CURRENT ISSUES IN EVOLUTION: SOCIOBIOLOGY

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I. INTRODUCTION

Of all the issues in the various current debates among evolutionists, probably none has more controversial implications than the theory of sociobiology. The tenets of sociobiology have aroused vigorous opposition, even among evolutionists. Christians should be even more strongly opposed to its tenets and conclusions. I hope to explain why this is so.

Samuel Butler is reported to have said that a chicken is merely an egg's method for making another egg. Sociobiology is founded on a similar upside-down view of the world. In sociobiology, the gene is the center of importance. Evolution is seen as being driven by competition among the genes. Those genes that survive in the highest numbers in the next generation are the winners. This concept is summarized in the term "**selfish gene**". An organism is simply the gene's method for making more copies of itself. The primary function of an organism is to reproduce the genes and serve as their temporary carrier. The implications to Christianity of this position are startling.

II. ILLUSTRATION BY EXAMPLES

Sociobiology is concerned with the explanation of social behavior by means of evolutionary mechanisms, which means darwinian selection. The goal of this science is to explain how social behavior could arise through evolution. In general it begins with the existence of behavior and attempts to explain how the behavior could persist through some advantage given to the individual or species possessing that behavior. This requires that the behavior is genetic.

A. Genetic basis of behavior — bird song

The genetic basis of behavior can be illustrated with an example. The song of the male North American white-crowned sparrow has a particular basic structure, but the details vary from one region to another. Variations can be compared to dialects of a language. Normally, full song develops at an age of 7 or 8 months, but the capacity for learning the song is present earlier. Young birds raised in isolation after the age of 2 or 3 months still developed the song in their local dialect. However, if the young were removed from the nest within the first 14 days, they developed a song with most of the basic elements in it, but without the specifics of their local dialect. Young birds from 2 weeks to 2 months of age, if exposed to tape recordings of a different dialect, will learn that dialect. It seems that the dialects are learned, but the basic elements of the song are genetically determined.

B. Selection and behavior — ritualized fighting

If behavior is to be explained as the result of natural selection, some explanation for the advantages of the behavior must be given. This is illustrated in the territorial threat behavior of males of many different species, for example the brush-tailed possum (*Trichosurus vulpecula*; description taken from Biggins 1984). A threatened male possum may go through a series of postures before any violence occurs. First the body may be lowered and the head extended forward with the ears lowered horizontally. Soft hisses and grunts may be produced. If the threat continues, one forelimb may be raised and the claws exposed. Eventually the animal stands up, balancing with its tail, spreads its forelimbs laterally, opens its mouth and growls loudly.

The advantage of this behavior is that it may convince the other animal not to attack, thus permitting both animals to save their strength for better pursuits. If a fight does occur, both animals risk being harmed

in some way. If the contestants are confined, as in a cage, the loser signals submission by falling on its side with all four limbs outstretched. It may also secrete a white liquid from its anal glands, which further signals its decision to stop fighting. The winner then ceases the attack. Behavior that reduces the risk of injury without reducing reproductive success will be favored by natural selection. Mating rights go to the winner, and the loser lives to try again. In many cases, the loser is probably a young animal. It would not be in the best interest of the species for the young to be killed by the stronger males in such disputes. It is not even in the best interest of the winning male if the loser is his own offspring. Any gene that caused a parent to kill its own offspring would be quickly eliminated by natural selection, because the individuals carrying it would be eliminated by the behavior caused by the gene.

C. Altruism and kin selection — nighthawk injury display

The examples given above are fairly clear cut and the explanation is reasonable. However, not all behavior has such an obvious explanation. In many species, individuals help each other, sometimes increasing their own risk of death, or reducing their own chances for reproducing. Sociobiologists seek an evolutionary explanation for such **altruistic** behavior.

An example of altruistic behavior is the distraction display of certain birds, especially ground-nesting birds such as the lesser nighthawk. When approached on the nest, the female leaves the nest and flies conspicuously low, landing on the ground near the intruder. With wings drooping or outstretched, she pretends to be injured, acting as though trying to fly but unable. If the intruder attempts to catch her, she leads him away from the nest, finally taking to the wing and eventually returning to the nest. Although this behavior surely increases the risks of injury or death to the parent bird, it is not difficult to see how such behavior would be advantageous to the bird's family. A minimal increase in risk to the parent may greatly increase the chances for survival of the offspring. A gene for such behavior should have a positive selective advantage.

Selection for a trait which increases the chances of survival for some individuals at the expense of a related individual is called "**kin selection**". The selective benefit of the gene controlling such a trait is called "**inclusive fitness**". Inclusive fitness is the sum of the increase in fitness in the relatives of the individual displaying the altruistic behavior. The concept of inclusive fitness involves calculating the sum of the fitness conferred by the gene for altruistic behavior in the relatives of the individual possessing it. If the total probability of survival of a gene for altruistic behavior is greater in a group of relatives than it is in a single individual, the altruistic behavior will favor the continuance of the gene. For example, on average, an individual shares 1/2 of his genes with each sibling. Therefore, if an individual can save 3 or more siblings by sacrificing his own interests, the gene for such behavior will increase in the population. If only 1 sibling is saved, the gene will decrease. Likewise, an individual shares 1/4 of his genes with an uncle or aunt, and 1/8 of his genes with each cousin. Risking his neck for his cousins will not be worth it unless he can save at least 9 of them!

The concept of kin selection has been proposed to explain altruistic behavior among relatives, but what about such behavior among unrelated individuals? "**Good Samaritan**" behavior would seem to be unexplained by natural selection. However, consider the benefits of altruistic behavior for others. Suppose a man swims into the sea to rescue a drowning person. Further suppose that the risks to the rescuer are considerably less than the risks to the victim. The rescuer has nothing to gain from taking the risk, unless he knows that the other person would rescue him in similar circumstances. If the altruism is reciprocal, a person can trade a higher probability of dying without rescue to a lower probability of dying with rescue. Therefore it will be to his advantage to take a risk in helping others.

This leaves an important question: what if the rescued man cheats, and does not reciprocate? How are cheaters controlled? The answer is that in human society, individuals are identifiable. Cheaters can be identified and punished. The long term consequences of cheating are more harmful than the risk taken in the rescue.

III. SOCIOBIOLOGY AND CHRISTIANITY

The sociobiological explanation of reciprocal altruism raises some important questions concerning human morality. If the survival of reciprocally altruistic behavior depends on the identification and punishment of cheaters, one has an evolutionary explanation for human morality. **Human morality** functions as a device to increase the fitness of those carrying genes for altruistic behavior. "When altruism is conceived as the mechanism by which DNA multiplies itself through a network of relatives, spirituality becomes just one more Darwinian enabling device" (Wilson 1980, p. 58). Religions themselves compete and evolve so as to promote the welfare of their adherents.

Sociobiology has seemingly opened the way for science to consider questions that are normally considered to be outside the reach of science. **Ethics** and **morality** are seen by sociobiologists as strategies to enhance the survival of those who practice and advocate them. Artistic impulses were inherited from our pre-human ancestors, and may be related to the development of tool-making. In later times they came to be associated with religion, contributing to the success of religious behavior. These behaviors are believed to have a genetic basis, although considerable behavioral plasticity is recognized.

It should be clear that sociobiology, taken to its logical conclusion, is **incompatible** with Christianity. It destroys the basis for man's accountability to God, effectively denying even the existence of God. It reduces man to little more than a machine, with no true morality or freedom of choice. Its benevolent tolerance of religion may be more dangerous than outright opposition. Yet it is making inroads into contemporary thinking. SDAs must be aware of what is happening and respond appropriately. The world needs to hear the gospel message -- that God does exist, that man is fallen from his once-high position, that God has a plan to bring us back to Him, and that we have the freedom to choose to accept restoration through Jesus Christ.

IV. SUMMARY

Animal behavior has a genetic basis. Stabilizing selection plays a role in maintaining animal behavior. Sociobiology attempts to apply the principles of animal behavior to humans. In doing so, humans are considered to be genetic machines, subject to some modification by environmental influences. Kin selection and inclusive fitness are theoretical constructs designed to explain altruistic behavior. Sociobiology has been criticized as being a new form of racist social darwinism. To the extent that sociobiology undermines the basis of human morality and free choice it is incompatible with Christianity.

V. REFERENCES

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