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Sociobiology

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Abstract

This section defines the term sociobiology, describes its origins in the work of Edward O. Wilson and how the discipline has developed over time. It also mentions how sociobiology may be applied to the study of sexual behaviour.

Main text

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

Edward O. Wilson brought the term into both academic and popular usage with his 1975 book 'Sociobiology: the New Synthesis'. Wilson was an ant biologist, and had spent his career observing the very complex social behaviour of these insects, though his book extended to social behaviour 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 behaviour. It was a landmark in evolutionary biology, and resulted in two key shifts in the study of animal behaviour (Laland and Brown 2011). Firstly, sociobiology's main focus is on the functional significance of behaviour. Previous work on animal behaviour, the discipline of ethology for example, had focused more on the mechanisms by which behaviour was brought about. Sociobiology is more concerned with asking *why* a particular behaviour was selected for (in terms of promoting the animal's reproductive success), than *how* the behaviour is brought about. Sociobiology also took the 'gene's eye' view of natural selection, citing recent work by evolutionary biologists such as William Hamilton and George Williams which emphasised that the unit of selection is the gene, and not the individual or the species.

Though most of this book was focused on the behaviour of non-human 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, resulting in Wilson having a jug of water dumped on his head during a scientific conference (Segerstrale 2001). The idea that human behaviour is 'genetically determined' was resisted very strongly on political grounds, by those who thought it marked a resurgence of eugenics; not just by social scientists but by some

prominent biologists too, including Stephen Jay Gould and Richard Lewontin in Wilson's own Harvard department. Despite this initial reaction, sociobiology has become established as a thriving area of research in the form of descendant disciplines, particularly human behavioural ecology, cultural evolution and evolutionary psychology.

Like sociobiology, these disciplines consider human behaviour to be the product of natural selection, and to result from the interaction between genes and environment. Behaviour therefore demonstrates 'phenotypic plasticity', i.e. different behaviours 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 behaviour (learning behaviours from other individuals, rather than working out a behaviour all by oneself). Different social traditions (or cultures) may therefore arise when different behaviours become entrenched in different populations through social learning. Wilson himself developed his interest in this cultural evolution after writing 'Sociobiology' and published 'Genes, Mind and Culture: the Coevolutionary Process' in 1981 with Charles Lumsden. This book famously contained the statement, however, that 'genes hold culture on a leash': making clear Wilson's opinion that cultural evolution is not completely dissociated from genetic evolution.

Sexual behaviour was a key interest of sociobiology from the start. Since sociobiologists are interested in the function of behaviours, they ask why a particular sexual behaviour has evolved: what benefits does the behaviour bring in terms of increased reproductive success. Wilson, for example, speculated on the origins of homosexuality in 1975. He suggested that any genes which promoted homosexual behaviour and therefore presumably reduced an individual's direct number of descendants, may be maintained by natural selection if homosexual behaviour 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 behaviour of our species served the purpose of cementing pair-bonds, which he believed were a fundamental unit of human social organisation. Subsequent sociobiologists have maintained an interest in sexual behaviour, 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 non-human behaviour, partly because most researchers working on animal behaviour are interested in all aspects of behaviour and not just social behaviour, but also partly because of the negative connotations the term picked up during the 1970s sociobiology debate. But the discipline itself, applying evolutionary theory to social behaviour, is going from strength to strength: behavioural ecology is a discipline firmly established within biology, and human behavioural ecologists, evolutionary psychologists and cultural evolutionists are becoming established in anthropology, psychology, and other social science departments.

Cross references

evolutionary psychology; homosexuality

Keywords

sociobiology; E.O. Wilson; natural selection; human behavioural ecology; evolutionary psychology; cultural evolution

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Further reading

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