewarded with a good life. In other words, prosocial actions, or actions that foster cooperation between in-group members and generally help grease the wheels of social harmony, should lead actors to have expectations for positive life events. Many religions are founded (and recruit members) on the basis of the carrots of reward, as well as the sticks of punishment.

The belief in this just worldview is so strong, in fact, that among many groups personal calamities and hardships are taken as evidence that the individual must have done something horribly wrong. Often the only suitable remedy for these hardships is spiritual extirpation by way of public confession. For the Igbo of Nigeria, “adultery by a wife is regarded as bringing supernatural punishment upon herself and her husband . . . thus if a woman experiences difficult labor, it is assumed that she has committed adultery and she is asked to give the name of her lover in order that the child be born. If a man falls sick, his wife may be questioned as to whether she has committed adultery” (Ottensberg 1958 [1980], p. 124). The Kogi of Amazonia force individuals to confess their most unseemly and personal thoughts to the *máma*, or local priest. “The *máma*, by means of confession, can ascertain all of the crimes which [people] commit, committed, or intend to commit in his town” (Reichel-Dolmatoff 1950, p. 142), and the person is told that he or she will be felled with misfortune should they be dishonest.

An obvious selective advantage of accruing information about social others in this manner is the increased likelihood of evading threats to genetic fitness before they happen (see Bering & Shackelford, in press; Shackelford & Buss 1996). Having knowledge of a potential mate’s history of alleged physical abuse against his ex-wife can help a woman to make an informed (i.e., ancestrally-adaptive) decision when this man decides to propose to her. Indeed, much like Pascal’s wager, even if such information is potentially unreliable, the risks associated with ignoring these rumors should be much greater than the risks of allowing them to influence one’s decision-making. In addition, in the ancestral past, possessing such information about others could have provided a considerable degree of social leverage in the context of status-striving and resource acquisition, afford-

ing power over others who feared their social exposure (e.g., blackmail). Therefore, being under the impression that others' misfortunes are diagnostic of a supernatural agent's displeasure may have contributed to the self's genetic fitness *if* this belief encouraged the person to confess his or her hidden misdeeds and, in doing so, provided the self with strategic information it otherwise would not have been afforded. Also, fitness benefits may have accrued *if* such misfortunes or actual confessions removed someone from the favored social pool – thereby leaving more potential mates and effectively raising one's own *relative* standing simply by highlighting someone else as a black sheep.

Implicit Existential Beliefs: Punishment and Expectations for Justice

Although religious systems that make such processes of supernatural punishment explicit tend to illustrate these patterns of causal reasoning most clearly, they appear just as fundamental to human behavior in the abstract (see Bering 2002). Lerner has found extensive evidence for “just world beliefs” in both religious and nonreligious samples, in which people often tacitly assume that people get what they deserve (for a review, see Lerner & Montada 1998). When these just world beliefs are apparently violated, such as when an innocent person becomes the victim of a crime, individuals seem to go to great effort to reassert their just worldviews. For example, some individuals may begin to derogate the victim and perceive the victim as instigating the crime. Children seem to display similar just world expectations – perhaps even stronger than those of adults (Stein 1973). And Piaget ([1932] 1965) argued that young children evidence a belief in “immanent justice” in which “the child must affirm the existence of automatic punishments which emanate from things themselves” (p. 251). Thus, in his classic experiment, Piaget (1932 [1965]) presented children aged 6-12 years with the story of a child who steals or disobeys and then, upon traversing a bridge, falls into the water when the bridge collapses. Nearly all (86%) of the youngest children in the study reasoned that the accident would never have happened were it not for the character's earlier misdeeds.

In addition to seeing others' misfortunes as related to their immoral behaviors, people who have violated some moral rule themselves often appear to “expect” punishment in the form of negative life events, and

those guilty parties who find themselves more or less untarnished by their wrongdoing may feel as though their current happiness is undeserved. This is a common theme in literature, exemplified by the works of Victor Hugo (e.g., *Les Misérables*) and Fyodor Dostoyevsky (e.g., *The Brothers Karamazov*, *Crime and Punishment*). In an interesting essay, Landman (2001) describes the real life case of Katherine Power, a Vietnam War era fugitive radical who drove the getaway car in a 1970 bank heist that left a security guard – a husband and father of nine – dead. Twenty three years later, in September of 1993, Power, chronically depressed and “obsessed with a desire to be punished, to seek expiation” (Franks 1994, p. 54), turned herself in to the authorities without any provocation on the part of the FBI, who admitted having had no idea where she was all those years. Asked why she ultimately confessed, she told her lawyer that “my strongest weapon against suicide is my contract with God and my family” (Franks 1994, p. 42).

The Primacy of Intentions in the Moral Domain: Deception Fails with Supernatural Agents

Taken together, there is good reason to suppose that these various forms of causal reasoning involve endowing supernatural agents, or their fuzzier “just world” counterparts, with privileged epistemic access to the self’s psychological states. This is because social psychologists have long recognized that overt actions are by their nature morally ambiguous – what distinguishes prosocial from antisocial behaviors are the intentions of the actor (Eisenberg & Fabes 1998; Loeber 1985). For instance, the act of a man holding the door open for a woman may be prosocial if the man wishes to reduce uncertainty about who is to proceed first through the door, but if it is done to reinforce the gender stereotype that women are physically inferior to men, the act would likely be considered antisocial (Hart, Burock, London & Atkins 2003). In other words, an observation of the act alone would not allow for classification of the behavior as pro- or antisocial. Rather, one would have to have some insight into the actor’s motivations for holding the door open.

For certain supernatural agents, however, the actor’s underlying intentions are immediately known. Unlike other people who through various forms of deception can be inveigled into thinking that the self is a more selfless character than it may in fact be, even the most skillful legerdemain

will be wholly ineffective when dealing with an all-knowing god. Therefore, any supernatural punishment that arises as a consequence of antisocial actions must have its origins in the supernatural agent's knowledge of the self's truly bad intentions. A man, for instance, may be lavishing much-needed attention on a lonely widow, bringing her the happiness that she so desperately seeks; many may be blinded by these "good deeds" and unwise to his true intentions – which are to get at this lonely widow's sizeable fortune. Although this man may escape punishment from his peers, the attitude in many traditional societies is that this is inconsequential because this man will ultimately "get his" in the form of supernatural punishment. For example, in Borneo, "the Iban believe that anyone who successfully cheats another, or escapes punishment for his crimes, even though he might appear to profit temporarily, ultimately suffers supernatural retribution" (Sandin & Sather 1980, p. xxviii).

In most societies, of course, moral franchises have probably always been constructed entirely on the basis of divine will. What makes causal attributions of divine will cognitively complex is the fact that supernatural agents' desires often stand in stark contrast to those of the self; they center on the belief that the supernatural agent is aware of the self's internal psychological states. In order to see a sibling's illness as a form of punishment or a season's good harvest as a reward, one must implicitly assume that the supernatural agent knows that he or she *does not want* the sibling to become sick or *will enjoy* the prosperity of a good harvest. But then one can certainly imagine idiosyncratic situations in which these events would not be seen as necessarily bad or desirable. Perhaps one's older brother stands to inherit the family goods, and the self is next in line for this inheritance; thus the brother's unexpected illness might be less a form of punishment and more a serendipitous reward. In this case, punishment for such private filial scheming might be the sibling's astoundingly good health. Or perhaps one wishes that the harvest would be poor this year because it would give one an excuse to leave the natal group and pursue more fertile fields, which the individual has secretly wanted to do for some time. If the crops yield a good harvest, then this might be viewed as supernatural punishment for some other moral transgression.

The point is that these examples involve more than simple godly omniscience that resembles the preschoolers' egocentric bias, as Barrett

et al. (2001) attempt to argue for children's reasoning about the infallible knowledge of God. If this were the case, then individuals might grow up to believe that God was complicit in their malingering – he would be their personal partner in crime. This is because, for the cognitively egocentric individual, any immoral thoughts and desires would be God's as well. If one wished to covet thy neighbor's wife, then God would personally draw up the bed sheets. But this is not the way it works. Instead, the individual has to first *possess knowledge* that its desires/actions are socially unacceptable (e.g., "I know that it's wrong to feel this way/do this deed") rather than simply *having* socially unacceptable desires/engaging in transgressions; otherwise, naiveté obtunds the expectation of supernatural punishment. Moreover, the individual must attribute such knowledge not only to him- or herself, but also to supernatural agents (e.g., "I know that it's wrong to feel this way/do this deed, and God knows that I know this too. What's more, He doesn't like it."). The heart of supernatural causal beliefs is the notion that the gods are emotionally invested in their own apparently arbitrary rules for human conduct, emotions, and desires that are often unshared by the self. And the gods, of course, are seen as being wise to this opposition of mental states.

Second-Order Mental State Representation and Supernatural Causal Beliefs

Consider the mental representational abilities that would be required to entertain such causal beliefs. To begin with, the individual must possess the capacity to attribute psychological states to a supernatural agent. Because supernatural agents are agents nonetheless, this is a relatively easy process; they are simply understood to have minds and to experience psychological states. Developmentally, this capacity to engage in first-order mental state attribution (A mentally represents B's *belief* [or *knowledge*] [or *intentions*] [or *desires*] [or *emotions*] about X ...) is present even in very young children. Starting in infancy, humans evidence an understanding that other agents' behaviors are driven by hidden goals and intentions (Meltzoff 1995; Gergely, Nadasdy, Csibra & Biro 1995). Just a few short years later, preschool-aged children build substantially on these early intentionality mechanisms, and evidence a belief-desire psychology that provides them with an understanding that others see the world differently

than the self. Thus, by age 4 or 5, children pass a variety of “false-belief” and “appearance-reality” tests in which they are asked to reason how another agent will see things from a naïve point of view (see Wellman, Cross & Watson 2001; Flavell 1999). Prior to this age, children assume that because they themselves know something (for example that a sponge that looks like a rock is in fact a sponge, or that a chocolate bar was secretly moved to another location), then so too must others, despite the fact that these others are not privy to this special information. Only around preschool age do children reason that others’ subjective views of the world will not conform to reality if they lack veridical information. This, of course, enables children to begin developing their deceptive aptitude – purposely implanting false beliefs in others’ minds or depriving others of specific sources of information for personal benefit – and also to construct more meaningful social relationships that involve reparations of others’ confused mental states by offering them useful information (Gopnik & Meltzoff 1997; Wellman 1992).

But the development of higher-order cognition does not end here. There is at least a small developmental gap between first-order theory of mind (A [self] thinks that B [other] thinks that X) and second-order theory of mind (A [self] thinks that B [other] thinks that C [other] thinks that X), which does not appear to come online until around 6 or 7 years of age (Núñez 1993; Perner 1994; Perner & Howes 1992; Sullivan, Zaitchik & Tager-Flusberg 1994). And, we argue, it is only with the appearance of a second-order theory of mind that the child begins to see the natural events occurring in his life as *meaningful* or, more specifically, as symbolic and declarative of an abstract intentional agent’s desire to share social information with him. Thus, events take on the same quality of “aboutness” that is also characteristic of behaviors – here, events come to be *about* the supernatural agent’s moral judgment in reference to the self’s actions which are in themselves *about* the self’s psychological states. Suddenly the random occurrences of the natural world become signs of a cognitively intrusive and authoritarian eye in the sky.

There is recent laboratory evidence to support the hypothesis that second-order representation is required to view natural (i.e., random) events as communicative messages from a supernatural agent. Bering (2003) had 3- to 7-year-old children play a guessing game in which they were to

place their hand on top of one of two boxes that they believed contained a hidden reward. Prior to these “guessing” trials, however, children were informed of an invisible princess (“Princess Alice”) present in the room with them who would “tell them, somehow, when they chose the wrong box.” On several of the trials, the experimenters triggered an unexpected event (a picture falling, a light flashing on and off) precisely at the moment the child’s hand made contact with one of the boxes, and children’s responses to these events were recorded.

Only the oldest children – the 7-year-olds – reliably (82%) moved their hand to the opposite box after experiencing these unexpected events. Moreover, when asked why these events occurred, only the oldest children stated that Princess Alice caused the event because she was attempting to tell them where the ball was in fact hidden. Although neither the 3- or 5-year-olds in the study reliably (16% and 31%, respectively) moved their hands on the behavioral portion of the task after experiencing the unexpected events, many of the 5-year-olds verbally stated that Princess Alice caused the events to happen. However, very few children from this age group reported that she did so in order to tell them that they had their hand on the wrong box. In other words, it was as if children in the middle age group merely saw Princess Alice as an invisible woman running around in the laboratory and “making things happen” – pulling the cord to the table lamp, knocking the picture off the wall – for no other purpose than to convey her presence in the room. The oldest children, in contrast, exploited her “antics” as a source of information; to them, the light turning on and off was analogous to her pointing to the correct box, and the picture falling off the door was treated as if it were Princess Alice saying, “no, not that one, the other one.” For the youngest children, the picture falling was merely “the picture falling,” and the light turning on and off was merely “the light turning on and off.”

Although additional data must be gathered before a strong case can be made, these findings indirectly support the idea that the ability to see natural events as symbolic and declarative of a supernatural agent’s mental states is dependent on a second-order theory of mind. In order to see the events in the study as Princess Alice’s way of sharing strategic information about the hidden ball, children must view this supernatural agent as viewing their own behavior (i.e., placing their hand on the “wrong” box) as

being caused by a state of ignorance. In light of previous findings showing that the ability to engage in such recursive thinking about psychological states develops at about age seven (e.g., Perner & Howes 1992; Sullivan et al. 1994) the second-order hypothesis fits these data well.

Concluding Remarks

Because divinely imposed rules are designed to disarm the (more selfish) psychological mechanisms that were adaptive for human ancestors long before the intentionality system came along, they are not always so very easy to follow. As stated earlier, social success requires that those ancient, but still present, heuristics designed to maximize genetic success for the short-term must be effectively thwarted by more novel, long-term inhibitory strategies designed to preserve and enhance social reputation. Therefore, if belief in supernatural agents with whom the self holds an implicit social contract increases behavioral inhibition under conditions whereby the self underestimates the likelihood of detection by actual ingroup members, then the gods themselves are slaves to genes. In that deities and ancestral spirits are so often the purported authors of human morality, H.L. Mencken (1949) preceded us in evolutionary theory when he stated that “conscience is the inner voice that warns us somebody may be looking.” These arguments are somewhat difficult to see, perhaps, from an egocentric perspective, but the Western notion of God is no exception to the rule. Consider the biblical passage that “whosoever looketh on a woman to lust after her hath committed adultery with her already in his heart” (Matt. 528) in relation to the foregoing arguments. Any moralizing supernatural agency is but one more expression of an ancestrally adaptive psychological mechanism that was explicitly designed to cope with the sudden awareness that other minds in the community are keeping careful tabs on the self’s actions in the moral domain.

In conclusion, if such beliefs are reflective of a true psychological adaptation, then barring any atypical developmental experiences that alter the expression of the human cognitive phenotype, it should be next to impossible to entirely lose the feeling that the self has a private audience that is intimately associated with its most secret thoughts. We have inherited the general template for religiosity because those early humans who abandoned the prospect of supernatural agents, or who lacked the

capacity to represent their involvement in moral affairs, were likely met with an early death at the hands of their own group members, or at least reduced reproductive success. Those who readily acquiesced to the possibility of moralizing gods, and who lived their lives in fear of such agencies, survived to become our ancestors.

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