

# AN EVOLUTIONARY CRITIQUE OF THE CREATED CO-CREATOR CONCEPT

*by William Irons*

*Abstract.* The created co-creator theology states that human beings have the purpose of creating the most wholesome future possible for our species and the global ecosystem. I evaluate the human aspect of this theology by asking whether it is possible for human beings to do this. Do we have sufficient knowledge? Can we be motivated to do what is necessary to create a wholesome future for ourselves and our planet? We do not at present have sufficient knowledge, but there is reason to believe that with further scientific research we will be able to acquire it. The more difficult question is whether we can be motivated to cooperate on the scale necessary to fulfill this purpose. Evolutionary theories of human sociality, altruism, and cooperation are reviewed. I conclude that it is possible for human beings to fulfill the purpose defined for us by the created co-creator concept, but doing this will not be easy.

*Keywords:* altruism; behavioral ecology; cooperation; created co-creator; evolutionary psychology; game theory analyses of human cooperation.

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The core of Philip Hefner's theology of the created co-creator is this:

Human beings are God's created co-creators whose purpose is to be the agency, acting in freedom, to birth the future that is most wholesome for the nature that has birthed us—the nature that is not only our own genetic heritage, but also the entire human community and the evolutionary and ecological reality in which and to which we belong. Exercising this agency is said to be God's will for humans. (Hefner 1993, 27)

This is a theological statement, not a scientific one, but in my opinion it represents scientifically informed theology. Because it is theology, and I

William Irons is Professor of Anthropology at Northwestern University, 1810 Hinman Avenue, Evanston, IL 60208-1310; email w-irons@northwestern.edu.

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am offering a critique as a scientist, I cannot criticize the entire proposition, only the part that is subject to scientific evaluation. I focus on what science tells us about the potential for human altruism and cooperation. The idea that there is a creator God who gave human beings a purpose may be correct, but it cannot be evaluated scientifically by looking for a correspondence between theoretical models and systematic empirical observation. However, one aspect of the concept can be investigated scientifically. This is the proposition that human beings can create a future that is wholesome for the human population of the world and the ecosystem of the planet on which this population depends. Note the slight modification I have made: I ask about a wholesome rather than the "most wholesome" future. This is a less demanding proposition to evaluate but raises the same questions.

We have a growing body of knowledge as a result of evolutionary sciences such as human behavioral ecology and evolutionary psychology. This knowledge suggests that it is possible for human beings to create a wholesome future but that it will not be easy. There is definitely no guarantee that it will happen.

Whether human beings *can* do this and whether we *should* are also, to a degree, separate questions, and the second question, like all such basic ethical questions, cannot be answered completely by science. Hefner answers this second question by drawing on a tradition of Christian theology. I as a nontheist can respect his answer, but for myself I need a somewhat different justification. Following Richard Alexander (1987), I see moral propositions as being based on a consensus or near consensus among the members (or at least the most powerful and influential members) of a society. In this case, saying that human beings should take as our purpose creating a wholesome future is something that would require the near agreement of most of the human populations—or at least most of the governments—of the world. This is asking a lot, but I believe that it may be possible. There have been movements in recent history toward international cooperation that support this possibility. These include the acceptance by many governments of various agreements relating to the long-term protection of the environment and certain treaties protecting human rights throughout the world. There are not yet enough of these international accords with sufficient means of enforcement to inspire great confidence, but the mere fact that such accords have enjoyed some success is, in my opinion, grounds for hope. It will not matter if this near consensus is based for different people on different theological traditions, some Christian, some representing other religious traditions, and some based on purely secular humanistic traditions. As long as there is sufficient agreement on the human course of action required, the proposal can be realized.

The human aspect of the created co-creator proposal can be broken down into several smaller questions. First is the question of the level of

social group in which the created co-creator is to do the work of contributing to the creation of a wholesome future. Another is the question of how wholesomeness is to be defined. We also must ask whether human beings have sufficient knowledge to act in ways that will create a wholesome future and whether we can be motivated to act on this knowledge. Being motivated to create a wholesome future may require a large measure of altruism and cooperation, and current evolutionary theory raises questions about the extent to which people can be motivated to behave altruistically or cooperatively. This question of human motivation is the most serious scientific challenge to the created co-creator theology and the question to which I give the most attention.

Concerning the level of social group, I begin by saying that the larger the social group the more difficult it is to establish cooperation. Much of the way in which Hefner discusses his idea implies a concern for the preservation of the global ecosystem on which the human species depends for survival. This requires international cooperation. It is tempting, once that is said, to conclude that the situation is hopeless. However, I alluded to signs of a recent historical trend toward greater international cooperation. This is a halting trend represented by such events as the creation of the United Nations and of the European Economic Community. Creating a wholesome future for our species will require more international cooperation than these organizations have accomplished so far, but there are grounds for hope. I address the possibility of putting the created co-creator idea into practice at this highest level of international cooperation and then comment on how it can be applied at more local levels.

There is also the question of the definition of wholesomeness. Achieving a consensus definition would be very difficult. For now I think it suffices to say that most of us can identify conditions of future environments that we would say are wholesome and other conditions that we would say are unwholesome. Persons with different cultural traditions are almost certain to define this concept differently, but such disagreements may not be great enough to bar cooperation.

Hefner raises the question of how human beings will use future knowledge of genetics in a wholesome way. In addition to managing the global ecosystem, there will be the question of managing the human genome.

There also are questions of social justice and war that seem intractable. Again, I think that a complete elimination of the problems that come under this heading is out of the question for the foreseeable future, but there is hope that in the longer run the condition of the world's human community may move toward improvement in these areas as well.

Do human beings have sufficient understanding of ourselves and our ecosystem to create a wholesome future? Can we be motivated to act on this knowledge and actually create a wholesome future? I address these two questions separately. The more troublesome question, in my opinion,

is the issue of motivation. As already noted, this requires a measure of altruism, and evolutionary theory is not crystal clear on the question of how much altruism we can hope for. I argue that there is hope that human beings can create and use what game theorists call win/win or nonzero-sum situations in order to motivate cooperation despite our basic selfishness (cf. Ostrom 1990; Ridley 1996; Wright 2000).

#### SUFFICIENT KNOWLEDGE?

Do human beings possess sufficient understanding of our genetic heritage and basic nature, and of the nature of the ecosystem on which we depend for our survival, to fashion courses of action that will preserve a healthy ecosystem for future populations? My tentative answer to this question is that we do not at present, but we are close enough that we can be hopeful about this aspect of the created co-creator proposal. The controversy set off by Bjørn Lomborg's book *The Skeptical Environmentalist* (2001), I believe, makes it clear that our knowledge of how to manage the global ecosystem is incomplete and that resolving the unanswered questions is made difficult by politicization of environmental issues. Nevertheless, I believe that more research and continuous monitoring of crucial ecological parameters will make this possible. To have sufficient knowledge we need to know how much biodiversity must be maintained. We need to know how large a human population the world can support on an indefinite basis. We also need to recognize that what is considered sufficient knowledge and what is a sufficiently wholesome environment are, in effect, moving targets. Perhaps the most important thing to observe is that the theology of the created co-creator calls for efforts to increase knowledge of our species and of the world's ecosystem. Both research to gain new knowledge and education to spread this knowledge are necessary parts of the program of the created co-creator.

Fuller understanding of the human genome will allow health measures that are not possible at present. Will these include some modification of the genome? Will such changes make future environments more wholesome? The latter is a subject that excites strong reactions, but we need to keep an open mind as our knowledge increases. Such a thing may be seen as desirable by future generations. Will a better understanding of the interconnected populations and other forces that constitute our global ecosystem enable us to do a better job of protecting this ecosystem? The answer of course is yes, but what this future knowledge will be and what course of action it will justify are questions we cannot now answer completely.

The question of war and social justice is, if anything, the one that inspires the least optimism. In recent history we have witnessed a number of genocides, and in many parts of the world lesser but nevertheless serious violations of human rights still abound. Wars also persist, and terrorism

has greatly complicated the question of how to move toward a world characterized by less war and more peaceful international cooperation.

The most hostile force of nature for members of our species during most of human evolution has been other human beings (Alexander 1987). War and destructive exploitation of natural resources are immediate causes of much of what we can label as unwholesome in the contemporary world. Knowledge, including the kinds of knowledge produced by the social sciences, can aid in abating and eliminating these threats to human welfare, but the question of what people can be motivated to do also is relevant to solving problems caused by human destructiveness. This provides a transition to the more difficult question of human motivation.

#### CAN HUMANS BE MOTIVATED TO CREATE A WHOLESOME FUTURE?

Evolutionary psychology and behavioral ecology are associated with the idea that human beings and other organisms can be motivated to behave altruistically only under certain conditions (Dawkins 1989) and also with the idea that it is especially difficult to motivate humans to be altruistic to strangers or to act in ways that cost us and produce benefits that are diffused among a very large population. It might seem, therefore, that the answer to our question is a definite no. However, this is not unambiguously the case. Numerous recent developments in the theory of the evolutionary basis of human altruism suggest ways in which it may, in fact, be possible to create a social environment in which we can be motivated to behave in ways that are beneficial to the human populations and ecosystem of the future. This can best be done by a combination of social strategies that include monitoring, punishing certain selfish behaviors, and creating social structures that entail win/win situations (Ostrom 1990; Ridley 1996; Wright 2000).

It is an empirical fact that human beings form social groups of great size and that maintaining these groups requires a measure of cooperation among group members. These groups are much larger than can be explained by kin altruism or direct reciprocity. This has led to the development and, to some extent, testing of theoretical concepts that can explain larger cooperating groups. Primary among these concepts are indirect reciprocity (Alexander 1987), the game theory concept of commitment (Schelling 1960; Frank 1988; Hirschleifer 1987; Nesse 2001a), and game theory ideas about the use of punishments to enforce cooperation (Boyd and Richerson 1992; Bowles and Gintis 2002; Fehr and Gächter 2000). Also, a complete model of how human beings manage to form large cooperating groups needs to include the fact that large human groups are built around political hierarchies that use coercion to assure cooperation. Behavioral ecologists and evolutionary psychologists have not really begun to explore the role of

hierarchies in maintaining large human social groups, but other social scientists have, and we can draw on their knowledge to build better models of human cooperation. In what follows I review the various social strategies on which human altruism and cooperation are built.

#### INDIRECT RECIPROCITY

Indirect reciprocity can be summarized with the behavioral rule that says, Be nice to nice people and nasty to nasty people. Indirect reciprocity occurs when people observe other people and then behave altruistically toward those who seem to be altruistic and selfishly toward those who seem to behave selfishly. This involves the notion of reputation. In the small human communities of our ancestors, individuals had extensive opportunities to observe the behavior of others, and over time people acquired reputations based on what was observed. People then rewarded those who were generally helpful to others by giving them aid and punished those who were not helpful by refusing to help them. According to Alexander (1987), this sort of indirect reciprocity formed the basis of human morality, and the psychological tendency to behave in this way was favored by natural selection because it facilitated the formation of larger, better-united groups. In human evolution, group-group competition became a powerful selective force, and there was runaway selection for a number of traits that aided the formation of larger, more solidary groups. According to Alexander, moral systems are systems of indirect reciprocity. Game theory simulations of indirect reciprocity have supported the idea that such systems can in fact serve as the basis of cooperation among groups of genetically unrelated individuals (Nowak and Sigmund 1998).

Below I review a number of additional social strategies—commitment, moralistic strategies, altruistic punishments, and hierarchies of power—that can extend the size of cooperative human groups. All of these strategies with the exception of hierarchy are elaborations on the theme of indirect reciprocity. The basic idea of indirect reciprocity consists of observing the behavior of others and then rewarding cooperative behavior and punishing uncooperative behavior. In a social environment in which indirect reciprocity is an important strategy, it would pay individuals not just to passively wait for other members of their group to discover that they are “nice” people but rather to actively send out signals of their niceness. It would make sense to signal other socially useful qualities as well. Thus, theories of signaling and related theories about commitment are a straightforward extension of the idea of indirect reciprocity. In a similar way, moralistic strategies and altruistic punishment are elaborations of the basic strategy of indirect reciprocity.

Social environments based on indirect reciprocity are vulnerable to deception and freeloading. Despite this, human sociality has reached an impressive scale. This is because there are counterstrategies that limit the

extent to which freeloaders sending false signals of cooperative intentions can undermine cooperation. Such strategies include hard-to-fake signals of commitment and punishments.

#### COMMITMENT

The game theory analysis of commitment and signals of commitment began with work by Thomas Schelling (1960) and has been expanded by a number of later theoreticians (Hirschleifer 1987; Frank 1988; Nesse 2001b). Schelling (2001, 52–53) has used material from Joseph Conrad's *The Secret Agent* (1923) to illustrate the strategic use of commitments. In the novel, anarchists who were plotting to blow up Greenwich Observatory were known to get the nitroglycerine they needed from a man referred to only as the Professor. The police knew about the Professor's practice of supplying anarchists with nitroglycerine but did not try to apprehend him because he was believed to carry some nitroglycerine in his jacket connected to a releasing device in his pocket. The police believed that if they tried to apprehend him, he would blow himself and them to bits. Because of this belief, they never tried to arrest him or charge him with a crime. Thus, by making a contingent commitment to do something contrary to his self-interest, the Professor served his self-interest. Blowing up himself and the police would have been very much contrary to his self-interest, but because the police believed he was really committed, he never had to act on this commitment.

The story of the Professor is not a very inspiring one if we are looking for hope that human beings can create a wholesome future. A better example can be found in President John Kennedy's political decisions during the Cuban missile crisis. The Russians were installing missiles in Cuba, with Cuban cooperation. These missiles could target American cities with nuclear warheads. Kennedy responded by quarantining Cuba and threatening to stop any Russian ships carrying missiles to the island. The risk that a confrontation between Americans and Russians could escalate into a nuclear war was great. A nuclear war would be contrary to the interests of both the American and the Russians. In effect, each side was playing the game of chicken. In a game of this sort, the more committed party has the advantage (Schelling 1960). Apparently the Russians were convinced that Kennedy would stop their ships despite this risk, and they backed down. Here again an inflexible but contingent commitment to behave contrary to self-interest served a useful purpose. It persuaded the Russian government to do what the American government wanted.

A contingent commitment to act contrary to self-interest can be a powerful instrument. This kind of strategic commitment is inherently neither good nor bad; it is simply inherently powerful. It can be used for good or bad purposes. In terms of creating future environments, such commitments could be used to create a better future or a worse one. The hope

associated with the created co-creator theology is that commitment will be used to create a better, more wholesome, future.

Numerous other illustrations of commitment can be offered, and not all involve violence or destructive behavior. Marriage and business contracts are examples of commitment. Jack Hirschleifer (1987) and Robert Frank (1988) suggest that human emotions are forms of commitment and that their visible signs are credible signals of commitment. They further suggest that these emotions evolved because of the advantage they conferred on individuals who could influence others with their commitments. Love and anger can easily be seen as emotions that commit us to courses of action that persuade others to behave in ways that serve our interests. In the formation of large cooperating groups, patriotic commitments to nations or commitments to adhere to the precepts of a particular religion can serve as means of creating cooperation.

Ideas about commitment derived from game theory are very similar to the ideas that have been developed by evolutionary biologists focused on the study of signaling in animal behavior (Zahavi 1975; Maynard Smith and Harper 2003). The game theorists have emphasized that hard-to-fake signs of commitment play an important role in the use of commitment as a social strategy. Obviously a commitment is not going to influence behavior if it is not communicated to someone else. A reliable sign of commitment is therefore as important as the commitment itself. Especially important are what game theorists call hard-to-fake signals of commitment. There are numerous reasons why a sign or signal can be hard to fake. It can be difficult or at least unprofitable to fake because it is secured, because it is costly, or because it is easily monitored.

An example of a commitment secured by contract is an apartment lease, which requires a security deposit and contains a clause saying that the renter will forfeit the deposit if she breaks the lease before it expires. An example of a commitment secured by circumstances would be an army that is committed not to retreat because there is a large cliff to its rear. Schelling (2001, 48) quotes Xenophon as saying that the ideal setting for battle is one in which the enemy see easy retreat in every direction, while one's own army has a ravine to its rear and can find no safety other than in victory.

Commitments do not need these sorts of visible backing to be persuasive. Signals are more reliable the costlier they are and the more easily they are monitored. Consider the case of a social group in which the members of the group frequently help one another. Giving help is costly, but receiving help is a benefit, and the benefits of membership more than compensate for the costs. Assume that the members also monitor each other and expel individuals who are found not to do their share of helping. A freeloader may wish to enter such a group and enjoy the benefits without paying the costs, but he or she will be discovered and thrown out. The freeloader could then move on to another similar group. The altruism of



such groups can be parasitized by mobile freeloaders. However, if entering the group is allowed only after one does something costly such as putting up with a period of hazing or paying a large sum of money, the freeloader's chances of recouping the costs of entrance before being discovered and ejected are slim. In a situation like this, requiring a costly signal of group membership can prevent freeloading.

It has been suggested that religions and religious rituals have served as hard-to-fake signals of commitment in ancestral human environments and that our propensity to be religious is an evolved trait for this reason. Practicing a religion often entails considerable cost, and thus religion can serve as a hard-to-fake signal of commitment to a particular social group (Cronk 1994; Iannaccone 1992; Irons 1996; 2001a, b). Religious rituals also meet the easy-to-monitor criterion because of the large number of often elaborate public rituals that most religions require (Irons 1996; 2001a, b). Practicing a religion is a hard-to-fake signal of group loyalty because it is both costly and easily monitored.

The hypothesis that the psychological mechanisms underlying religion are evolved adaptations with the function of enhancing within-group cooperation has been tested by Richard Sosis, who compared the longevity of religious versus secular United States communes in the nineteenth and early twentieth centuries. He found that communes with a religious charter last on average four times as long as those based on secular charters (Sosis 2000; 2003; Sosis and Alcorta 2003; Sosis and Bressler 2003; Sosis and Ruffle 2003). Sosis and his colleagues have just begun their very impressive research on the evolutionary foundations of religion. It would be premature to claim that they have proved that religion is a hard-to-fake signal of commitment. More research is necessary to evaluate this hypothesis thoroughly. Nevertheless, their findings are very suggestive, showing that for some reason religious commitments are more effective at creating cooperation than those based on a secular ideology and that religion may have an important role to play in creating larger-scale cooperation in the future. However, this statement is not without ambiguity. Religions of the fundamentalist variety can serve as sources of very destructive behaviors (Almond, Appleby, and Sivan 2003). On the other hand, the more liberal forms of religion that have led to the formation of various interfaith groups such as the Parliament of the World's Religions may offer hope for religious institutions that encourage the kind of behavior advocated by the concept of the created co-creator.

#### PUNISHMENTS

Robert Boyd and Peter J. Richerson (1992) used simulations to demonstrate that conformity to costly social norms can be enforced by what they call moralistic strategies. These strategies consist of two parts: punishing those who do not obey some social rule, and punishing those who do not

punish rule breakers. Moralistic strategies are clever extensions of indirect reciprocity. It is not hard to find real examples of social strategies that contain the central elements of this model, the elements of punishing rule breakers and of punishing non-punishers. The McCarthyism of the early 1950s is one conspicuous example. (Although named for Senator Joseph R. McCarthy, the term characterizes practices that began earlier, survived later, and flourished in both houses of Congress as well as state legislatures.) Individuals were punished for being members of the Communist Party USA or its front organizations by being put on blacklists that kept them from getting jobs. The results were devastating for some who were closed out of professions in which they had been successful for years. Also, persons known or thought to be Communist were called to testify in committee hearings and asked to give up the names of others whom they knew to be Communists. If they gave some testimony but refused to give names, they could be jailed for contempt. Thus, they were not only punished themselves but were also required to, in effect, punish others. To invoke the Fifth Amendment was to invite public suspicion.

A similar kind of moralistic strategy with even more dangerous consequences is visible in the conflict between Israel and Palestine. Many Arab leaders who were “soft” on Israel have been assassinated in the bloody history of the conflict. Thus, Arab hard-liners not only punish Israel by maintaining an aggressive stance toward Israel but also punish those who fail to punish Israel—those who are “soft” on Israel. This has the unfortunate effect of pushing moderates seeking peace into the closet when conflict between these groups is violent.

A recent set of experiments by evolutionary economists and game theorists has explored another way in which punishments can be used to maintain cooperation. Their experiments revolve around what they call altruistic punishments (Fehr and Gächter 2000; Gintis 2000). The experimenters have volunteers play a game something like the following. Players are given a certain amount of money—say, \$100 each—from which they can make contributions to a public-goods fund. What they do not contribute to the fund, they can keep. After all players have been given a chance to contribute to the public-goods fund, the fund is then increased by some multiple—say, doubled—and then the money in the fund is divided evenly among all the players, whether they contributed or not. If every player contributes her entire \$100, and the fund is doubled and then divided evenly, each player gets \$200. This is much better than simply keeping the \$100 each was given initially. However, if there are four players, and three contribute \$100 and one contributes nothing, the outcome is different. When this round of play is over, those who gave \$100 to the public-goods fund each get \$150 when the fund is distributed. The freeloader who kept his \$100 also gets \$150 when the fund is divided and ends up with \$250. Freeloading pays more than contributing.

If the game is played several times, the contributions to the public-goods fund tend to decline as the contributing players realize that they are being taken advantage of by freeloaders. However, if an additional rule is added allowing players to know what other players contribute and to punish those who contribute too little, contributions to the public-goods fund can be maintained over extended play. The ability to punish may take the form of allowing a player to pay, say, \$20 to have \$100 taken away from another player whom she designates, or \$40 to have \$200 taken away. However, the person who pays to punish gets no automatic payback, only the satisfaction of punishing a freeloader and perhaps the hope that future payouts from the public-goods fund will be large for everyone.

Given this ability to punish, the usual result is for the public-goods fund to remain large or even to grow somewhat. Such games reveal that human beings have a strong motivation to punish others whom they see as free riders, even if it costs them to do so. If their punishment causes freeloaders to start contributing to a public-goods fund, the benefits of their punishment are shared equally among all players. In this situation, punishing imposes a net cost on punishers that is not recouped and is therefore altruistic. This propensity may be an evolved adaptation that served in human evolution to maintain cooperation in non-kin groups. Altruistic punishments are a form of the basic strategy of indirect reciprocity, be nice to nice people and nasty to nasty people. Here altruistic punishers are nasty to nasty people at a net cost to themselves.

Ernst Fehr and Simon Gächter (2000) refer to the type of altruisms their research reveals as strong reciprocity and argue that it can be maintained in a population only by group selection. They usually refer to this as multilevel selection. David Sloan Wilson (2002) also has made strong arguments for the role of group selection in understanding human altruism and has tied this to his idea that religious congregations and communities as social groups are products of group selection. Boyd and Richerson (2001) have made a somewhat similar argument in favor of what they call cultural group selection. This consists of the differential survival of cultures—that is, cultures that encourage greater altruism are more likely to survive. From the 1960s to the present, mainstream evolutionary thinking has assumed that selection at the level of the group was not powerful enough to overcome the effects of selection at the level of the individual except under very unusual conditions (Williams 1966). Theorists including Gintis, Fehr, Wilson, and Boyd and Richerson are challenging this, and the study of human altruism is what has led them to do so. It remains to be seen whether their challenge will be successful.

Others claim that in most real human situations what are defined by these game theorists as altruistic punishments do tend to be ultimately rewarded in the kinds of social environments typical of ancestral human environments (Maynard Smith and Harper 2003, 126; Patton 2000; 2003).

In these environments there is a longer time over which rewards can flow back to those who are conspicuously altruistic, and the flow of benefits in many forms and in many directions not only goes on over a life span but continues between descent lines as children pick up the social debts and resources of their parents. These rewards over long periods of time often come in the form of increases in reputation and status. Indirect reciprocity is a very long-term strategy.

The possibility that the created co-creator idea can be successful as a guide to behavior does not depend on the outcome of this debate. It is clear that human beings can under the right conditions be motivated to behave in ways that are beneficial to large human communities. The practical question for the immediate future is how best to encourage this sort of behavior. This is exactly the question that a created co-creator should ask herself. Part of the answer lies, I argue, in good scientific research that tells us how to encourage large-scale altruism.

#### HIERARCHIES

One element that is present in almost all large human social groups is political hierarchy. Recent theoretical work by Robin Dunbar (1996) sheds light on the role of hierarchy in forming large human social groups. He approaches the question of the formation of larger social groups from the perspective of a primatologist. In terms of theory, his view of what is involved in the formation of larger groups is very much in line with that of Alexander (1987). However, he approaches the question primarily in terms of empirical data and apparently has not read Alexander's watershed 1987 volume, which is not part of the primatological literature narrowly defined. He does not use the term *indirect reciprocity*, but his thinking incorporates a very similar idea.

He begins by observing that among primates grooming is the primary signal of social closeness and probable future altruistic aid. He then suggests that, in human groups, gossip and small talk have replaced grooming and have done so because this facilitates the formation of larger groups. One can gossip with several individuals at once but can groom only one at a time. This role for gossip became possible only after the advent of language, and Dunbar says that this was the primary reason for the evolution of the human capacity for speech. He presents data showing that the size of groups and the size of the neocortex are strongly correlated in primates and in some other highly social mammals, suggesting that the expansion of brain power is primarily an adaptation to complex social life. By tying social behavior to anatomy in this way, he allows us to infer that the expansion of the human brain in the genus *Homo* over the last 2.5 million years may have been an adaptation to the formation of larger and larger social groups. He presents data from the study of military, business, and reli-

gious organizations that show that the largest human group that can be held together by gossip and small talk is in the range of 150 members. Human groups of course are often much larger than 150, and he observes that larger groups tend to be organized around hierarchies. Groups of 150 or fewer can easily reach a near consensus on how to act because most of the members are in close contact with many other members. They have overlapping networks of people who frequently engage one another in gossip and small talk.

I would suggest that gossip and small talk are vehicles for indirect reciprocity. I find it interesting that Alexander sees morality as a form of social cement holding larger human groups together, whereas Dunbar sees gossip as doing the same thing. No doubt, a central topic of gossip is always the morality of other members of our social groups. Gossip and morality are closely interconnected in human social life.

Human groups of 150 or more are able to stay together and cooperate in significant ways only if they are organized around hierarchies, which allow some individuals greater power to coerce and punish nonconformists and freeloaders. This result is consistent with the views of anthropologists who study social and cultural evolution (Johnson and Earle 2000; Earle 1997). They see the origin of the office of chief and societies organized around chiefs as a crucial step in social evolution that allowed the formation of larger social groups. Eventually the simple political hierarchies of chiefdoms were replaced, in many areas of the world, with states—centralized governments employing bureaucracies and standing armies as means of controlling their citizens or subjects. I propose that the difficulties many theorists have in seeing how large groups can be held together with indirect reciprocity, signaling commitment, and moralistic strategies will disappear if they add hierarchy to the mix of strategies used by human beings to hold large social groups together. Unlike commitment and punishments, hierarchy goes beyond indirect reciprocity.

Hierarchy is obviously important in holding human social groups together, and future game-theory experiments would do well to somehow incorporate it. This may be difficult, however, because a group of more than 150 with a formal hierarchy may be difficult to create with volunteers for an experiment. Our understanding of the role of hierarchy in holding groups together may have to depend on ethnographic and historical data. It might also make sense to look for a propensity to altruistically reward those who are conspicuously generous or helpful to other players. It seems logical that indirect reciprocity should include rewarding behavior that is especially beneficial to others or to the social group as a whole as well as punishing freeloading.

The three categories of commitment, punishment, and hierarchy complement each other, and I believe all are valid as explanations of how human beings have managed to create large cooperating groups.

## THE FUTURE OF LARGE-SCALE HUMAN COOPERATION

Created co-creators will be able to construct a wholesome future for our species only if they are able to create worldwide cooperation on a larger scale than has occurred to date. World religions and large nations are the largest groups that human beings have managed to form so far. In order to fully carry out Hefner's proposal contained in the created co-creator concept, the nations of the world would need to cooperate to enforce a course of action for everyone that would do the many things that science tells us are necessary for the creation of a wholesome future.

There have been weak trends toward this sort of international cooperation in recent history. This indicates that the larger-scale cooperation required to create a wholesome future for all of humanity may be possible. Such trends toward greater global cooperation are in marked contrast with earlier history. With more extensive economic interdependence, communication, travel, and a more widely shared awareness of the consequences of human action for the future, human beings may be able to create a wholesome future.

In addition to greater international cooperation, another hopeful sign is the increase in interfaith cooperation. If followers and leaders of different religious traditions can see themselves as sharing a common purpose of working toward a more wholesome future, this can provide much of the motivation necessary to fulfill the promise of the created co-creator.

We should not be unduly optimistic, however. For science to understand precisely how our activities affect the future is not an easy task. The protracted debates over global warming provide one reason for concern. Controlling this phenomenon requires some sacrifices, and this is not easy for everyone to accept. Awareness of these sacrifices, in my opinion, has motivated "research" designed to prove that the phenomenon is not real or at least not nearly as extensive and dangerous as some think. This is only one of many such problems. Resistance to the measures necessary to create a wholesome future is a serious obstacle to creating a healthy future environment.

Also, the world today is still characterized by separate nation-states that have very different agendas for the future, and some nations are willing to go to war with others to pursue these agendas. Much change is necessary before we can hope for the created co-creators to actually create a future that is wholesome for the entire population of the world.

## SMALLER ARENAS OF HUMAN ACTION

Up to this point I have discussed the most ambitious interpretation of Philip Hefner's theology of the created co-creator. This is the hope that human beings can create a wholesome environment for the entire population of the planet. However, I think it is useful also to examine the created

co-creator in terms of the effects of human choices on small arenas. We make many choices that affect our families, our work places, and our local communities. Throughout the history of our species, this has been the purview of most human concerns.

At the level of smaller social groups, it is easier for us to think of ourselves as working to finish an incomplete and imperfect creation. Humans can take as our goal striving to make each of these smaller social arenas a more wholesome environment for those affected by it. At this level, our guiding sacred story could be the story of George Bailey, the hero of the modern American myth presented in the film "It's a Wonderful Life." We can turn to other real heroes who have contributed to creating a more wholesome future by their personal action: Martin Luther King Jr., Mohandas Gandhi, Bishop Desmond Tutu. At the same time, we need to be cautious about the destructive ways in which some individuals—Hitler, Stalin, Pol Pot—have created a less wholesome future.

#### WHAT ABOUT NONTHEISTS?

For those who have a theistic worldview, Hefner's theology of the created co-creator can serve as a guide to our ultimate purpose in the rapidly changing world in which we live. For nontheists, it can serve as well, but in a somewhat different way. I am not convinced that the environment we find ourselves in was created for us by a benevolent guiding force beyond our species; in fact, I strongly suspect that it was created by a set of forces that are indifferent to our well-being. This might seem to make my worldview and Hefner's incompatible. However, the Judeo-Christian doctrine of the fallen nature of humanity rescues us from this situation. A fallen humanity and a humanity created by indifferent forces seem to me very similar in terms of what we can observe about human nature and about the world of living things as they exist today. The two views tell very different stories of the origin of this fallen state, but what they describe as the current state of ourselves and our world are very similar, and they leave open the idea that we can create a better future world.

I once heard a theologian suggest that Richard Dawkins's *The Selfish Gene* (1989) is an alternate account of the fall. In a way this is true. The religious stories in Genesis explain the origin of evil and of the fallen nature of human beings. Given its emphasis on the origin of selfishness or choices that increase conflict, Dawkins's book can stand as an account of the origin of selfishness, conflict, and suffering. Yet conflict, suffering, deception, predation, and parasitism can be evil only if someone is aware of them and can make a choice for or against these things. Nontheists can make choices that decrease conflict and suffering and choices that increase conflict and suffering. Thinking of one's ultimate goal as trying to contribute to the creation of a more wholesome future can serve as a guide for nontheists as well.

## CONCLUSION

I do believe that human beings have an evolved capacity to behave altruistically as well as selfishly and that this view can be defended in terms of current evolutionary science even though it is not science but rather an extrapolation beyond science. We have to make choices that cannot be fully justified by science alone. The belief that human beings can be motivated to create a more wholesome future on both a small and a large scale is compatible, I believe, with what we learn from human behavioral ecology and evolutionary psychology. In the right kind of environment, people can be motivated to emphasize the altruistic side of their nature and to expand the reference groups toward which they direct their altruism. Useful guides to the kinds of environments that will encourage this expansion of cooperative behavior can be found in Elinor Ostrom's *Governing the Commons* (1990), Matt Ridley's *The Origin of Virtue* (1996), and Robert Wright's *Nonzero* (2000). There is hope for the future of our species, and human beings may yet fulfill the purpose defined by the theology of the created co-creator.

## NOTE

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