Selection and Salvation:

The Contributions of Religious Thought to the Problem of Altruism

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1. Introduction – The Problem of Altruism

Through specialization and the division of labour, groups of cooperating individuals can together achieve things that lone individuals cannot ever hope to. However, despite these benefits, all such systems of cooperation are vulnerable to the problem of cheating. In any situation where the collective cooperation of individuals yields greater benefits than solitary action, the temptation for individuals to take these collective benefits without paying the appropriate cost is present. In contrast to mutually beneficial cooperation, cheating benefits only the cheater at the expense of all co-operators. If cheating is not controlled in the population, the benefits of cooperation will evaporate.

How then did altruistic behaviours (behaviours that decrease the genetic fitness of the actor, while increasing the genetic fitness of others) come to be in humans? By what evolutionary processes did they become stable in the population? It would seem that altruistic behaviour would be easy to explain, simply by virtue of its collective effectiveness. However, a problem arises in this explanatory endeavour: Regardless of the fitness benefits of cooperation for a group of co-operators, cheaters within that same group will always benefit to a greater degree. One can imagine this problem playing out amongst a small group of hunter gatherers. If all members of the group agree to share all of the food they hunt or gather evenly, all members of the group stand to gain by evening out the probabilities of both feast and famine. However, if one or more members of the group “cheat” on the agreement and save their harvest for themselves while also taking a fraction of the others’, they will do better at the expense of the co-operators. Add in the complication that failure to secure food threatens survival and reproduction efforts, and after a few generations we would expect that all co-operators would disappear from the population via natural selection. As Wilson & Wilson (2007) put it:

> During evolution by natural selection, a heritable trait that increases the fitness of others in a group (or the group as a whole) at the expense of the individual possessing the trait will decline in frequency within the group. (pg. 329)

Given this fact, how can the human altruism that is apparent in everyday life be reconciled with a proper biological and psychological account of its origins?

In the early 1960's William Hamilton provided a clue to this evolutionary riddle by producing a mathematical model that quantitatively described how helping behaviours amongst related individuals should develop in social species (Hamilton, 1964). His theory eventually became known as kin selection, and provided a tidy explanation for why helping related individuals need not be detrimental to one's genetic self, since helping kin entails helping a proportion of one's own genes. Thus, in the above example if the individuals are related to one another, then the cheaters are cheating their own genes as well, and therefore stand to gain less (genetically) for their transgressions. Over time, selection naturally favours groups of reciprocating kin. Kin selection for moral virtues is a good place to start looking for the origins of human altruism, but cannot explain it in its entirety since humans seem predisposed to provide benefits for genetically unrelated individuals as well. A near perfect example of this is the individual detriment, but collective gain in paying taxes. Richerson and Boyd (2005) summarize the problem of altruism as follows:

> Our ancestors six million years ago in the Miocene presumably cooperated in small groups mainly made up of relatives, as contemporary nonhuman primates do. There was no trade, little division of labour, and coalitions were limited to small numbers of individuals…Sometime between then and now, *something* happened that caused humans to cooperate in large, complex, symbolically marked groups. What caused this radical divergence from the behaviour of other social animals? (pg. 195-196) [emphasis added]

How can we account for the extended altruism apparent in humans? What special "something" pushed us (and us alone) beyond the biologically "normal" practice of helping only our kin? The

remainder of this paper will be an effort to elucidate what this "something" that Richerson and Boyd allude to might be. While I agree with the account that Richerson and Boyd subsequently provide (explained below), I argue that there is a more parsimonious and fruitful way of considering the same variables. I argue that religious thought provided the impetus for moving beyond the comparatively simple systems of kin reciprocity by pulling groups together. Before explaining this hypothesis in full, it will be necessary to explain some of the concepts entailed therein.

2. Altruism and the Selection of Groups

In his 1871 book *The Descent of Man*, Charles Darwin had the following to say regarding morality:

> It must not be forgotten that although a high standard of morality gives but a slight or no advantage to each individual man and his children over the other men of the same tribe, yet that an increase in the number of well endowed men and and an advancement in the standard of morality will certainly give an immense advantage to one tribe over another. (pg. 178-179, as cited in Richerson & Boyd, 2005)

What Darwin is advocating here is what has become known as multi-level selection theory; the idea that selection operates on more than one level of organizational complexity (Sober & Wilson, 1998). While individuals can be selected for (or against) based on their adaptedness to the environment, multi-level selection theory posits that groups of individuals too can be selected for their adaptedness their environment. Thus, while it is individually detrimental for individuals to perform altruistic behaviours, their performance can lead to benefits at the level of the group.

Consider this process in groups of alarm calling animals such as Meerkats. These dessert dwelling animals have unique alarm calls for each of the different types of predators that threaten them: snakes and birds of prey. The motivation to vocalize an alarm call upon seeing a predator

represents the prototypical problem of altruism. By sounding the alarm, an individual is calling attention to themselves (and thereby decreasing their fitness) for the benefit of the group. Over time, we would intuitively expect to see exactly what Wilson and Wilson describe; a decrease in the frequency of these altruistic types. However, as is evident by the presence of the behaviour itself, this is not what happens. Because the groups that include altruists are better adapted to their environment than groups that do not contain altruists, something very counterintuitive happens across generations: they increase in size relative to groups of non-altruists. Sober and Wilson (1998) argue for the evolution of altruistic behaviours through exactly this group-selective method, and note that it will occur whenever the following four conditions are present:

1. There must exist a population of groups
2. The groups must vary in their frequency of altruists
3. There must be a direct relationship between the frequency of altruists and the groups fitness
4. The groups must be isolated from each other, but also mix at some stages

the process can be summarized as follows:

> If the two groups are permanently isolated from each other, natural selection will eliminate the altruists within each group…The global [across both groups] increase in the frequency of altruists…will be a transient phenomenon of little interest. Suppose however, that the progeny of both groups disperse and then physically come together before forming new groups of their own. In this case…the increased frequency of the altruists…will become the average frequency for the next generation. If the process is repeated over many generations, altruists will gradually replace the selfish types, just as the selfish types replaced the altruists in the one-group example. (pg.25-26)

The idea of group selection was popular amongst evolutionary biologists until the mid 1960's when George Williams produced a critique of the subject in his 1966 book, *Adaptation and Natural Selection.* Although he conceded that group selection must occur in order to explain the existence of group-level adaptations, he concluded that "group-related adaptations do not in fact exist" (pg. 93). In order to conceptualize altruism (and other group-level adaptations)

without evoking multi-level selection, several influential theories appeared shortly thereafter including Trivers' (1971) theory of reciprocal altruism, and Dawkins' (1976) selfish gene theory. Following Williams, each of these authors agree that multi-level selection is theoretically possible, but think that it can be ignored in practice because of its relative weakness compared to individual level selection (Sober & Wilson, 1998). As clarifying as this individual-selection paradigm has been, Sober and Wilson (1998) argue that it has blinded evolutionary biologists to group-level adaptations where they do in fact exist.

Richerson and Boyd (2005) reinvigorate the idea of multi-level selection by invoking its full potential to explain human morality. Briefly, they posit that the most likely cause of extended human morality is the "rapid cultural adaptation [that] led to a huge increase in the amount of behavioural variation among [human] groups."(pg. 203-204). Following Sober and Wilson, they claim that since larger more cooperative groups should yield greater productivity, and hence greater fitness than smaller less cooperative groups, the process of group selection could *then* give rise to the cultural transmission of systems of rewards and punishments. The onset of what they term moralistic punishment could then serve to decrease the force of selection within any group, making the group itself the salient entity of selection. They further claim that low variation within groups and hence relatively high variation between groups is also maintained by conformist social learning. Over time, the more cooperative groups would outcompete the less cooperative groups producing the ubiquitous extended morality found in modern humans. Thus, for Richerson and Boyd altruistic behaviours leading to an extended human morality are a perfect example of a group-level adaptation; the exact concept that Williams denied in the mid 1960's.

Thus far, I am in agreement with Richerson and Boyd's formulation of human morality. In comparison, individual-level selection accounts (usually involving some mixture of kin selection and reciprocal altruism) seem to lack the necessary complexity to explain the full scope of human morality, and by definition blind themselves to group level adaptations. However, I think Richerson & Boyd's account can be conceptually rearranged, and simplified by considering extended human morality inseparable from another salient group-level adaptation: religion.

3. God-Given Morality?

Before proceeding it should be mentioned that viewing supernatural thought from an evolutionary point of view entails an atheistic (or at least agnostic) outlook. That is, evolutionary accounts of religion provide no discussion of the idea that religious ideals exist because they are factually true. Rather, the focus is placed on questions regarding the adaptiveness of such beliefs (Boyer, 2001).

Richerson and Boyd (2005) discuss religion in relation group selected altruism, but generally consider it to follow from the mechanisms that produce altruism itself:

> If cultural variation is maintained mainly by moralistic punishment, those who do not adopt Christian beliefs in a devout Christian society are punished by believers, and people who do not punish such heretics are themselves punished. People adopt the prevalent belief because it yields the highest payoff in readily measurable currencies, inclusive of the cost of being punished. (pg. 206)

I argue that this account gets the causal order wrong. The tendency toward religious thought is the *cause* of punishment and conformist social learning which *then* allowed for rapid cultural adaptation, which consequently developed the positive feedback loop that evolved the systems of extended altruism that we know today. That is, organized religion is not merely a by-product of

the evolved capacity for altruism, but rather organized religion is the outgrowth of the human predisposition toward supernatural thought, which is the spark that caused the needed variation between human groups for selection to operate at the level of the group. Once selection occurs between groups, group-level adaptations such as altruism should be expected to arise naturally via the familiar process that Darwin foresaw over a century ago. What evidence is there that supernatural thought decreases variation within groups?

In his 2002 book, *Darwin's Cathedral*, David Wilson presents evidence affirming the claim that religious ideologies do indeed reduce the pressure of selection within groups. He notes that although religions are often thought of as primarily supernatural belief systems that foster relationships between people and gods, the true evolutionary importance of religion lies mainly in its ability to foster relationships between people. In this way, religion has many *secular* benefits. He explains his main hypothesis:

> …religious groups are products of group selection and are indeed like bodies and beehives. A given religion adapts members to their local environment, enabling them to achieve by collective action what they cannot achieve alone or even together in the absence of religion. The primary benefits of religion take place in this world, not the next. (Wilson 2007, pg. 237)

As interesting as this hypothesis is, for our purposes it only pushes the question of origins back further. If religious thought incited the development of altruism, what incited the development of religious thought? Considering all of the expenses in time and resources, why did religious thinking develop at all?

Wilson provides a big clue by considering the benefits that accompany a fictional system of beliefs. He argues that such a fictional belief system can "perform the same functions as externally imposed rewards and punishments, often at a much lower cost." (pg. 99).

For example, if everyone paid their taxes only out of fear for the externally mediated punishments, much more effort would have to be expended in the collection of taxes, which would proportionately undermine the entire endeavour. By internalizing these punishments via supernatural thought, all members of society stand to gain from the lack of resources needed to artificially uphold the system. Thus, groups that internalize forms of social control can be much more successful than groups that have to rely instead on external forms of punishment and reward. Supernatural agents and ideologies are simply the proximate mechanisms that allow for this efficient distortion of reality. In addition, fictional belief systems can also be adaptive at the individual level by virtue of being much more motivating and cognitively economical than realistic worldviews ever could be. For example, while struggling for resources, conceptualizing one's opponent as inhuman can serve to motivate adaptive behaviours that would not otherwise be possible. These ideas taken together give us reason to believe that all human belief systems ought to be overwhelmingly fictional in their portrayal of the world (Wilson, 2002). The doubly adaptive nature (group-level and individual level) of supernatural thought is a critical component in my reformulation of Richerson and Boyd's hypothesis. However, before we approach the full formulation, one last issue remains. Even if it is the case that religions provide a kind of internal social control mechanism via departing from factual reality, what evidence is there that religious behaviours give rise to altruistic behaviours?

By examining the catechism (book of teachings explicitly taught to those entering the faith) of the 16th century religion Calvinism, David Wilson (2002) was able to investigate the specific types of behaviours the designers of Calvinism prescribed to its followers. Among others in this document he found the following prescriptions: obey authority members, abandon the self will, do unto others as you would have them do unto you, behave as a single organism, pay taxes

and perform other civic duties, and behave in a civil manner. The effect of individuals conforming to these rules is a unifying one. Helping others in times of need, adhering to the golden rule, and acting in a civil manner are all altruistic; they each require an elevation of the group over the self. The prescriptions to “abandon the self-will”, and to “behave as a single organism” could not be more explicit in this regard. Through prescriptions such as these, organized religious ideologies serve to decrease the variation within the group of its followers, and thereby inadvertently increase variation between other groups that may even be undergoing their own unification process. Although these examples are taken from modern organized religions that could not have altered the evolution of morality, we would expect the same pattern of group-cohesive effects from earlier tribal religions that definitely could have.

Finally, my hypothesis regarding the origins of human morality can be stated in full: As organisms increase in cognitive complexity, the default position for epistemological beliefs is practical rather than factual. That is, natural selection favours individuals and groups who perceive the world in adaptive ways rather than factually accurate ways. However, once an organism develops the proximate epistemological predisposition to adopt a supernatural fictional belief system (i.e. conceptualizing ones enemies as nonhuman, or killing in the name of some primitive god), its fitness will increase *within* its group, and over time the predisposition will spread to all (or most) members of the group. (Note here that there need be no special reason for the onset of this predisposition, it may be that chance only stumbled on this “good trick” once) Once a sufficient number of group members are predisposed to depart from factual reality in this way, those members of the group must begin make religious prescriptions (like those of Calvinism), and punish those that do not cooperate, else the group cleaves into two or more groups and the same problem eventually re-emerges. In this way, punishment arises as a means

to enforce individually adaptive supernatural ideologies, which *then* become adaptive at the group level. Eventually this process of punishment must take hold and decrease the variation within the group, thereby increasing the variation between groups sufficiently for selection to operate significantly at the level of the group (satisfying Sober & Wilson's 2nd requirement for group selection), which then selects the groups that best fit the environment. And, as we have seen, the groups that best fit the environment are those that cooperate on a large scale while effectively controlling the cheater problem. In short, the evolution of complex, extended human morality requires the selection of varying groups, and supernatural ideation is the best proximate group-cohesion mechanism natural selection has yet produced.

Thus, although I agree with the mechanisms that Richerson & Boyd evoke to account of the origins of human morality, I propose that the theory is more parsimoniously stated when religion is cited as its cause rather than as a consequence of it. Critics of religion have long argued that our morality does not come from the bible, or any other divine source. They point out that our ability to pick and choose which maxims to follow and which to discard indicates a separate system of morality which could not have come from the very prescriptions it evidently is able to evaluate (Dawkins, 2006). I agree with these critics, but on this deeper level I think they are wrong; supernatural thought and morality have been inextricably linked for millions of years.

4. Conclusion – The Nature of the Problem: Probability and Plausibility

Ultimately, any theory concerning the origin of a very complex and infinitesimally improbable event such as the evolution of human morality must be a surprising one. If we could look back through time to see exactly what happened in the Miocene, and in what sequence, we

would no doubt be shocked by the number of events that just so happened to interact in just the right way for our species alone to escape with the superior cognitive and cooperative abilities that we benefit from today. Consequently, hypotheses regarding the origins of human morality must not only account for why humans acquired this extended morality, but also for why other of our hominid ancestors did not. As such, any hypothesis that presents a guaranteed path to altruistic behaviours fails the challenge before it even starts. With this in mind, I propose that as unlikely as it seems that religious thought contributed to the development of altruism, it is exactly that improbability that makes it plausible.

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