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One Gene at a Time

VAULTING AMBITION

Sociobiology and the Quest for Human Nature.
By Philip Kitcher.
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The MIT Press. $25.

By Melvin Konner

A DECADE has passed since the publication of E. O. Wilson's "Sociobiology: The New Synthesis" — an event that is generally seen as marking the consolidation, if not the start, of a new field of biological and behavioral science. It was greeted with praise in The New York Review of Books by C. H. Waddington, a renowned English geneticist and lifelong progressive, and it was widely acclaimed as an encyclopedic summary of the evolutionary approach to animal, and human, behavior. However, it came under fire from many quarters. Such critics as Richard C. Lewontin at Harvard University, a leading mathematical geneticist, and Stephen Jay Gould, a leading paleontologist and naturalist who is also at Harvard, have devoted substantial time, energy and print to exposing its scientific flaws. They have also pointed out its dangerous political implications, arising from the inappropriate application of sociobiological principles to support racist and reactionary ideologies. Those implications have been puzzlingly ignored by many of the practitioners in the discipline.

Meanwhile, the new field has grown in numbers and enthusiasm, attracting some of the best young minds in evolutionary biology and animal behavior. Frequent issues of Science, Nature and Scientific American and every issue of such distinguished specialty journals as American Naturalist and Animal Behaviour contain new papers contributing to the research program known as sociobiology, which is basically an application of Darwinian principles to behavior. Hundreds, if not thousands, of investigators now devote themselves to developing this bitterly controversial new field. Others, fewer but growing in number, seek to extend its principles to the explanation of human behavior and often address their conclusions to a general reading public.

Who is right? It seems a good time for an assessment, and Philip Kitcher, a professor of philosophy at the University of Minnesota, has undertaken to provide a decisive one. He previously contributed a valuable analysis of scientific creationism, scrutinizing that dubious enterprise — and inevitably, Darwinism as well — under the cold blue light of the philosophy of science. He now turns that light on a new and relatively vulnerable part of evolutionary biology itself. Lavish praise of the book by Mr. Lewontin and Mr. Gould leaves no doubt about the importance of this assessment to the most distinguished critics of the discipline.

As Mr. Kitcher appreciates, and all insiders know, Mr. Wilson's synthesis was an important contribution but not a seminal one. The latter distinction is reserved for three currents of thought.

The first is the concept of inclusive fitness. Darwin based the burden of evolutionary competition on the individual. Inclusive fitness takes that burden off the individual and shares it among relatives, thus making altruism comprehensible in evolutionary terms for the first time. This concept and its mathematical development are most closely associated with the work W. D. Hamilton did at Cambridge University. The second is the use of game theory calculations to explain much about both competition and the limits to competition. This work, known among sociobiologists as evolutionary stable strategy, is most closely associated with the work of John Maynard Smith at the University of Sussex in England. The third is the use of optimization theory, a concept borrowed from the way economists study maximizing profits, utility and other goals. In sociobiology the theory sees reproduction as the goal and explains the behavior and functioning of organisms in the service of that goal. The principal work on it was done by Robert Trivers at Harvard Univesity.

All have in common the Darwinian idea that only those hereditary characteristics which improve reproduction can survive the relentless culling of evolution. These three lines of thought, well developed by the early 1970's, have transformed completely the way scientists from a variety of disciplines think about animal behavior. Mr. Kitcher recognizes this, and in a meticulous analysis puts his philosopher's stamp of approval on them — with some reservations — as well as on a large number of empirical studies of animal behavior that derive from and test them. But if humans are animals, these concepts can be applied generally, in some ways at least, to our own behavior.

ENTER what Mr. Kitcher derisively calls "pop sociobiology." This misnomer — it subsumes a number of works that received little popular attention, including one full of advanced mathematics — appears to mean something like "those works of *human* sociobiology which arrive at sweeping conclusions about human nature." However, some careful empirical works with quite limited goals are also heavily criticized. Mr. Kitcher draws liberally on previously published critiques, especially those of Mr. Lewontin and Mr. Gould — even repeating some of their jokes. But he also contributes some of the most extended and detailed analyses of sociobiological works published to date.

In some cases these treatments probably go beyond what the works require. No work of sociobiology appears without being subject to the most in

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tense scrutiny within the discipline. It is a young field with a limited number of logical possibilities, and inevitably many ideas have been put forth by several people at once. Each is met by a counter-proposal, and generally the data do not yet suffice to discriminate clearly between such alternatives. For example, kin selection, group selection, reciprocal altruism and the exercise known in game theory as prisoner's dilemma are all hypotheses to account for what we commonly think of as altruistic or cooperative behavior — a central puzzle for the Darwinian world view. Proponents of these ideas have attacked each other frequently, so it cannot be surprising that Mr. Kitcher's attacks on them do not seem compellingly original.

HE also suffers from the outsider's lack of appreciation for the most exciting points on the frontier of the discipline. In his tolerant account of animal sociobiology, he reviews some of the best and most rigorous work. In his relatively intolerant account of human sociobiology he omits much of the best. Of 244 references in his bibliography, only one is to the journal Ethology and Sociobiology, which is where most papers about human sociobiology appear. He makes no reference to the work of Martin Daly and Margo Wilson, who do the most rigorous empirical testing of sociobiology hypotheses on human data. He does not discuss Sarah Hrdy's work on the sociobiology of female competition, the implications of which have been embraced by feminists, and he omits as well her crucial work on competitve infanticide in some animal groups. Throughout, the book is marred by an unfortunate snickering tone that has no place in this or any debate. Nevertheless, Mr. Kitcher has written the most impressive account of sociobiology that has been provided by any critic. No one interested in human sociobiology can afford to ignore his analyses, particularly those in the 15 technical discussions set off from the main text.

Rabbi Hillel, the great Talmudic sage, asked by a wag to teach him the Torah while standing on one foot, supposedly replied, "What is hateful to you, do not do unto your neighbor." If I were forced to do the same for sociobiology, I would say, "A person is only a gene's way of making another gene," and conclude as Rabbi Hillel did, "The rest is commentary. Now go and study." Such study would lead first to the major complication that each of the vast number of genes carried around by a person must cooperate with others. That is a problem not yet really dealt with by sociobiological theory, which deals with one gene at a time, a practice that accounts for many of its failures.

But of course, and more important, the Torah is a prescriptive enterprise, while sociobiology is, or should be, only a descriptive one. As Mr. Kitcher notes, some writers on human sociobiology have failed to appreciate this distinction. Rabbi Hillel, although he died in the first century, would not have been amazed to learn that human nature is full of selfish tendencies — the novelty of the genes notwithstanding. He would have taught as he did anyway (more or less against the sociobiological grain) not in spite of selfish tendencies, but because of them.

I once asked a dyed-in-the-wool sociobiologist to account for the Shakers, a religious sect which refused to reproduce — thus, as it were, throwing the gauntlet down to Darwin. He thought for a comically difficult few seconds and finally sputtered, "They're being selected against!" For him this closed the matter. For the rest of us, it opens up the possibility of a vast realm of human action that is not subject to precise Darwinian explanation. The crucial question of sociobiology is not whether the theory is right (in important respects it must be) but how much of human behavior it accounts for.

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Sociobiology has not yet fulfilled its promise to solve and sweep away major longstanding puzzles of human motivation and action. Like Mr. Kitcher, I am skeptical that it will. But it is too early to tell. So far, its accounting of altruism, competition, sex differences, parent-offspring conflict and deception, among other phenomena, has extended and in some ways sharpened the mode of discourse on these age-old problems. Mr. Kitcher would do well to study a number of subtler and more rigorous examples of human sociobiology that his book omits from consideration. Would-be human sociobiologists would do well to study his criticism of some unsuccessful premature efforts.

But the most important message of his book lies elsewhere. Mr. Kitcher has written a critique of sociobiology, endorsed by its most distinguished opponents, that gives the enterprise a legitimate place among the sciences of biology and behavior. In his metaphor, sociobiology shares the "vaulting ambition" that overcame Macbeth when he wanted to be King of Scotland instead of being satisfied with being Thane of Cawdor. I take this to mean that sociobiology can now be considered a peer of the realm of science, to be admitted to the highest councils of discourse and decision; that the best and largest contingent of the field may now be permitted to apply the paradigm in what Thomas Kuhn has called "normal science," without further assault on its fundamental legitimacy. This assessment should gladden the heart of many a working sociobiologist. □