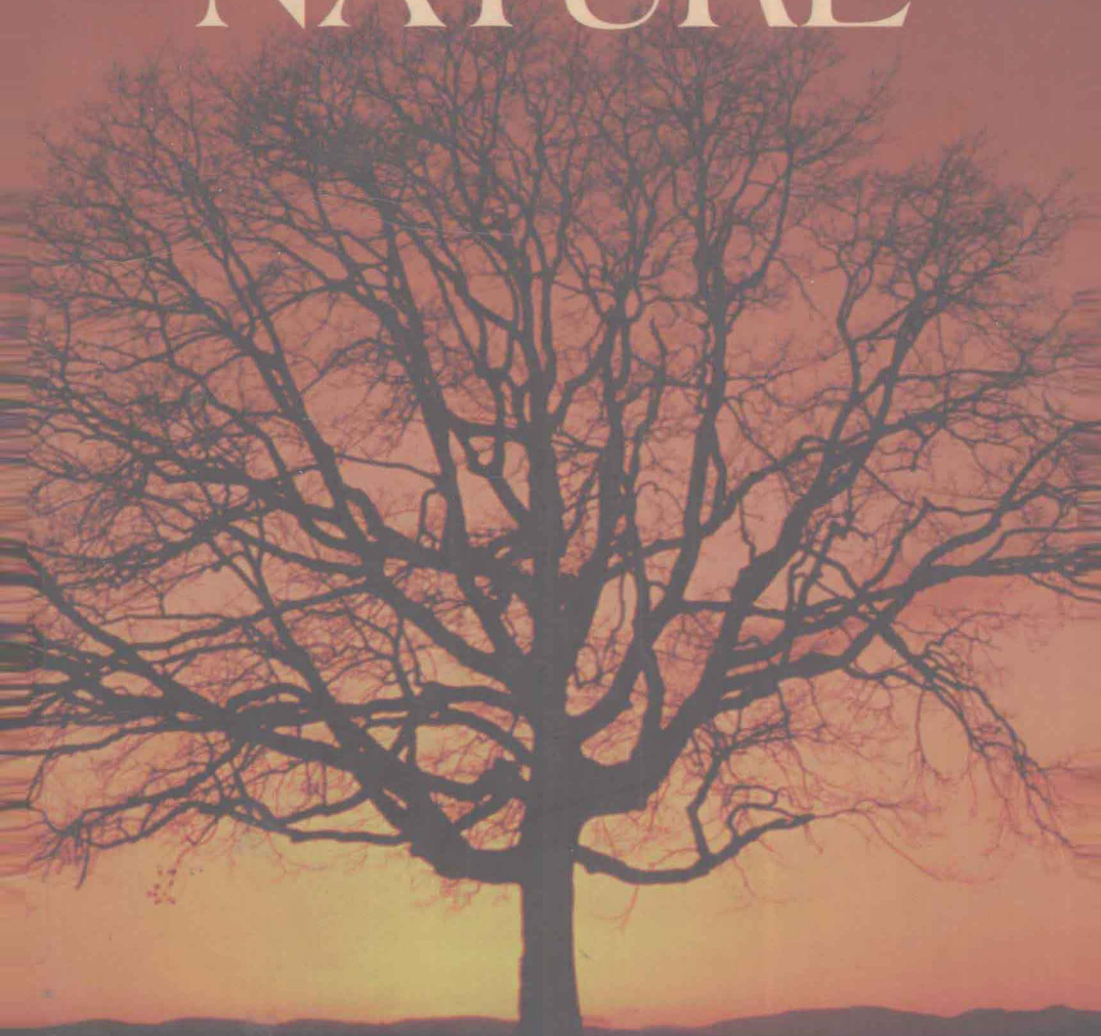


Winner of the Pulitzer Prize for General Nonfiction

EDWARD O. WILSON

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# ON HUMAN NATURE



*"Compellingly interesting and enormously important."*

WASHINGTON POST BOOK WORLD



# On Human Nature

EDWARD O. WILSON

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What though these reasonings concerning human nature seem abstract and of difficult comprehension, this affords no presumption of their falsehood. On the contrary, it seems impossible that what has hitherto escaped so many wise and profound philosophers can be very obvious and easy. And whatever pains these researches may cost us, we may think ourselves sufficiently rewarded, not only in point of profit but of pleasure, if, by that means, we can make any addition to our stock of knowledge in subjects of such unspeakable importance.

Hume, *An Inquiry Concerning  
Human Understanding*



*On Human Nature* is the third book in a trilogy that unfolded without my being consciously aware of any logical sequence until it was nearly finished. The final chapter of *The Insect Societies* (1971) was entitled "The Prospect for a Unified Sociobiology." In it I suggested that the same principles of population biology and comparative zoology that have worked so well in explaining the rigid systems of the social insects could be applied point by point to vertebrate animals. In time, I said, we will account for both termite colonies and troops of rhesus monkeys by a single set of parameters and one quantitative theory. Unable to resist the rhetoric of my own challenge, I set out to learn the large and excellent literature on vertebrate social behavior and wrote *Sociobiology: The New Synthesis* (1975). In its final chapter "Man: From Sociobiology to Sociology," I argued that the biological principles which now appear to be working reasonably well for animals in general can be extended profitably to the social sciences. This suggestion created an unusual amount of interest and controversy.

The aftermath of the publication of *Sociobiology* led me to read more widely on human behavior and drew me to many seminars and written exchanges with social scientists. I became more persuaded

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than ever that the time has at last arrived to close the famous gap between the two cultures, and that general sociobiology, which is simply the extension of population biology and evolutionary theory to social organization, is the appropriate instrument for the effort. *On Human Nature* is an exploration of that thesis.

But this third book could not be a textbook or a conventional synthesis of the scientific literature. To address human behavior systematically is to make a potential topic of every corridor in the labyrinth of the human mind, and hence to consider not just the social sciences but also the humanities, including philosophy and the process of scientific discovery itself. Consequently, *On Human Nature* is not a work of science; it is a work about science, and about how far the natural sciences can penetrate into human behavior before they will be transformed into something new. It examines the reciprocal impact that a truly evolutionary explanation of human behavior must have on the social sciences and humanities. *On Human Nature* may be read for information about behavior and sociobiology, which I have been careful to document. But its core is a speculative essay about the profound consequences that will follow as social theory at long last meets that part of the natural sciences most relevant to it.

Opinion on the merit of these arguments will no doubt be as sharply divided as it was on the sections dealing with human behavior in *Sociobiology*. At the risk of surrendering advantage to those whose beliefs leave them no option but rejection, I wish to say the following to others who are prone to read this book uncritically as a tested product of science: I might easily be wrong—in any particular conclusion, in the grander hopes for the role of the natural sciences, and in the trust gambled on scientific materialism. This qualification does not represent false modesty but instead is an attempt to maintain strength. The uncompromising application of evolutionary theory to all aspects of human existence will come to nothing if the scientific spirit itself falters, if ideas are not constructed so as to be submitted

to objective testing and hence made mortal. The social sciences are still too young and weak, and evolutionary theory itself still too imperfect, for the propositions reviewed here to be carved in stone. It is my conviction nonetheless that the existing evidence favors them and through them the broader confidence in biological inquiry that forms the main thrust of this exposition.

I have been blessed with friends and colleagues who provided enormously useful aid and advice during the preparation of the book. They of course do not agree with everything I have said, and I exonerate them all from the errors that still remain. Their names follow: Richard D. Alexander, Jerome H. Barkow, Daniel Bell, William I. Bennett, Herbert Bloch, William E. Boggs, John T. Bonner, John E. Boswell, Ralph W. Burhoe, Donald T. Campbell, Arthur Caplan, Napoleon A. Chagnon, George A. Clark, Robert K. Colwell, Bernard D. Davis, Irven DeVore, Mildred Dickeman, Robin Fox, Daniel G. Freedman, William D. Hamilton, Richard J. Herrnstein, Bert Hölldobler, Gerald Holton, Sarah Blaffer Hrdy, Harry J. Jerison, Mary-Claire King, Melvin Konner, George F. Oster, Orlando Patterson, John E. Pfeiffer, David Premack, W. V. Quine, Jon Seger, Joseph Shepher, B. F. Skinner, Frank Sulloway, Lionel Tiger, Robert L. Trivers, Pierre van den Berghe, Arthur W. Wang, James D. Weinrich, Irene K. Wilson, Richard W. Wrangham.

As she has done for my previous books, Kathleen M. Horton aided in bibliographic research and typed the successive drafts of the manuscript. Her assistance has improved the accuracy and efficiency of my work by an amount I would be afraid to try to measure.

Chapter 1 contains relatively unchanged portions of my previous articles "The Social Instinct," *Bulletin of the American Academy of Arts and Sciences*, 30: 11-24 (1976) and "Biology and the Social Sciences," *Daedalus*, 106(4): 127-140 (1977); Chapters 5 and 7 contain most of the content of "Human Decency Is Animal" (*The New York Times Magazine*, October 12, 1975); and Chapters 4 and

8 contain a few sections from Chapter 27 of *Sociobiology*. The permission of the publishers to reproduce this material is appreciated. Permission for the quotation of work by other authors has been obtained variously from the University of California Press, the University of Chicago Press, and Macmillan Company; the specific citations are given in the bibliographic notes.





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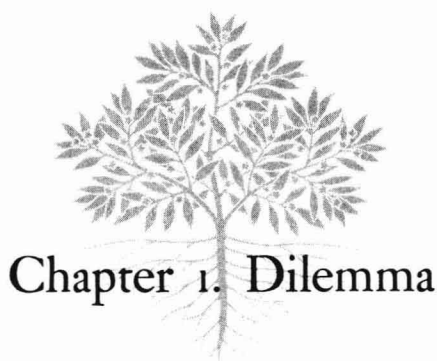
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These are the central questions that the great philosopher David Hume said are of unspeakable importance: How does the mind work, and beyond that why does it work in such a way and not another, and from these two considerations together, what is man's ultimate nature?

We keep returning to the subject with a sense of hesitancy and even dread. For if the brain is a machine of ten billion nerve cells and the mind can somehow be explained as the summed activity of a finite number of chemical and electrical reactions, boundaries limit the human prospect — we are biological and our souls cannot fly free. If humankind evolved by Darwinian natural selection, genetic chance and environmental necessity, not God, made the species. Deity can still be sought in the origin of the ultimate units of matter, in quarks and electron shells (Hans Küng was right to ask atheists why there is something instead of nothing) but not in the origin of species. However much we embellish that stark conclusion with metaphor and imagery, it remains the philosophical legacy of the last century of scientific research.

No way appears around this admittedly unappealing proposition. It is the essential first hypothesis for any serious consideration of the

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human condition. Without it the humanities and social sciences are the limited descriptors of surface phenomena, like astronomy without physics, biology without chemistry, and mathematics without algebra. With it, human nature can be laid open as an object of fully empirical research, biology can be put to the service of liberal education, and our self-conception can be enormously and truthfully enriched.

But to the extent that the new naturalism is true, its pursuit seems certain to generate two great spiritual dilemmas. The first is that no species, ours included, possesses a purpose beyond the imperatives created by its genetic history. Species may have vast potential for material and mental progress but they lack any immanent purpose or guidance from agents beyond their immediate environment or even an evolutionary goal toward which their molecular architecture automatically steers them. I believe that the human mind is constructed in a way that locks it inside this fundamental constraint and forces it to make choices with a purely biological instrument. If the brain evolved by natural selection, even the capacities to select particular esthetic judgments and religious beliefs must have arisen by the same mechanistic process. They are either direct adaptations to past environments in which the ancestral human populations evolved or at most constructions thrown up secondarily by deeper, less visible activities that were once adaptive in this stricter, biological sense.

The essence of the argument, then, is that the brain exists because it promotes the survival and multiplication of the genes that direct its assembly. The human mind is a device for survival and reproduction, and reason is just one of its various techniques. Steven Weinberg has pointed out that physical reality remains so mysterious even to physicists because of the extreme improbability that it was constructed to be understood by the human mind. We can reverse that insight to note with still greater force that the intellect was not constructed to understand atoms or even to understand itself but to promote the

survival of human genes. The reflective person knows that his life is in some incomprehensible manner guided through a biological ontogeny, a more or less fixed order of life stages. He senses that with all the drive, wit, love, pride, anger, hope, and anxiety that characterize the species he will in the end be sure only of helping to perpetuate the same cycle. Poets have defined this truth as tragedy. Yeats called it the coming of wisdom:

Though leaves are many, the root is one;  
Through all the lying days of my youth  
I swayed my leaves and flowers in the sun;  
Now I may wither into the truth.

The first dilemma, in a word, is that we have no particular place to go. The species lacks any goal external to its own biological nature. It could be that in the next hundred years humankind will thread the needles of technology and politics, solve the energy and materials crises, avert nuclear war, and control reproduction. The world can at least hope for a stable ecosystem and a well-nourished population. But what then? Educated people everywhere like to believe that beyond material needs lie fulfillment and the realization of individual potential. But what is fulfillment, and to what ends may potential be realized? Traditional religious beliefs have been eroded, not so much by humiliating disproofs of their mythologies as by the growing awareness that beliefs are really enabling mechanisms for survival. Religions, like other human institutions, evolve so as to enhance the persistence and influence of their practitioners. Marxism and other secular religions offer little more than promises of material welfare and a legislated escape from the consequences of human nature. They, too, are energized by the goal of collective self-aggrandizement. The French political observer Alain Peyrefitte once said admiringly of Mao Tse-tung that "the Chinese knew the narcissistic joy of loving themselves in him. It is only natural that he should

have loved himself through them." Thus does ideology bow to its hidden masters the genes, and the highest impulses seem upon closer examination to be metamorphosed into biological activity.

The more somber social interpreters of our time, such as Robert Heilbroner, Robert Nisbet, and L. S. Stavrianos, perceive Western civilization and ultimately mankind as a whole to be in immediate danger of decline. Their reasoning leads easily to a vision of post-ideological societies whose members will regress steadily toward self-indulgence. "The will to power will not have vanished entirely," Gunther Stent writes in *The Coming of the Golden Age*,

but the distribution of its intensity will have been drastically altered. At one end of this distribution will be the minority of the people whose work will keep intact the technology that sustains the multitude at a high standard of living. In the middle of the distribution will be found a type, largely unemployed, for whom the distinction between the real and the illusory will still be meaningful . . . He will retain interest in the world and seek satisfaction from sensual pleasures. At the other end of the spectrum will be a type largely unemployable, for whom the boundary of the real and the imagined will have been largely dissolved, at least to the extent compatible with his physical survival.

Thus the danger implicit in the first dilemma is the rapid dissolution of transcendental goals toward which societies can organize their energies. Those goals, the true moral equivalents of war, have faded; they went one by one, like mirages, as we drew closer. In order to search for a new morality based upon a more truthful definition of man, it is necessary to look inward, to dissect the machinery of the mind and to retrace its evolutionary history. But that effort, I predict, will uncover the second dilemma, which is the choice that

must be made among the ethical premises inherent in man's biological nature.

At this point let me state in briefest terms the basis of the second dilemma, while I defer its supporting argument to the next chapter: innate censors and motivators exist in the brain that deeply and unconsciously affect our ethical premises; from these roots, morality evolved as instinct. If that perception is correct, science may soon be in a position to investigate the very origin and meaning of human values, from which all ethical pronouncements and much of political practice flow.

Philosophers themselves, most of whom lack an evolutionary perspective, have not devoted much time to the problem. They examine the precepts of ethical systems with reference to their consequences and not their origins. Thus John Rawls opens his influential *A Theory of Justice* (1971) with a proposition he regards as beyond dispute: "In a just society the liberties of equal citizenship are taken as settled; the rights secured by justice are not subject to political bargaining or to the calculus of social interests." Robert Nozick begins *Anarchy, State, and Utopia* (1974) with an equally firm proposition: "Individuals have rights, and there are things no person or group may do to them (without violating their rights). So strong and far-reaching are these rights they raise the question of what, if anything, the state and its officials may do." These two premises are somewhat different in content, and they lead to radically different prescriptions. Rawls would allow rigid social control to secure as close an approach as possible to the equal distribution of society's rewards. Nozick sees the ideal society as one governed by a minimal state, empowered only to protect its citizens from force and fraud, and with unequal distribution of rewards wholly permissible. Rawls rejects the meritocracy; Nozick accepts it as desirable except in those cases where local communities voluntarily decide to experi-

ment with egalitarianism. Like everyone else, philosophers measure their personal emotional responses to various alternatives as though consulting a hidden oracle.

That oracle resides in the deep emotional centers of the brain, most probably within the limbic system, a complex array of neurons and hormone-secreting cells located just beneath the “thinking” portion of the cerebral cortex. Human emotional responses and the more general ethical practices based on them have been programmed to a substantial degree by natural selection over thousands of generations. The challenge to science is to measure the tightness of the constraints caused by the programming, to find their source in the brain, and to decode their significance through the reconstruction of the evolutionary history of the mind. This enterprise will be the logical complement of the continued study of cultural evolution.

Success will generate the second dilemma, which can be stated as follows: Which of the censors and motivators should be obeyed and which ones might better be curtailed or sublimated? These guides are the very core of our humanity. They and not the belief in spiritual apartness distinguish us from electronic computers. At some time in the future we will have to decide how human we wish to remain—in this ultimate, biological sense—because we must consciously choose among the alternative emotional guides we have inherited. To chart our destiny means that we must shift from automatic control based on our biological properties to precise steering based on biological knowledge.

Because the guides of human nature must be examined with a complicated arrangement of mirrors, they are a deceptive subject, always the philosopher’s deadfall. The only way forward is to study human nature as part of the natural sciences, in an attempt to integrate the natural sciences with the social sciences and humanities. I can conceive of no ideological or formalistic shortcut. Neurobiology cannot



be learned at the feet of a guru. The consequences of genetic history cannot be chosen by legislatures. Above all, for our own physical well-being if nothing else, ethical philosophy must not be left in the hands of the merely wise. Although human progress can be achieved by intuition and force of will, only hard-won empirical knowledge of our biological nature will allow us to make optimum choices among the competing criteria of progress.

The important initial development in this analysis will be the conjunction of biology and the various social sciences—psychology, anthropology, sociology, and economics. The two cultures have only recently come into full sight of one another. The result has been a predictable mixture of aversions, misunderstandings, overenthusiasm, local conflicts, and treaties. The situation can be summarized by saying that biology stands today as the antidiscipline of the social sciences. By the word “antidiscipline” I wish to emphasize the special adversary relation that often exists when fields of study at adjacent levels of organization first begin to interact. For chemistry there is the antidiscipline of many-body physics; for molecular biology, chemistry; for physiology, molecular biology; and so on upward through the paired levels of increasing specification and complexity.

In the typical early history of a discipline, its practitioners believe in the novelty and uniqueness of their subject. They devote lifetimes to special entities and patterns and during the early period of exploration they doubt that these phenomena can be reduced to simple laws. Members of the antidiscipline have a different attitude. Having chosen as their primary subject the units of the lower level of organization, say atoms as opposed to molecules, they believe that the next discipline above can and must be reformulated by their own laws: chemistry by the laws of physics, biology by the laws of chemistry, and so on downward. Their interest is relatively narrow, abstract, and exploitative. P.A.M. Dirac, speaking of the theory of the hydro-