THE EVOLUTIONARY BASIS OF RELIGIOUS ETHICS

by John Teehan

Abstract. I propose that religious ethical traditions can be understood as cultural expressions of underlying evolutionary processes. I begin with a discussion of evolutionary theories of morality, specifically kin selection and reciprocal altruism, and then discuss some recent work on the evolution of religion, setting out those features of religion that prepare it to take on a moral function in society. Having established the theoretical framework for the thesis, I turn to a close reading of early Jewish and Christian ethical teachings, as found in the Bible, in order to set out preliminary support for the proposal. My goal is to argue for the plausibility of the thesis and to indicate how, if correct, it provides new insight into Judeo-Christian moral traditions and into the phenomenon of religious violence. Such an approach to religious ethics has important metaethical implications. In the last section I consider issues such as the foundation of ethics and the possibilities and limitations of a secular ethics.

Keywords: Christian ethics; costly signals; evolutionary ethics; Judaism; kin selection; reciprocal altruism; religious violence.

"If there were no God, then all would be permitted." Thus Dostoevsky expressed what is for many the simple relationship between morality and religion—the necessity of religion as the grounding of morality. Although significant work has been done to establish the autonomy of ethics, this position continues to possess intuitive appeal to popular audiences and to more than a few professional academics. Morality, so it goes, must be based on something timeless, immutable, transcendent; otherwise, we are left with nothing but our passions and subjective whims to guide us through the moral complexities of our lives. This view is characteristic of many philosophical approaches to ethics as well as theological ones.

John Teehan is Associate Professor of Philosophy at Hofstra University, 104A Roosevelt Hall, Hempstead, NY 11549; e-mail SUSJPT@Hofstra.edu.

[*Zygon*, vol. 41, no. 3 (September 2006).]
 ISSN 0591-2385

In contrast to such philosophical and theological approaches stands the tradition of empirical ethical theories. Such theories attempt to base moral judgments on concrete, naturalistic phenomena such as pleasure, happiness, or desires.

One of the more recent and still more controversial empirical approaches is what we may call *evolutionary ethics*, a term too broad and vague for present purposes, covering not only a wide array of theories but also a variety of often incompatible approaches to questions of morality.[1] I am concerned here with the attempts to understand moral phenomena—the emotions (such as love and hatred, anger and jealousy, sympathy and animosity, guilt and shame) that underlie our moral dilemmas and the cognitive strategies (that lead to our judgments of right and wrong, good and evil) as products of our evolutionary development. Such an approach to ethics stands in direct opposition to transcendent approaches: it is a bottom-up rather than a top-down explanation, as it were. In Daniel Dennett's terms, such an approach sees morality created by cranes, not skyhooks (1995, 73–80). This accounts, I believe, for much of the popular discomfort with evolutionary studies of humanity. The fear seems to be that if we can account for our moral lives as resulting from strictly natural processes, a transcendent basis is rejected, and morality is akin to an illusion.

Given this, it is possible that the thesis developed in this essay will be seen by some as controversial. I intend to explore not only the proposition that morality is grounded in natural processes but also that religious ethics themselves can be understood as expressions of an underlying evolutionary logic. This reverses the transcendent position—that morality is grounded in religion—and suggests, instead, that religious ethics are grounded in a moral logic that is itself grounded in nature. Then, rather than there being an opposition between religious ethics and evolutionary ethics, religious ethics becomes a subset of evolutionary ethics.

I begin with a quick overview of theories on the evolution of morality and the evolution of religion in order to make the conceptual link tying religion to morality. I then consider how this evolutionary link has shaped religious ethics. In the concluding section I consider some implications of this thesis.

The Evolution of Morality

From an evolutionary perspective, morality is a means to resolve social conflict and thereby make social living and cooperative action possible. This is essential for humans. We are social beings, descended from a long line of social beings. Group living allowed our ancestors to better face the rigors, dangers, and challenges of daily existence. The benefits of cooperative behavior in hunting and gathering and in defense against predators are obvious, but there were, of course, costs. Cooperation requires an individual to share the dangers and the costs necessary to promote the good of

the group. This raises a problem from an evolutionary perspective. Typically, individuals who most successfully promote their own interests will have an advantage in the struggle for survival. Sacrificing my interest for the good of the group does not seem to make sense from an evolutionary perspective. This is the problem of altruism. In evolutionary studies altruism has been defined as "behavior that benefits another organism . . . while being apparently detrimental to the organism performing the behavior" with benefits and costs determined by the effects on an individual's reproductive fitness (Trivers 1971, 35). The problem is to understand how behavior that lowers an agent's fitness in order to raise the fitness of another can arise from a process driven by so-called selfish genes (Dawkins 1976).[2]

The first step in solving this problem was the development of the theory of kin selection, which was rigorously established by William Hamilton in 1964. Evolutionary theory holds that behavior that increases reproductive success (that is, fitness) will be selected for and passed on. Reproductive success is measured strictly in the number of genes passed from one generation to the next. Sacrificing for one's children makes sense, then, because one is protecting one's genetic investment. People who do not care for their children will not have many descendants. This type of self-sacrifice is really long-term self-interest and poses no problem for evolution.

Hamilton realized, however, that childbearing is not the only way to get copies of an individual's genes into the next generation. He writes,

> A gene causing its possessor to give parental care will then leave more replica genes in the next generation than an allele having the opposite tendency. The selective advantage may be seen to lie through benefits conferred indifferently on a set of relatives each of which has a half chance of carrying the gene in question. From this point of view it is also seen, however, that there is nothing special about the parent-offspring relationship. . . . The full-sib relationship is just as close. If an individual carries a certain gene the expectation that a random sib will carry a replica of it is again one-half. Similarly, the half-sib relationship is equivalent to that of grandparent and grandchild with the expectation of replica genes, or genes "identical by descent" as they are usually called, standing at one quarter; and so on. (Hamilton 1964, 1–2)

My child carries copies of 50 percent of my genes, but my full siblings also carry copies of 50 percent of my genes, and their children, my nieces and nephews, carry copies of 25 percent of my genes, and so on through the various degrees of familial relationships. Sacrificing my immediate interests for my kin then can also be seen as consistent with long-term self-interest. This broader conception of genetic self-interest is termed by Hamilton "inclusive fitness." While this may not coincide with philosophical notions of altruism, it does create the possibility for at least limited self-sacrificial behavior in a way consistent with evolutionary processes.

Hamilton's theory of kin selection is one model for explaining the evolution of morality, but it is not sufficient. However powerful kin selection

may be, it is restricted to relatively small groups where likelihood of relatedness is high. This model explains why it makes sense to sacrifice for a relative but not why I should sacrifice for someone genetically unrelated. For societies to continue to develop beyond extended family units another mechanism is needed. In 1971, Robert Trivers provided a model for this with his theory of the evolution of reciprocal altruism. Simplistically, this is an "I'll rub your back, so that you will rub my back" strategy, or, as Trivers put it, "Reciprocal altruism can also be viewed as a symbiosis, each partner helping the other while he helps himself" (1971, 39). Cooperative behavior pays off. My sacrificing some time and effort to help you now pays off when you help me later and so functions as an investment in my long-term fitness. Given the challenges and the precariousness of human existence during our evolutionary history, a strategy that promoted a system of mutual assistance would have had a great selective advantage.

Trivers sets out three conditions necessary for the evolution of reciprocal altruism:

> (1) Length of lifetime. Long lifetime of individuals of a species maximizes the chance that any two individuals will encounter many altruistic situations. . . . (2) Dispersal rate. Low dispersal rate during all or a significant portion of the lifetime of individuals of a species increases the chance that an individual will interact repeatedly with the same set of neighbors. . . . (3) Degree of mutual dependence. Interdependence of members of a species . . . will tend to keep individuals near each other and thus increase the chance they will encounter altruistic situations together. (1971, 37)

Clearly, humans meet these criteria (1971, 45). Reciprocal altruism allows for the development of extended relationships of assistance and the development of more complex societies in a way consistent with the mechanics of Darwinian evolution.

Richard Alexander expanded and enriched this evolutionary approach to morality with the notion of indirect reciprocity. My helping you now may also benefit me, even if you never reciprocate, by creating the reputation of my being a cooperator. Alexander writes, "I regard indirect reciprocity as a consequence of direct reciprocity occurring in the presence of interested audiences—groups of individuals who continually evaluate the members of their society as possible future interactants from whom they would like to gain more than they lose (this outcome, of course, can be mutual)" (1987, 93–94). He points out three major forms such reciprocity may take. The reputation for being a cooperator may encourage others to cooperate with such an individual; an altruistic individual may be rewarded, either materially or in terms of status enhancement, by society for her contributions; or an altruist may improve his and/or his family's fitness by increasing the fitness of the community (p. 94).

Such processes work, of course, only if people do in fact reciprocate. There is, however, a great temptation not to reciprocate—to cheat or de-

fect—because if you have already benefited from someone's cooperation any reciprocation on your part will be an unnecessary cost. Given this, the ability to discriminate between cooperators and cheaters is crucial, as is the commitment to punish those who refuse to reciprocate. If cheating is costly, that is, "if cheating has later adverse affects . . . which outweigh the benefit of not reciprocating" (Trivers 1971, 36), there is a motivation to cooperate. If a society is to function at a level beyond the family it must develop a system of encouraging cooperation and detecting and punishing cheating. One solution is the development of a moral system[3]—a code of behavior that approves of and rewards certain behaviors necessary to cohesive social functioning while condemning and punishing those behaviors contrary to cohesive social functioning. As Alexander puts it,

> Moral systems are systems of indirect reciprocity. They exist because of conflicts of interest, and arise as an outcome of the complexity of social interactions in groups of long-lived individuals with (a) varying conflicts and confluences of interest, (b) indefinitely iterated social interactions, and (c) multiple interactants. The function or *raison d'etre* of moral systems is evidently to provide the unity required to enable the group to compete successfully with other human groups. (1987, 142)

There is a large and growing body of literature supporting this theory of the evolution of morality and suggesting, furthermore, that this may have played a decisive role in the evolution of human cognition.[4]

Kin selection and reciprocal altruism (both direct and indirect) are the twin pillars of evolutionary approaches to morality. Reciprocal altruism extends the influence of morality beyond the clan ethic supported by kin selection, and together they provide an effective means of explaining a wide range of moral phenomena. Reciprocal altruism, however, also suffers from what I call the problem of extension. An individual has a strong motivation to reciprocate so that he does not get the reputation of being a cheater. A cheater will be punished and will not benefit from future acts of cooperation. This motivation, however, is most powerful in small communities where there is a high probability that cheating will be detected and remembered. In a large community there is a greater possibility that cheating may go undetected, so the cost of cheating is reduced. Also, the larger and more complex a society the more indirect are the costs and benefits of altruism. One may contribute to the general fund and never realize who is cooperating and who is cheating. This too lowers the cost of cheating and consequently raises the cost of cooperating. Moral systems weaken as societies become larger and more anonymous. Matt Ridley exemplifies this with an utterly mundane, and therefore effective, example of driving etiquette. He points out that "nobody would dream of driving in their home suburb or village as they do in Manhattan," and it is obvious why this is so: "Big cities are anonymous places. You can be as rude as you like to strangers in New York, Paris or London and run only a minuscule risk

of meeting the same people again (especially if you are in a car). What restrains you in your home suburb or village is the acute awareness of reciprocity. If you are rude to somebody, there is a good chance they will be in a position to be rude to you in turn" (1996, 70). The greater the likelihood of future interactions, the greater the potential cost of cheating; the larger the society, the lesser the likelihood of future interactions with any particular individual outside one's social circles and so the greater the temptation to cheat. Developing societies need to solve this problem of extension. Religion is one solution, but before we can explore this option we need to consider the evolution of religion.

One more point needs to be made before proceeding. When discussing the evolution of morality and an evolutionary moral logic we are not referring to processes that are necessarily conscious motives or even conscious considerations. We are referring to cognitive/emotional predispositions, sometimes referred to as epigenetic rules, that can lead people to act in altruistic ways. So, for example, parents who sacrifice for their child are not necessarily (or even likely to be) calculating the probable return in genetic replication on the investment of time. If asked they may sincerely reply that their child's happiness makes all the effort worthwhile. This feeling of pride and love that motivates their behavior may be considered the proximate cause of that behavior. The theory of kin selection provides, in this case, an explanation of the development of such emotional responses and so speaks of an ultimate cause (that is, evolution explains the development of the emotional response; the emotional response explains the behavior). This is why the case of parents investing in a severely disabled child, with low probability of a genetic return on that investment, is not a counterexample to evolutionary accounts of parenting. Parental investment motivated by an emotional attachment to a child can function as the proximate cause of such behavior, even when such behavior will not pay off in an evolutionary sense. Evolution favors behaviors with a higher probability of enhancing reproductive fitness than competing behaviors, which entails that in certain cases that behavior will not enhance reproductive fitness. It is crucial to keep this lesson in mind as it helps to address a number of proposed counterexamples (such as sacrificing for a complete stranger, with no expectation of reciprocation) that, prima facie, seem to weaken the argument for an evolutionary account.[5]

The Evolution of Religion

To talk of the evolution of religion is to walk into a minefield, and not simply because of religious sensitivities. One problem is the question of definition. What constitutes a religion? How do we differentiate religion from magic or superstition? I am going to deal with the problem here by ignoring it. In considering the evolution of religion we are interested in a

mindset that interprets the world in ways that contribute to the development of systems we would today categorize as religious. The other significant problem is that we are engaged in a project of intellectual archaeology. We are attempting to uncover the origins of phenomena that have left no physical traces. For certainly the religious mindset must predate, in order to be able to account for, the creation of religious objects and rituals. So when we consider the earliest cultural signs of religion we have already passed the point of religious origins.

Despite these formidable challenges, attempts to explain the origin of religion in empirical terms date back at least to David Hume's *The Natural History of Religion* ([1757] 1956) and was a popular project throughout the nineteenth century. Without disparaging or discounting any of the contributions of those early investigators, I believe it is only within the past few decades that we have developed the tools that can give us a fair chance of setting out a scientific account of religious origins: evolutionary psychology and cognitive science. This, I realize, is a somewhat controversial claim, which I do not defend here.[6] For present purposes I am concerned with the view of religious origins provided by these methods and the implications for our understanding of religious ethics. There have been several major works published in the last few years on this topic. These treatments of the evolution of religion are not completely consistent with one another, but there are some general themes we can pull out.

In the study of the earliest forms of religious systems we find a widespread belief in supernatural agency. These agents might be gods, ghosts, or spirits animating the natural world. Although many cultures, ancient and contemporary, do not draw the same sharp line between the natural and the supernatural as is familiar in modern Western religious thought, we can label these agents supernatural in that they do not function in the same way as representatives of natural ontological categories. Cognitive scientists argue that ontological categories, such as Animal, Person, Plant, and Artifact, serve important functions for conceptually organizing the world and generating inferences about objects we meet in experience.[7] For example, a person may not know what an okapi is, but if told she could see one at the zoo she is likely to categorize it as an animal. Given only this, one can generate a series of beliefs about this unknown creature: that it breathes, eats, moves of its own power, seeks to reproduce, has a habitat, can be killed, can be seen and touched, and so on. In fact, a person will be able to generate a large and detailed set of beliefs about this creature of which they have no experience simply by placing it in an ontological category.

Religious entities, too, can be fit into a variety of such categories but are distinguished by involving counterintuitive expectations. Pascal Boyer writes, "religious concepts invariably include information that is counterintuitive relative to the category activated" (2001, 65). Such concepts may

concern humanlike beings who are capable of becoming invisible, nonhuman animals with humanlike cognitive abilities, or natural objects, such as streams or mountains, that stand apart from typical streams and mountains by possessing certain capabilities. As anthropologist Scott Atran points out, gods fit into the ontological category of Persons, so this concept generates rich inferences about such beings based on the expectations captured by this category. However, this concept also contains clear counterintuitive beliefs. Atran writes, "Gods and other supernatural beings are systematically unlike us in a few general ways . . . and predictably like us in an enormously broader range of usual ways" (2002, 93). Let us consider a clear example—the gods of Olympus.

Zeus fits into the ontological category of Person. This categorization generates certain beliefs, consistent with Persons, that we can see exemplified by Zeus. He eats and drinks, seeks sexual satisfaction, hides his indiscretions from his jealous wife, asserts his power, is offended when insulted, can be deceived, and so on. What distinguishes Zeus as a god are those counterintuitive qualities associated with him: he never dies, he can control the forces of nature, he can change his form, and so on.

The belief in supernatural agency as counterintuitive example of natural ontological categories represents a primitive level of religious consciousness upon which more elaborate and formalized beliefs and ritual are built. Stewart Guthrie (1993) has provided an account of the generation of such beliefs as the result of natural cognitive responses to underdetermined stimuli.

When presented with a stimulus of unclear origin, say, a noise outside your door in the middle of the night, the mind is presented with a challenge of how to categorize and so respond to that stimulus. Is it something that can be ignored, or does it demand an active response? Guthrie argues that the safest strategy is to overinterpret the stimulus, "to discover as much significance as possible by interpreting things and events with the most significant model" (1993, 61). If you interpret the noise as a possible intruder you will be motivated to investigate. If it turns out to be the wind blowing against the shutters you have merely wasted some energy. However, if you underinterpret the stimuli (say, as the wind blowing against the shutters) you risk treating an intruder as a harmless noise and endangering your family and yourself. During human evolution our ancestors faced these situations on a regular basis. The noise ahead could be the wind rustling the leaves, or it could be a predator waiting to pounce. Faced with this, those who overinterpreted stood a better chance of avoiding danger. This provided an important survival advantage. We are all the descendants of people who, faced with these choices, said, "Tiger!"

Guthrie provides a wealth of examples to show that this cognitive strategy to overinterpret stimuli remains a common part of our engagement with the world, emphasizing that this is not the result of irrational thought

or sloppy, primitive thinking. It is not the mind going wrong but the mind making a rationally justifiable attempt to bring coherence to experience (1999, 89–90).

This approach has been bolstered, and refined, by cognitive psychologists who posit agency detection as an important part of our intellectual toolbox. Events in the world call for an interpretation so that we can begin to respond to them. The default position of our minds seems to be to posit agency, even if the stimulus does not fit with our ordinary experience of agents (Boyer 2001, 145). The counterintuitive examples of agency that gods and spirits represent appear to result from the mind's evolved strategy for making sense of underdetermined or undetermined stimuli in a dangerous and puzzling world. As Atran has put it, "Supernatural agency is the most culturally recurrent, cognitively relevant, and evolutionarily compelling concept in religion. The concept of the supernatural agent is culturally derived from innate cognitive schema, 'mental modules,' for the recognition and interpretation of agents, such as people and animals" (2002, 57).

Furthermore, the counterintuitive nature of supernatural agents, rather than being an obstacle to their acceptance as explanations actually seems to contribute to their resiliency. Studies show that the counterintuitive aspects of religious agents can make religious stories more resistant to recall degradation over time, relative to more intuitive stories, and so make such stories particularly fit for transmission from one generation to the next (Atran 2002, 100–107)

Supernatural agents, or gods, come, of course, in many variations. The most common, if not universal, feature projected into such beings, however, is a mind (Boyer 2001, 144), and this has important implications. In our day-to-day interactions with other agents—that is, people—it is crucial, as we have seen, to be able to distinguish potential cheaters from potential cooperators. To do so requires a wide range of information, not least of which concerns the mental states of these other agents—What information do they have, what do they lack, what are their intentions? Boyer argues that the ability to predict the behavior of others is a significant competitive advantage and has led to the evolution of a "hypertrophied social intelligence" in humans (Boyer 2001, 122; see also Byrne and Whiten 1988; Byrne 1995). This cognitive system affects how people understand supernatural agency. Boyer points out that we conceive of humans as "limited access strategic agents" (2001, 155). That is, we assume that others do not have access to complete or perfect information relevant to social interactions. Our information is limited, and our ability to discern another's intention faulty, and this limitation is mutual.

Say, for example, I want to avoid a tedious assignment in order to enjoy a beautiful spring day, but I also want to avoid being penalized for this choice. I decide to tell my boss that I must stay home to care for a sick

child. I view this as a promising strategy, because I view my boss as a limited access strategic agent. That is, I assume that she does not have access to my true intention or to the actual health status of my child. My boss, for her part, may appear to sympathetically grant me the day, not because she believes me but in order to give a choice assignment to a competitor without my knowledge. She feels confident in doing this because she views me as a limited access strategic agent, also.

People the world over, however, represent gods as "full access strategic agents" (Boyer 2001, 158). That is, they view their gods or ancestors not necessarily as omniscient but as having access to all information relevant to particular social interactions. The gods know that my child is healthy and at school and that I plan to spend the day at the ball park, just as they know that my boss is unsympathetic and scheming against me. They have access to all that is needed for making a sound judgment in any particular situation. Not all gods may be represented as possessing this quality, but the ones that do will be of particular significance. As Boyer puts it, "The powerful gods are not necessarily the ones that matter; but the ones that have strategic information always matter" (p. 160). Beings that possess such a trait are in a particularly privileged position to assume a moral role.

We are now ready to bridge the evolution of religion and evolutionary morality.

The Evolution of Moral Religions

Religion is much more than morality, and in fact it is not always concerned with morality; the gods are not necessarily moral beings. However, under certain conditions the connection between morality and religion becomes significant. As suggested earlier, religion may play a role in solving the problem of extension for evolutionary mechanisms of morality. The larger and more complex a society becomes, the greater the temptation to defect from social cooperation and the greater the chance of doing so successfully. This makes sacrificing for the social good more costly and, even for the socially conscientious, a less rational option. The danger of this spiraling out of control threatens the sustainability of such societies. Religion seems to provide a remedy to this situation. It is not the only solution, but it has been one of the more robust.[8]

The solution is simple to state: Gods, as full access strategic agents, occupy a unique role that allows them to detect and punish cheaters and reward cooperators. In moral religions such gods are conceived of as "interested parties in moral choices" (Boyer 2001, 172). They are concerned with social interactions and fully cognizant of the behavior and motives of those involved. Communal belief in such beings, therefore, lowers the risk of cooperating and raises the cost of cheating by making detection more probable and punishment more certain. As Donald Bloom writes, "Religions, and other sets of beliefs relevant to human conduct which may or

may not be called a religion, will arise as the structure for the moral system which encourages the promotion of cooperation and the detection and discouragement of cheating" (2003, 28). Religion then becomes the vehicle for the moral code of a society required for that society to continue to function as a cohesive unit as it grows in size and complexity. It solves the problem of extension.

Some recent research provides data suggestive of this proposition. In a study of the relationship between population density and religious belief, Frans Roes and Michael Raymond (2003) found a significant, positive correlation between society size and belief in moralizing gods (that is, gods supportive of human morality). These authors see such belief as an adaptation that provides the cohesion that allows societies to grow larger and so outcompete other groups. It is too soon to adequately assess the reliability of this study, but it is worth noting that the authors see their data as supporting a view of religious evolution consistent with the moral theories of Alexander. Given that Alexander plays an important role in the present essay, further confirmation of their conclusions would be significant.

In any case, the study of Roes and Raymond is in line with the evolutionary treatment of religion set out by David Sloan Wilson in *Darwin's Cathedral* (2002). This is an important contribution to the evolutionary study of religion and ethics and breaks new ground that I am attempting to develop here. For Wilson, moral systems allow groups to function as adaptive units. Groups with effective moral bonds will have a survival advantage. Wilson points out that belief systems that can internalize social control are more effective than those that rely on external controls. A fictional belief system, such as represented by religion, can function as a low-cost external control system and can be more readily internalized than a reality-based system[7] (2002, 98–105).[9]

Religion not only supports evolved moral mechanisms by providing supernatural oversight; it also functions powerfully as a signal of willingness to cooperate. As noted, it is imperative to be able to discriminate between potential cooperators and cheaters. As societies become larger and more anonymous, this becomes increasingly difficult. Belief in a moral god addresses this difficulty, but only if such belief is commonly shared. If you do not believe a god is watching you, you have less to fear from cheating, and I have more to lose by cooperating. My belief that you will be punished someday for your lack of belief does little to protect me now. How can I trust you to reciprocate my cooperation?

It has been pointed out that humans have developed a wide range of ways to signal a commitment to cooperate in order to encourage cooperative behavior from others, such as a smile and an open hand (see Frank 1988; Nesse 2001). However, humans also possess the ability to deceptively signal such an intention—for example, a fake smile and a knife in a hidden hand—so one must be wary of the sincerity of such signals. Given

this, evaluating signals of commitment is an important task. A sound rule to guide this task is that the harder it is to fake a signal to commit to cooperation the more trustworthy it is. As William Irons notes, "For such signals of commitment to be successful they must be hard to fake. Other things being equal, the costlier the signal the less likely it is to be false" (2001, 298).

Religious rituals and rules can function as such hard-to-fake signals. Indeed, Irons has characterized religion as a hard-to-fake sign of commitment (1996; 2001). Irons points out that religions are typically learned over a long span of time, their traditions are often sufficiently complex to be hard for an outsider to imitate, and their rituals provide opportunities for members to monitor each other for signs of sincerity. This is a costly and time-consuming process (2001, 298). Showing oneself to be a member of a religion signals that one has already made a significant contribution of time and energy to the group and is willing to follow the code that governs the group. It signals that one is a reliable partner in social interactions and can be trusted to reciprocate. Of course, not all rituals are equally effective signals. Rituals may be easy to fake or cost little to perform. Such rituals, if not counterbalanced by costly rituals, threaten to weaken social cohesiveness. Richard Sosis has found that "Costly constraints have a positive impact on the longevity of religious communes, suggesting that increases in the level of sacrifice imposed on members enhances group commitment" (Sosis and Alcorta 2003, 268; see also Sosis and Bressler 2003).

From an evolutionary perspective religious morality provides a vehicle for extending the evolutionary mechanisms for morality—kin selection and reciprocal altruism. Also, by serving as hard-to-fake signs of commitment, religions function to discriminate between in-group members (those who have invested in the religion and so can be trusted) and out-group members (those who have not invested in the religion and so cannot be trusted). If this is an accurate account of the evolution of religious morality, it should be possible to detect these evolutionary concerns embedded in religious moral traditions and so ground such ethical systems in an evolutionary matrix. A more comprehensive study is called for, but even a cursory survey can find supporting evidence for this thesis.

Evolutionary Religious Ethics

For the sake of exemplification I restrict the discussion here to the Judeo-Christian moral traditions, although I contend that it can be just as readily supported by a consideration of Islam. The thesis of this essay will be more powerfully supported if it can be extended to other moral-religious traditions; however, even if it is limited to monotheistic religions, given the role these traditions play in the modern world it will not be insignificant.

It is crucial to recognize another limitation. Judaism and Christianity have incredibly complex, at times inconsistent, ever-evolving moral traditions. No comprehensive treatment is planned, or even possible, in such a forum as this. Indeed, any "comprehensive" treatment may be open to the charge of simplification, or reductionism. Still, something meaningful may be said by properly focusing the discussion. The treatment here is concerned with the bases of the earliest expressions of these moral traditions, specifically those found in the Torah and the Gospels. This is not to imply that an evolutionary account cannot be extended to later developments, only that this is not attempted here.

The goal of this discussion is to make the case that an evolutionary approach to understanding the bases of religious ethics is a worthwhile contribution to such studies. By choosing representative moral principles that exemplify an evolutionary logic I demonstrate the plausibility of this approach and its potential for shedding new light on these issues. Of course, an important aspect of defending an evolutionary approach is to account for those moral precepts that do not immediately fit into this schema. This, however, also must wait for a more comprehensive study. I make suggestions on how to handle such counterexamples,[10] but the priority must be on establishing the evolutionary approach as a theoretical tool before refining its usage.

We look first to Judaism. In our treatment of Jewish Scriptures the focus is on the developed canon and ignores considerations of dating of the various books and their history of composition. This is not because these are unimportant concerns. Indeed, the evolutionary model may contribute to the sociohistorical understanding of these issues. The focus here is on the stories told and learned by the ancient Jewish communities. For the sake of discussion we can presume this community to be postexilic so as to minimize concerns over dating. The present discussion also avoids questions of historicity of the patriarchs or the Exodus, though, if one were to take a strictly literal interpretation of such stories, the need for any analysis, be it evolutionary or literary, would be obviated.

Beginning with the stories of the patriarchs, we can see these as embodiments of the logic of kin selection. Jews are all children of Abraham. "Israel" is not merely the ancestral home of the Jewish people (bequeathed by God) but was the father of the twelve tribes. All Jews through their tribal lineage are members of one, extended family. This extended family is the basis of Judaism and Jewish morality. It is the basis but of course not the whole. As we saw, kin selection can do only so much in binding a complex society. As we turn to the Mosaic Law, we can see, at least in part, that it functions to extend the force of this basic tribal ethic.

The Law begins by establishing the preeminence of the Hebrew God over all other gods and connecting the prosperity of the community to obedience to God and the law. "I the LORD your God am a jealous God,

visiting the iniquity of the fathers upon the children to the third and fourth generation of those that hate me, but showing steadfast love to thousands of those who love me and keep my commandments" (Exodus 20:5–6 RSV). This yoking of communal prosperity to obedience to God's Law is the defining characteristic of the relationship between God and God's chosen people and serves the function of fortifying social bonds with divine sanction. A community cannot survive and prosper without a shared commitment to a moral system. The ancient Hebrews addressed the problem of extension posed by evolutionary accounts of morality by establishing the idea of a covenantal relationship, which both embodies and reinforces the logic of evolutionary morality.

As we read the specific rules set out in the Law, what we find are rules not so much for spiritual purification as for social cooperation. We see prohibitions against murder, adultery, theft, and perjury (Exodus 20:13–16). We are commanded, "You shall not covet your neighbor's house; you shall not covet your neighbor's wife, or his manservant, or his maidservant, or his ox, or his ass, or anything that is your neighbor's" (20:17 RSV)—all of which can be justified on purely practical grounds as minimal requirements for social living.

This, of course, does not argue against a divine authorship. We can certainly imagine God legislating just those rules best designed to ensure peace among neighbors. However, in certain laws we see a level of specificity more appropriate to a civil code than to a guidebook for moral perfection. This is what is to be expected from a religious ethics that ultimately functions as a social bond. For example, we find this very particular law for dealing with an owner of an unruly ox:

> When an ox gores a man or a woman to death, the ox shall be stoned, and its flesh is not to be eaten; but the owner of the ox shall be clear. But if the ox has been accustomed to gore in the past, and its owner has been warned but has not kept it in . . . its owner also shall be put to death. If it gores a man's son or daughter, he shall be dealt with according to this same rule. If the ox gores a slave, male or female, the owner shall give to their master thirty shekels of silver, and the ox shall be stoned. (Exodus 21:28–32 RSV)

As a civil regulation this is sensible and fair. It tries to take into account both parties to a potential dispute and to administer justice proportionate to the situation. This type of regulation, unglamorous and mundane as it may be, is key to maintaining a sense of reciprocity within a community. As a precept of a higher moral law, however, one might wonder at the unquestioning acceptance of slavery and the implicit commercialization of human flesh expressed in the compensation for a gored slave. But notice that a slave is not considered part of the community. A slave is not evaluated for potential to cooperate and reciprocate cooperation. A slave is a possession that is dealt with, however benignly, through coercion. The harm done to a slave threatens social cohesion by the harm done to its owner, and that is what is addressed.[11]

We also find much in the Law that attempts to keep the covenantal relationship central to Jewish life. Circumcision, Sabbath observance, and the dietary and purification laws serve to bind the people to their God but also clearly set off the Jewish community from other ancient Mediterranean cultures. These are costly and time-consuming rituals. Circumcision signals either lifelong membership in the group or, in a new member, a commitment to the group the cost of which is unlikely to be undertaken lightly. Kosher laws and purification rituals provide ample opportunity for public evaluation of commitment; because of the complexity of many of these practices, mastering them requires a long-term immersion in the tradition. Sabbath observation may not be as costly as circumcision or as complex as dietary laws, yet the punishment for failing to master this signal of commitment—death—highlights its value as a measure of commitment. Given this, such practices, as hard-to-fake-signals of commitment to the group, identify those who can be trusted to cooperate and those who may be tempted to defect.

In considering Christianity we are faced with a more complex situation. This is the result not of any qualitative difference between Judaic and Christian ethics but of a more fluid and dynamic sense of what constitutes community. Christianity began as a sect within first-century Judaism, but it developed into a cosmopolitan, Hellenized religion. The moral teachings of Christianity reflect the tensions, contradictions, and conflicts that characterized that historical process. For example, in Luke 10:25–37 Jesus, after declaring "Love thy neighbor" a central moral requirement, is asked "and who is my neighbor?" This question is significant not only because it seeks to establish the boundaries of the moral community but because it expresses confusion about those boundaries. This moral confusion is characteristic of large, complex, and increasingly anonymous societies and would be inconceivable in most tribal societies. Jesus replies with the story of the Good Samaritan in which the hero is a member of reviled outgroup who stops to aid a stranger in need, while two characters who would have been expected to be moral role models (a priest and a Levite) ignore the suffering of a fellow Jew. The parable indicates that a tribal morality is no longer adequate; the boundaries of the group are being recalibrated. That they are being recalibrated and not erased will be touched on presently.

It also illustrates the difficulty in assessing "Christian ethics" as if it were a unified and consistent system. This famous parable is found only in the Gospel of Luke. The earlier ones, Mark and Matthew, do not contain it. This is telling in that Luke generally is acknowledged to be aimed at a more Gentile audience than that of either Mark or Matthew and so is more concerned with extending the boundaries of the moral community. Each of the Gospels presents a message designed to speak to a specific audience with specific concerns. The differences between them are not so great that they prevented the early church from granting all four canonical

status, but they are significant enough to caution against an analysis that conflates the four into a single moral system.

An evolutionary analysis of early Christian ethics, therefore, requires a much more specific and detailed consideration of the developmental story than I provide here. Still, we can pull out examples from the canonical Gospels that offer prima facie support for an evolutionary account. For the sake of simplifying the discussion, I restrict my examples to the Gospel of Matthew.

We may segue into Christianity by considering how Jesus summarizes the moral message of the Mosaic Law. In Matthew 7:12 Jesus declares "So whatever you wish that men would do to you, do so to them; for this is the law and the prophets." When later asked to identify the greatest of the commandments in the Law, Jesus replies: "You shall love the Lord your God with all your heart, and with all your soul, and with all your mind. This is the great and first commandment. And a second is like it, You shall love your neighbor as yourself. On these two commandments depend all the law and the prophets" (Matthew 22:37–40 RSV). "Do unto others" is the classic expression of reciprocal altruism. This central principle of evolutionary morality is here declared by Jesus to be the basis of all the teachings of the Jewish Law and the basic moral rule for Christians. Significantly, it is subordinated to only one other commandment, a complete devotion to God—which is consistent with the evolutionary logic of religious ethics. God serves to uphold the laws that bind society together and enables reciprocal altruism to function in a large complex society. This supreme commandment signals a complete commitment to the being that oversees the good of the group and thus is a sign of commitment to that group.

This analysis, however, may raise a concern. Identifying "Do unto others as you would have them do unto you" with reciprocal altruism might be questioned, as reciprocal altruism seems to call for us to "do unto others as they *have done* unto you." This is an important objection. Whether or not it can be answered depends on how we read both injunctions. The objection may be answered as follows: There are studies indicating that the development of altruism works best if we start with altruism as the default position—that is, enter into interactions with a willingness to cooperate—and base future interactions on the outcome. This has been demonstrated through computer simulations in experiments designed by Robert Axelrod (1984), who found that a "tit-for-tat" strategy was most successful in maximizing individual benefits from social interactions. Altruism cannot get off the ground unless there is an initial willingness to risk being cheated. Essentially we are best off to start with "do unto others as you would have them do unto you." Therefore, in according a primary position to this rule Jesus is giving evolutionarily sound advice and advocating a moral stance supported by evolutionary game theory—namely, if everyone adopted cooperation as the default position there would be little need for

any other laws. In this sense, then, the objection to identifying the golden rule with reciprocal altruism can be rejected. "Do unto others" is the first move, the default position, in evolutionary accounts of altruism.

Still, an objector can point out that even if "do unto others as you would have them do unto you" is the first move, all subsequent moves are ruled by "do unto others as they have done unto you," and this seems at odds with Jesus' message, as expressed by his admonitions to "Love your enemies" (Matthew 5:44) and "if anyone strikes you on the right cheek, turn to him the other also" (Matthew 5:39)—advice certainly at variance with the principles of reciprocal altruism. Indeed, it has been suggested that this moral stance represents a "protest against the principle of [natural] selection" (Theissen 1984, 112; see also Hefner 1996). How may an evolutionary account respond to this?

There are two responses, and both are important to a fuller appreciation of an evolutionary study of ethics. One is to admit that Jesus is here moving beyond the constraints of evolutionary moral logic. This exposes an important limitation, though not refutation, of evolutionary morality. An evolutionary account of morality should not be understood to imply biological determinism. It does not deny the possibility of resisting these cognitive/emotional predispositions or reject moral innovation. The complexity of our social world and the flexibility of our cognitive abilities conduce to allow for an element of moral creativity. In Jesus' teaching we see an attempt to stretch our moral imagination. It may be argued that what characterizes the moral prophets in human history is their ability to articulate a moral vision that pushes against our ingrained predispositions.

A second response is to point out that as moral exhortation Jesus' teaching may move beyond evolutionary logic, but as a guide to behavior it is evolutionary logic that often holds sway. While this is an admittedly contentious point, I would claim that the history of Christianity is filled with examples (such as the crusades, the inquisition, and the persecution of heretics and Jews) that speak to the power of the underlying evolutionary logic to overwhelm attempts to develop moral attitudes contrary to it (for example, "turn the other cheek"). The response of Christians in history to enemies and to attacks has often been much more in line with the psychology of evolutionary morality than with these particular teachings of Jesus. This is not so much a condemnation of Christianity as it is a lesson on the difficulty of moving beyond these evolutionarily ingrained moral predispositions. Even Jesus himself fell prey to the pull of these predispositions, as we can see when he condemns those who refuse to accept his teachings (Matthew 10:15). So Jesus' use of the golden rule is consistent with an evolutionary analysis, even if that analysis does not allow a simple identification of the two principles ("Do unto others" and reciprocal altruism.)

Christian morality is also filled with imagery to encourage kin selection. We are all children of God, so fellow members are brothers and sisters as

well as neighbors ("you are all brethren . . . for you have one Father who is in heaven," Matthew 23:8–9 RSV). However, we can find evidence of a confusion over moral boundaries and Christianity's attempt to clarify and extend the moral community. We read of an occasion when Jesus was teaching and was informed that his mother and brothers had come to speak with him. Jesus replied, "'Who is my mother, and who are my brothers?' And stretching out his hand toward his disciples, he said, 'Here are my mother and my brothers! For whoever does the will of my Father in heaven is my brother, and sister, and mother'" (Matthew 12:46–50 RSV). This is a radical extension of the moral community, but it is formulated in a way that takes advantage of an evolutionarily ingrained moral predisposition toward kin. Throughout the Gospels Jesus uses kin relationships as models for exemplifying moral obligations. In this passage he defines kin as those who follow God's will. In that God's will stands for the moral bonds of society, kinship is now determined not by blood but by willingness to abide by that morality. The readiness to support and aid a family member is now to be extended to those who signal commitment to the community by their devotion to God. As Elaine Pagels writes, "Inclusion in God's kingdom depends, then, not on membership in Israel, but on justice combined with generosity and compassion. Ethnicity as a criterion has vanished" (1995, 86).

Early Christians also developed a variety of ways to signal their identity with the group and their willingness to reciprocate acts of altruism. Their rejection of circumcision and dietary laws distinguished Christians from their parent group and fellow monotheists, the Jews, while their sharing of the Eucharist and refusal to sacrifice to Roman gods set them apart from their pagan neighbors. This last act served as a very effective hard-to-fake-signal of commitment given the often drastic consequences that followed it.[12]

Thus far we have been looking at morality as a means for establishing a sense of community and a code of in-group behavior. In serving this function morality also identifies an outgroup and implies an outgroup ethic. The key consideration within a group is to promote prosocial behavior by ensuring reciprocation among group members. The flip side of this membership is, of course, exclusion. If you are not family or neighbor, you are an outsider. Outsiders are not invested in the group and so have little motivation to cooperate or to reciprocate cooperation. Therefore they endanger the community. For all the constructive morality found in religion, we find an equally prominent place for warnings against outsiders.

In order to explore this flip side of morality let us consider the rule against killing. On Mount Sinai God enshrines "You shall not kill" as a divine command (Exodus 20:13), yet the first order Moses gives upon descending from the mountain is for the execution of those who had fallen into sin while he was gone.

> Then Moses stood in the gate of the camp, and said, "Who is on the Lord's side? Come to me." And all the sons of Levi gathered themselves together to him. And he said to them, "Thus says the Lord God of Israel, 'Put every man his sword on his side, and go to and fro from gate to gate throughout the camp and slay every man his brother and every man his companion, and every man his neighbor.'" And the sons of Levi did according to the word of Moses; and there fell of the people that day about three thousand men. And Moses said, "Today you have ordained yourselves for the service of the Lord. . . ." (Exodus 32:26–29 RSV)

Indeed, throughout the Mosaic Law we find numerous actions that are to be punished with death. Not only murderers are to suffer the death penalty but also those who commit adultery (Leviticus 20:10), bestiality (Exodus 22:19), or blasphemy (Leviticus 24:16) and those who profane the Sabbath (Exodus 31:14) or curse their parents (Exodus 21:17)—to name just a few.

After having received the law and communicated it to the people, Moses then leads the Hebrews on what can be described as a blood-soaked trek to the promised land. We are told, for example, that when God delivered the land of Heshbon to the Hebrews they "utterly destroyed every city, men, women, and children; we left none remaining" (Deuteronomy 2:34 RSV). They then moved onto the land of Bashan where they "smote him until no survivor was left to him." The passage continues, "And we took all his cities at that time—there was not a city which we did not take from them—sixty cities. . . . And we utterly destroyed them, as we did to Sihon the king of Heshbon, destroying every city, men, women, and children" (Deuteronomy 3:3–6 RSV).

In case we might be tempted to think that the extent of the killing was an excess brought on by the heat of battle rather than a divinely sanctioned slaughter, we read in Numbers of a case in which Moses angrily chastises the army generals for not killing all the inhabitants of a city. In their defeat of the Midianites the Hebrews took as captives the woman and children after slaying all the men. Moses, we are told, "was angry with the officers of the army," asking them "Have you let all the women live?" (Numbers 30:14–15 RSV). He corrects their error by instructing them thus: "Now therefore, kill every male among the little ones, and kill every woman who has known man by lying with him. But all the young girls who have not known man by lying with him, keep alive for yourselves" (Numbers 31:17–18 RSV).

What can we make of all of this? One certainly is tempted to charge the Mosaic Law with hypocrisy; aspects of it affront our sense of moral rightness. This has long presented a problem to those who would claim divine authorship for these acts. However, from the evolutionary perspective developed here there is less reason to be surprised.

Morality develops as a tool to promote within-group cohesiveness and so better enable individuals to enhance their genetic fitness. This cohesiveness also functions as an adaptive advantage in competition with other

groups (Alexander 1987; Wilson 2002). Morality is a code of how to treat those in my group; it is not extended to those outside the group. Because these others are not bound by the same code they must be treated as potential cheaters. Those outside the group are in fact a potential threat to my group's survival. The people the Hebrews encountered on their journey were obstacles that needed to be overcome in the interest of group survival. As such the moral injunction "you shall not kill" did not apply to them (see also Hartung 2002).

The evolutionary logic behind these actions is, perhaps, most apparent in Moses' instructions to spare the virgins among the Midianite prisoners. This clearly was not done from compassion, for he had no compunction about ordering the death of older women and male children. In the brute terms of reproductive fitness, the young girls were prime resources for the propagation of the community, while the older women and boys would have been a drain on the resources of a nomadic people. Moses' actions seem coldly calculating to modern readers and not what one would expect of a religious hero, but to the degree that morality serves evolutionary ends Moses ably fulfilled his role as moral leader of his community.

Although this may explain the lethal behavior toward those in the outgroup, we have seen that "you shall not kill" was often suspended within the group, also. However, the same logic supports the imposition of the death penalty toward in-group members. Morality sets the bounds of appropriate in-group behavior. It also serves as a signal of commitment to the group. Breaking this code poses two problems that need to be addressed. For one, say in the case of theft, it creates an imbalance that needs to be rectified. More important, perhaps, is that it signals a break from the group that may cast the perpetrator into the category of the outgroup. As such, the former in-group member becomes a potential threat and is outside the bounds of moral treatment. Some such breaks can be rectified by a willingness to accept the punishment of the group, but some cannot.

We can see this logic at work by looking at two very different capital crimes: murder and profaning the Sabbath. In the case of murder the death penalty seeks to restore the balance disrupted by the crime. "An eye for an eye" is the flip side of "Do unto others," so this punishment flows from the logic of reciprocal altruism. However, in profaning the Sabbath no member of the group is harmed. There is no imbalance to be corrected. To understand the punishment for this crime we need to remember that Sabbath observances serve as a signal of commitment to the group and mark an individual as one who can be trusted to reciprocate. By profaning the Sabbath one is signaling that he or she has opted out of this arrangement and is no longer a trustworthy member of the community. In the logic of evolutionary morality you are either in the group or out of the group, and if you are out, moral laws no longer apply to you.[13]

From a post-Enlightenment moral view, a principle against killing should apply categorically and so prohibit both the death penalty (at least for nonviolent crimes) and the slaughter of innocent children—hence the charge of hypocrisy against the ancient Hebrews. From an evolutionary view of morality, there is no hypocrisy. "You shall not kill" is a moral rule and as such applies to all members of the group. Those outside the group, whether members of a competing group or lapsed members of the community, do not fall under the extension of this rule.

Before leaving this discussion, a question of translation needs to be addressed. It has been noted that "You shall not kill"—the traditional translation found in many Christian versions of the Bible—is a mistranslation; it should be read as "You shall not murder." Does this change any of the preceding argument? I think not, at least not in any significant sense. What distinction can be drawn between *kill* and *murder*? It seems the least controversial reading is that to kill is to take a life, while to murder is also to take a life but with the added connotation that such an act is prohibited by the norms or laws of society. A soldier who takes the life of an enemy soldier in the course of a battle has killed but will not be charged with murder. A correctional officer who pushes the button that sends a lethal cocktail of drugs into the veins of a convict has taken a life but is not deemed a murderer. So "You shall not kill" is a more categorical prohibition against taking a life than is "you shall not murder."

How does this impact upon our discussion? One important implication is that the charge of hypocrisy is unfounded. If the commandment is "You shall not murder," imposing the death penalty upon blasphemers and such is not hypocritical, because such an action is not murder. Killing those who violate certain commands of the law, killing those who betray the group or outsiders who oppose the group, are divinely sanctioned instances of taking a life and by definition are not instances of murder.

Still, other issues arise when we read the law as "You shall not murder." For one, it makes the law mundane, as it then merely tells us not to commit killings that have not been sanctioned. Such a prohibition is a nearly universal trait of organized societies, although there is a diversity of ways to determine which killings are to be sanctioned. It also exposes the tautologous nature of the law: You shall not murder = It is wrong to kill those whom God/society deems it wrong to kill. "You shall not kill" would be a much more substantive and morally unique command (found elsewhere at the time, to my knowledge, only in Buddhism.)

However, from the perspective of an evolutionary analysis things change not at all. The fact that "You shall not murder" is a nearly universal social prohibition is consistent with an evolutionary understanding of biocultural development. More pertinent is how the command "You shall not murder" is to be applied—which killings are sanctioned, and so not "murder," and which are prohibited. Here we can return to the previous discussion

without any emendations, for, as argued there, the distinction between sanctioned and prohibited killing falls along lines supported by the logic of evolutionary morality.

As we turn to Christianity we must again be sensitive to the social context in which Christianity developed. The early Christians were a minority group within a minority group in a world dominated by a Roman-Hellenistic culture. As we have seen, this made the issue of boundary clarification a vital concern to the Christians. Although the Christians set those boundaries differently than their fellow monotheists did, they nonetheless demonstrated the same in-group/outgroup divide that we encountered in our discussion of Judaism. A clear expression of this dichotomous approach is found in Jesus' parable of the sheep and goats. Speaking of the final judgment, Jesus says,

> Before him will be gathered all the nations, and he will separate them one from another as a shepherd separates the sheep from the goats, and he will place the sheep at his right hand, but the goats at his left. Then the King will say to those at his right hand, "Come, O blessed of my Father, inherit the kingdom prepared for you from the foundation of the world.". . . Then he will say to those at his left hand, "Depart from me, you cursed, into the eternal fire prepared for the devil and his angels." (Matthew 25:32–41)[14]

Particularly notable about this passage is the severity of the treatment toward those in the outgroup. In our examples from the Jewish Scriptures, those outside the group merely suffered death; here they suffer eternal torment. Christianity raised the stakes for being on the wrong side of the divide. Throughout the Gospels the opponents of the Christians are categorized not merely as dangerous or evil but as in league with the devil. Pagels points out that in "the ancient world, so far as I know, it is only Essenes and Christians who actually escalate conflict with their opponents to the level of cosmic war" (1995, 84).

Understanding this escalation is a complicated task and deserves greater attention than is given here,[15] but let me suggest an explanation rooted in evolutionary logic. Both the early Christians and Essenes were radical, minority sects within first-century Judaism, and as such they had little temporal power to exercise in defense of their group and so were less able to punish those who defected. If the cost of defection is low, the likelihood of defection increases. This raises the cost of cooperation. A group cannot survive under such circumstances. Divine retribution then assumes a more essential role. Individuals could, theoretically, enjoy the benefits of membership in a Christian community, then defect before reciprocating and be protected from punishment by being absorbed back into the more powerful majority group. However, in doing so they were now aligning themselves with the enemy of God and could have no hope of escaping divine justice.

We can understand this shift away from a physical punishment of opponents toward a spiritual punishment as an example of the same evolution-

ary moral logic found in our discussion of Judaism, applied to the specific environmental conditions of early Christianity, rather than as a repudiation of that logic. That this is so may be supported by the fact that as soon as Christianity acquired the role of the dominant group within Roman society it quickly resorted to the more familiar, mundane means of punishing defectors.[16]

The role of violence in religion is a vital issue. People puzzle over the apparently paradoxical morality found in Judaism, Christianity, and Islam. Proponents characterize these religions as religions of peace and then struggle to explain the evidence to the contrary. From an evolutionary perspective there is no paradox; in fact, this is just what is to be expected. Morality evolves as a means of fostering prosocial in-group behavior and to define and defend the boundaries of that group. Religion, as an expression and extension of that morality, embodies these goals. Despite universalistic aspirations often invoked by religious moralities, their histories and their texts belie their evolutionary origins.

Conclusion

I conclude with comments on two implications of an evolutionary approach to religious morality. First, if the basic themes of religious morality conform to the logic of evolutionary morality, this seems to undermine any claim to divine sanction for any particular moral code (without thereby delegitimizing any particular moral injunction). If the moral teachings of religion can be explained as means of fostering group cohesiveness and encouraging prosocial behavior, and thereby tending to increase individual fitness, the addition of a divine lawgiver seems logically gratuitous. The fear that an evolutionary moral theory undermines the case for a transcendent ethics is substantiated. This, however, does not invalidate morality, even religious morality.[17] It does alter the status of such morality. Rather than being collections of divine commands, moral systems are records of the efforts of various human communities as they struggled to solve the problems of communal life and to create a better society. As such they are invaluable to anyone concerned with either morality or social progress. Their value is not that of conclusive truths but of moral experiments that need to be evaluated by their results. A more complete understanding of the evolutionary basis of religion and morality will improve our ability to assess such results.

Second, despite this downgrading of the status of religious morality, an evolutionary approach suggests a crucial moral role for religion to play. We live in societies incomparably larger and more complex than those that first forged the bond between religion and morality. The extension problem of evolved moral mechanisms still needs to be addressed. Are there secular solutions to this problem that can substitute for religion? This seems an open question. It is a question not of the rational justification of

a secular ethics but of the possibility of generating large-scale commitment to such an ethical system. One possible reading of this evolutionary story is that religion may play a necessary role in grounding moral obligation on a large scale. For a secular morality to function it may need to tap into the same emotional and cognitive resources accessed by religion.[18] Whether or not such secular substitutes can be made effective, it is clear that religion is designed to play such a role.[19] In fact, for better or worse, religion does play this role, and in all likelihood will continue to, for a vast portion of the global population. Because religion taps into such deeply ingrained psychological mechanisms it can serve to amplify and funnel human energies in any number of directions. Given this vast power to move people for good and for ill, and the central position of religion in so many of the challenges confronting us today, it is imperative to understand how religion functions. The topics treated in this essay are therefore deserving of further investigation.

NOTES

Papers on topics treated in this article were presented at the Mid-Atlantic AAR Annual Meeting, the New England Institute Conference on Cognitive Psychology, Evolutionary Psychology and Religion, and the Annual Meeting of the Society for the Scientific Study of Religion, all 2003. I am grateful to Chris DiCarlo, Arthur Dobrin, Robert Hinde, James Levy, and Patricia Romano for comments on earlier versions of this article and to the anonymous *Zygon* readers whose response provided an opportunity to develop some of the implications of this thesis.

1. The evolutionary study of ethics can be divided into methodological and normative—methodological indicating an attempt to explain moral phenomena as the results of evolutionary processes and normative indicating the attempt to derive ethical judgments from those natural processes. My work here is more concerned with methodological evolutionary ethics. This should not be taken to imply, however, that there is an absolute divide between the two approaches or that there are no normative implications of the methodological approach. For a discussion of this see Teehan and DiCarlo 2004.

2. This should not be construed as endorsement of a gene-centric view of evolution, although I believe there is much to be said for such an account. However, the gene-centric view seems the more restrictive in terms of explaining altruism, so the case for the possibility of altruism's evolving naturally will be stronger if it can be developed in a way consistent with such an approach.

3. In evolutionary terms the response to cheating is the development of a set of emotional responses against cheaters and in favor of cooperators. See Trivers 1971; Frank 1988. This provides the groundwork for moral systems.

4. Examples of works on an evolutionary basis for morality are Hamilton 1964; Williams 1966; Trivers 1971; Dawkins 1976; Axelrod 1984; Alexander 1987; Dennett 1995; Ridley 1996; and Hinde 2002. For a valuable discussion of cheater detection and cognitive evolution see Byrne and Whiten 1988 and Byrne 1995, especially chaps. 12–15. For other discussions of the evolution of the brain/mind see Gazzaniga 1992; Barkow, Cosmides, and Tooby 1992; and Dennett 1995, especially chap. 13. This, of course, merely scratches the surface of the voluminous works on these topics.

5. This does not mean that the evolutionary accounts can say nothing else about such ostensible counterexamples. For example, evolutionary theory seems to offer the best account of the dramatically elevated rates of child abuse directed against adopted/step-children compared to rates for natural offspring (see Daly and Wilson 1999).

6. The claim does of course need defending, and such a defense would be essential in a treatment more comprehensive than is undertaken here. Emile Durkheim, for example, presents an analysis of religion that merits consideration in any evolutionary approach (indeed, he

has already figured into the literature; see Wilson 2002). Despite the value of approaches such as Durkheim's, any empirical treatment of religion that predates the modern science of the mind is going to be significantly limited by that fact.

7. For a detailed discussion see Boyer 2001; Atran 2002.

8. A variety of political/legal structures also may function in this role. Religion is not a necessary strategy, but, given its worldwide application and incredible staying power, it may be argued that it is one of the more effective and perhaps is an important element in any such strategy. A test case for this is the phenomenon of secularization. Nothing said here should be construed as denying the possibility of the secularization of ethics or of social bonds. It is, however, an interesting and important question of how effective secularization can be.

9. Wilson's treatment of evolution and religion is an example of what he calls multi-level selection. That is, it sees evolution acting at the level of the group as well as at the level of the individual and the gene. The present treatment of religious ethics is, as stated, neutral as to the issue of selection level, although the mechanisms being discussed as underlying religious ethics do not involve group selection. This is an important issue for future clarification.

10. Allow me to propose one now: It has been suggested that the early Christian "cult of martyrdom" cannot be explained by an evolutionary logic that is rooted in improving reproductive fitness, whether on an individual or a group level. This is, prima facie, a challenge to the model proposed here. However, Christian martyrdom is a particular example of the more general phenomenon of self-sacrifice. Communities often encourage individuals to be willing to make the ultimate sacrifice. These are its soldiers, police, and firefighters, who willingly put themselves in situations where they may be expected to offer up their lives for the good of the group. Society reciprocates by according such individuals heightened status while they live, which often passes on to their families after they have died. This is an example of indirect reciprocity (see Alexander 1987). Christian martyrs were not giving their lives "so that others may live" but were promoting the interests of the group—as understood as being true to the God of that group—and powerfully signaling a commitment to that group. Furthermore, in the context of a heightened sense of persecution, the demonization of the persecutors may have suggested to some that martyrdom was necessary to group survival. See, for example, Pagels's (1995) discussion of Justin Martyr. For a discussion of a modern form of martyrdom—suicide bombers—with an evolutionary perspective see Atran 2003.

11. None of this should be understood to be dismissive of the moral value of the Law or to deny the contribution to humanity's moral development made by Jewish thought. Even in the case of slavery the Bible sets moral boundaries for their treatment (Exodus 21:20, 26–27). But it is also interesting to note that, consistent with the logic of evolutionary morality, Hebrew slaves are accorded more extensive and specific rights (see Exodus 21:1–11).

12. An analysis of Christian rituals and ceremonies may be a rich topic for an evolutionary analysis. See, for example, McCauley and Lawson 2002.

13. There are of course counterexamples of moral consideration extended to strangers that need to be accounted for. These may just be exceptions that prove the rule, but there may be a way to subsume them under the logic of evolutionary morality. The very fact that there are specific moral injunctions protecting strangers may be suggestive of an underlying in-group/out-group moral predisposition.

14. This touches on an important potential counterexample: the universalist rhetoric found in Christianity. If Christianity proposes salvation to all, does this not erase the in-group/out-group divide essential to the thesis of this essay? This is a complex issue, but there are good reasons to reject the notion that the universalist rhetoric of Christianity represents a universalist ethics. Christianity expands the boundaries of the community and rejects ethnicity as a criterion for membership. As such it may be a more inclusive group ("may be," as there are universalist sentiments found in Judaism, also), but it is still a group with requirements for membership, signals of commitment to other members, and, as we see here, quite severe consequences for not being a member. If universalism means that everyone is part of the in-group because there are no out-groups left to be part of, many groups can be reinterpreted as universalist in motivation. Still, we can find in both Judaism and Christianity elements of universalism that may be adapted to provide the foundation of a truly universal moral system.

15. Pagels (1995) provides a detailed and compelling account of this shift in her treatment of the development of the character of Satan. My discussion follows the account developed by Pagels, with the addition of an evolutionary perspective.

16. For a discussion of the use of violence and the role of the coercive power of the state in establishing orthodoxy and combating heresy (that is, defection from the group) see Smith 1976 and Rubenstein 2000. Particularly instructive is the often bloody dispute over the substantive relation between God the Father and God the Son known as the Arian controversy; Rubenstein provides a detailed discussion.

17. For an interesting attempt to defend a religious morality, specifically Thomistic ethics, with the findings of evolutionary morality see Pope 1994. This interesting discussion of the interplay between evolutionary and religious moralities yields important insights. It does seem, however, that the conclusions reached by Pope, while intriguing, do not depend upon a transcendent worldview for their validity.

18. E. O. Wilson addresses this issue in his 1998 work *Consilience*. Wilson shows an appreciation for and sensitivity to the function of religion in humanity's moral experience while remaining grounded in a naturalistic worldview. He proposes as an outcome to the clash of religion and the sciences a consilience that results in the "secularization of the human epic and of religion itself" (1998, 290). This provocative conclusion deserves engagement. Whatever one's view of Wilson's conclusion, his project is an example of the task that faces us.

19. Patrick McNamara (2002) raises a similar concern based on findings of neurological studies of religious experience. Although I have reservations about some of the implications of McNamara's conclusions, we are in agreement as to the need to explore this issue.

REFERENCES

Alexander, Richard D. 1987. *The Biology of Moral Systems*. New York: Aldine de Gruyter.

Atran, Scott. 2002. *In Gods We Trust: The Evolutionary Landscape of Religion*. Oxford: Oxford Univ. Press.

———. 2003. "The Genesis of Suicide Terrorism." *Science* 299 (7 March): 1534–39.

Axelrod, Robert. 1984. *The Evolution of Cooperation*. New York: Basic Books.

Barkow, Jerome H., Leda Cosmides, and John Tooby. 1992. *The Adapted Mind: Evolutionary Psychology and the Generation of Culture*. Oxford: Oxford Univ. Press.

Bloom, Donald M. 2003. *The Evolution of Morality and Religion*. Cambridge: Cambridge Univ. Press.

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

Byrne, Richard. 1995. *The Thinking Ape*. Oxford: Oxford Univ. Press.

Byrne, Richard, and A. Whiten. 1988. *Machiavellian Intelligence: Social Experience and the Evolution of Intellect in Monkeys, Apes, and Humans*. Oxford: Clarendon/Oxford Univ. Press.

Daly, Martin, and Margo Wilson. 1999. *The Truth about Cinderella: A Darwinian View of Parental Love*. New Haven: Yale Univ. Press.

Dawkins, Richard. 1976. *The Selfish Gene*. Oxford: Oxford Univ. Press.

Dennett, Daniel C. 1995. *Darwin's Dangerous Idea*. New York: Simon and Schuster.

Frank, Robert H. 1988. *Passions within Reason: The Strategic Role of the Emotions*. New York: Norton.

Gazzaniga, Michael S. 1992. *Nature's Mind*. New York: Basic Books.

Guthrie, Stewart. 1993. *Faces in the Clouds: A New Theory of Religion*. Oxford: Oxford Univ. Press.

Hamilton, William D. 1964. "The Genetical Evolution of Social Behavior, I, II." *Theoretical Biology* 7:1–52.

Hartung, John. 2002. "Love Thy Neighbor: The Evolution of In-Group Morality." *Skeptic* 3 (4): 86–89.

Hefner, Philip. 1996. "Theological Perspectives on Morality and Human Evolution." In *Religion and Science: History, Method, Dialogue*, ed. W. Mark Richardson and Wesley J. Wildman, 401–23. New York: Routledge.

Hinde, Robert A. 2002. *Why Good Is Good: The Sources of Morality*. London: Routledge.

Hume, David. [1757] 1956. *The Natural History of Religion*. Stanford, Calif.: Stanford Univ. Press.

Irons, William. 1996. "In Our Own Self Image: The Evolution of Morality, Deception, and Religion." *Skeptic* 4 (2): 50–61.

———. 2001. "Religion as a Hard-to-Fake Sign of Commitment." In *Evolution and the Capacity for Commitment*, ed. Randolph M. Nesse, 292–309. New York: Russell Sage Foundation.
McCauley, Robert, and E. Thomas Lawson. 2002. *Bringing Ritual to Mind: Psychological Foundations of Cultural Forms*. New York: Cambridge Univ. Press.
McNamara, Patrick. 2002. "The Motivational Origins of Religious Practices." *Zygon: Journal of Religion and Science* 37 (March): 143–60.
Nesse, Randolph M., ed. 2001. *Evolution and the Capacity for Commitment*. New York: Russell Sage Foundation.
Pagels, Elaine. 1995. *The Origin of Satan*. New York: Vintage Books.
Pope, Stephen J. 1994. *The Evolution of Altruism and the Ordering of Love*. Washington, D.C: Georgetown Univ. Press.
Ridley, Matt. 1996. *The Origins of Virtue: Human Evolution and the Evolution of Cooperation*. New York: Penguin.
Roes, Frans L., and Michael Raymond. 2003. "Belief in Moralizing Gods." *Evolution and Human Behavior* 24 (2): 126–35.
Rubenstein, Richard. 2000. *When Jesus Became God*. Harvest Books.
Smith, John Holland. 1976. *The Death of Classical Paganism*. New York: G. Chapman.
Sosis, Richard, and Candace Alcorta. 2003. "Signaling, Solidarity, and the Sacred: The Evolution of Religious Behavior." *Evolutionary Anthropology* 12:264–74.
Sosis, Richard, and Eric R. Bressler. 2003. "Cooperation and Commune Longevity: A Test of the Costly Signaling Theory of Religion." *Cross-Cultural Research* 37:211–39.
Teehan, John, and Christopher DiCarlo. 2004. "On the Naturalistic Fallacy: A Conceptual Basis for Evolutionary Ethics." *Evolutionary Psychology* 2:32–46.
Theissen, Gerd. 1984. *Biblical Faith: An Evolutionary Approach*. Philadelphia: Fortress.
Trivers, Robert L. 1971. "The Evolution of Reciprocal Altruism." *Quarterly Review of Biology* 46:35–57.
Williams, George C. 1966. *Adaptation and Natural Selection*. Princeton: Princeton Univ. Press.
Wilson, David Sloan. 2002. *Darwin's Cathedral: Evolution, Religion, and the Nature of Society*. Chicago: Univ. of Chicago Press.
Wilson, Edward O. 1998. *Consilience: The Unity of Knowledge*. New York: Vintage Books.