

# Sociobiology

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Sociobiology is the scientific field that applies the principles of evolutionary theory to social behavior. It assumes that, just as natural selection has shaped physiological characteristics, so too has social behavior evolved through the process of natural selection. This carries the assumption that behavior is influenced by genes, though not rigidly determined by them; any behavior emerges through the interaction between genes and environment.

Edward O. Wilson brought the term (and the concept it represents) into both academic and popular usage with his 1975 book *Sociobiology: The New Synthesis* (Wilson 1975). Wilson was an ant biologist and had spent his career observing the very complex social behavior of these insects, though his book extended to social behavior throughout the animal kingdom. As the title suggests, the book was a synthesis of existing work, clearly establishing how evolutionary theory could be applied to the understanding of social behavior. It was a landmark in evolutionary biology and resulted in two key shifts in the study of animal behavior (Laland and Brown 2011). First, sociobiology's main focus is on the functional significance of behavior. Previous work on animal behavior, in the discipline of ethology for example, had focused more on the mechanisms by which behavior is brought about. Sociobiology is more concerned with asking *why* a particular behavior was selected for (in terms of promoting the animal's reproductive success) than with asking *how* the behavior is brought about. Sociobiology also takes the "gene's eye" view of natural selection. Wilson's book cited recent work by evolutionary biologists such as William Hamilton and George Williams, which emphasized that the unit of selection is the gene, not the individual or the species.

Though most of his book was focused on the behavior of nonhuman animals, Wilson included a final chapter on human sociobiology, titled "Man: From Sociobiology to Sociology." This chapter triggered a vigorous controversy, which extended into the public sphere and resulted in Wilson having a jug of water dumped on his head during a scientific conference (Seegerstrale 2001). The idea that human behavior is "genetically determined" was resisted very strongly on political grounds, by those who thought that it marked a resurgence of eugenics; and not just by social scientists but by some prominent biologists too, including Stephen Jay Gould and Richard Lewontin in Wilson's own department at Harvard. Despite this initial reaction, sociobiology has become established as a thriving area of research in the form of descendant disciplines, particularly human behavioral ecology, cultural evolution, and evolutionary psychology.

Like sociobiology, these disciplines consider human behavior to be the product of natural selection and to result from the interaction between genes and environment. Behavior therefore demonstrates "phenotypic plasticity"—which means that different behaviors can arise from the same genome, depending on the environment in which an individual is raised. Some of this plasticity may be driven by the human tendency to rely strongly on social learning for the development of behavior—that is, to learn behaviors from other individuals rather than working out a behavior all by oneself. Different social traditions (or cultures) may therefore arise when different behaviors become entrenched in different populations through social learning. Wilson himself developed an interest in this cultural evolution after writing *Sociobiology* and published *Genes, Mind and Culture: The Coevolutionary Process* in 1981, with Charles Lumsden (Lumsden and Wilson 1981). This book famously contained the statement that "genes hold culture on a leash," which made clear Wilson's opinion that cultural

evolution is not completely dissociated from genetic evolution.

Sexual behavior was a key interest of sociobiology from the start. Since sociobiologists are interested in the function of behaviors, they ask why a particular sexual behavior has evolved: What benefits does the behavior bring in terms of increased reproductive success? Wilson, for example, speculated on the origins of homosexuality in 1975. He suggested that any genes that promoted homosexual behavior and therefore presumably reduced an individual's direct number of descendants may be maintained by natural selection if homosexual behavior was also correlated with a tendency to help one's relatives reproduce. He was also of the view that the constant sexual receptivity and elaborate sexual behavior of our species served the purpose of cementing pair bonds, which he believed were a fundamental unit of human social organization. Subsequent sociobiologists have maintained an interest in sexual behavior and attempted to test some of these ideas: for example, a number of empirical tests of the hypothesis that homosexuality has been selected through kin selection (the benefits brought to one's relatives) have now been performed, though with mixed results (Sommer and Vasey 2006).

The term "sociobiologist" is now rarely used to describe scientists working on either human or nonhuman behavior, partly because most researchers working on animal behavior are interested in all aspects of behavior and not just in social behavior, but also because of the negative connotations the term picked up during the

1970s sociobiology debate. But the discipline itself, applying evolutionary theory to social behavior, is going from strength to strength: behavioral ecology is a discipline firmly established within biology, and human behavioral ecologists, evolutionary psychologists, and cultural evolutionists are becoming established in anthropology, psychology, and other social science departments.

SEE ALSO: Evolutionary Psychology; Homosexuality in Nonhuman Primates and in Humans; Parental Investment; Parenting Effort

## REFERENCES

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## FURTHER READING

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- Alcock, J. 2001. *The Triumph of Sociobiology*. Oxford: Oxford University Press.