
An Interview with E. O. Wilson On Sociobiology and Religion

Jeffrey Saver

Edward O. Wilson possesses the rare distinction of having founded the new scientific discipline of sociobiology—"the systematic study of the biological basis of all social behavior." By bringing an evolutionary perspective to the study of social traits, Wilson revolutionized modern biology's understanding of social behavior, laying new emphasis upon the role that Darwinian natural selection plays in shaping and constraining the behavioral repertoire of species at all levels of the animal kingdom. When he proceeded to apply sociobiological analysis to human behavior, Wilson rekindled Western culture's perennial nature-nurture debate and emerged as a profound and controversial social and moral thinker in his own right.

Wilson was born in Birmingham, Alabama, in 1929. He obtained a B.S. degree in 1949 and an M.S. in 1950 from the University of Alabama, where he majored in biology. He received his Ph.D. from Harvard University in 1955 and has been in Cambridge ever since, now holding the position of Frank B. Baird, Jr., Professor of Science. His early scientific

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work included important contributions to entomology, classification, speciation theory, biogeography, and chemical communication.

*It was with the publication in 1975 of his encyclopedic *Sociobiology: The New Synthesis* that Wilson ushered in a new era in the study of animal behavior. Four years earlier, in his own research field of entomology, Wilson had brought together principles from physiology, population biology, and evolutionary theory to produce a unifying explanation of the complicated systems of the social insects in *The Insect Societies* (1971). Meticulously extending this approach to the many thousands of social animal species, Wilson in *Sociobiology* provided an encompassing evolutionary account of the origin and maintenance of the disparate patterns of sociality displayed by birds, primates, insects, and man.*

The birth of sociobiology was attended by widespread and bitter ideological debate. Many social scientists, liberals and Marxists, defending a vision of human nature as wholly determined by cultural conditions, charged that Wilson's recognition of an innate, genetic component to human behavior lent support to conservative, sexist, and racist political views. In a moment of excess zeal, radical demonstrators even dumped a pitcher of water over Wilson as he addressed a meeting of the American Academy of Arts and Sciences. It is a mistake, however, to align Wilson, a self-designated "typical Western liberal-

democrat," with the Social Darwinist hereditarians of a bygone era. As Wilson's circle of inquiry grew from insect societies to human culture, he necessarily became a generalist, synthesizing knowledge across a bewildering array of scientific disciplines. His chief concern has become the nature of the human predicament itself, and he is a subtle thinker on a plane above the political—a true scientist-philosopher.

Already in Sociobiology he recognized that his fledgling science's revelations of the biological basis of human behavior had profound implications for moral philosophy. He there wrote: ". . . Ethical philosophers intuit the deontological canons of morality by consulting the emotive centers of their own hypothalamic-limbic systems. . . . Only by interpreting the activity of the emotive centers as a biological adaptation can the meaning of the canons be deciphered."

Wilson went on to explore the diverse philosophical ramifications of a sociobiological view of man more fully in his 1978 Pulitzer Prize-winning book-length speculative essay, *On Human Nature*. On the academic level, he here suggested that, by systematically addressing human behavior, sociobiology would provide the long-sought bridge between the "hard" sciences of physics, chemistry, and biology and the "soft" sciences of anthropology, economics, psychology, and sociology, and transform the humanities as well. On religion, Wilson suggested that evolution had conferred upon man a biological predisposition to develop a blinding faith, which in primitive tribes promoted greater social cohesion and the sacrifice of the individual for the good of the community. However, he felt that this great susceptibility to indoctrination in religious or religiouslike causes was a liability in the modern world. Wilson offered in religion's stead a biological "mythopoeic epic" of the evolution of the mind from unreflecting inorganic matter to the inexhaustible richness of human thought.

Most fundamentally, on a moral-existential level, Wilson described three far-reaching spiritual dilemmas arising from sociobiology's comprehensive, materialistic explanation of human nature. "The first," he wrote, "is that no species, ours included, possesses a purpose beyond the imperatives created by its genetic history." In the absence of a religious dogma that provides goals external to our biological nature, where do we go from here? Wilson's answer to this first dilemma was the scientific quest, suggesting that man might for the moment devote himself to fully understanding his universe and his own species, including his evolutionary origins. But the knowledge so acquired, Wilson predicted, would raise new dilemmas. Once we understand the evolutionary significance of human nature, we must choose among the alternative emotional guides we have inherited. Either politically and sociologically in designing societies (the second dilemma) or biologically in designing individuals through future molecular-engineering techniques (the third dilemma), we must choose among and alter the components of the very essence of our humanity.

Most recently, Wilson has attempted to translate the conjectures of *On Human Nature* into testable, scientific hypotheses. In *Genes, Mind and Culture* (1981), Wilson and his co-author Charles Lumsden theorized that genetic and cultural evolution are tightly coupled, and the nexus of their interaction is the individual mind. The key intermediates in the "coevolu-

tionary circuit" that runs from genes to culture and back are the "epigenetic rules"—the genetically coded developmental regularities that direct the assembly of the mind. These mediate the reciprocal interaction of genes and culture by determining the brain's sensory ability to perceive *culturgens*—the units of culture—and by shaping its cognitive capacity to process acquired cultural information.—JEFFREY SAVER

“. . . We have set out to explain religion itself as a materialistic phenomenon. This is a distinction that I believe gives humanism the decisive edge over religion.”

Saver: Let me begin by noting that your writings suggest that you feel that the topic of religion is in many ways a special one, that religion plays a particularly important role in human life and offers tremendous promise to sociobiology as a phenomenon to be explained. You have even written that, "the sacred rituals are the most distinctively human." Why did you say that?

Wilson: I said that because sacred rituals are among the cultural universals and are generally regarded in most cultures as of overriding importance, taking precedence over almost anything else. And because they are affective—that is, they produce such powerful emotions so readily. It is a common experience to observe people go through startling mental transformations in connection with ritual or tribal religion. And sacred rituals typically entail the most complicated domain of culture in each separate society. These features together indicate to me that there is a very powerful, emotive force built into human beings that strongly influences them to produce affective and elaborate religious systems.

Saver: Nonetheless you have argued that scientific materialism is now in a position to deal a final blow to religion. You have suggested that the increasing power of sociobiological accounts of the evolutionary sources of religious belief will undermine the religious position. However, Hume, Freud, and many others in the past have advanced plausible, even compelling, explanations of the behavioral basis of religion, and religious belief survived these earlier attacks on much the same front as the one you hold is crucial now. How would you respond to the suggestion that you were falling prey to what you yourself have called "the humanist's touching faith in the power of knowledge and the idea of evolutionary progress over the minds of men."

Wilson: I argued that scientific materialism is currently posing a new challenge to religious belief because up to this time no one has thought through the full implications for religion of the Darwinian evolution of the mind. Consider, for example, what Charles Lumsden and I called, in our book *Genes, Mind and Culture*, "the epigenetic rules." These are the features by which the mind is assembled. In some instances they are very strict, narrow procedures, in others much more subtle and flexible; but all are nevertheless rules materialistically based on physical brain mechanisms. Very few people have thought carefully about the implications for religion of this

conception of how the mind originated and focused genetic evolution in individual mental development. And the more we know about the neurobiology of the brain and mind—a subject that is expanding exponentially fast—and the more we understand from population biology and sociobiology about the origins of social patterns during Darwinian evolution, the more likely it is that before very long we will have a much fuller, and maybe intellectually fully satisfying, account of the origin of religion in Darwinian terms. And if that is the case, then we—we the materialist, humanist scientists—have not simply proposed explanations of phenomena around us that compete with the traditional, mythological religious explanations, but we have set out to explain religion itself as a materialistic phenomenon. This is a distinction that I believe gives humanism the decisive edge over religion.

But of course no one expects that the realization by neurobiologists and philosophers of the biological meaning of religion and their resulting rejection of most traditional religious claims will result in a tidal wave of materialism that sweeps around the world. Materialism is still largely an upper-middle-class, educated, elite phenomenon because it requires the possession of so much information. It also requires a certain amount of material security, so that the mind is not being repeatedly staggered by the threats to its survival for which evolution has had literally hundreds of thousands of years to prepare it via the shortcut of religion. So you can't expect more than a tiny fraction of the population to see the import sociobiology has for religion, not right away. What the new sociobiology does seem likely to threaten is theology. It will threaten the Hans Kungs and the Billy Grahams of this world, within the seminaries and academic halls, not the religious pulse itself. The Averrhoist dictum holds firm: Philosophy for the philosophers, religion for the rest.

Yet, I believe a time will come when scientists will be far more interested in religion, mainly as a phenomenon for analysis, and the schizoid character of intellectual life, particularly scientific intellectual life, will tend to yield to a more monistic view of the universe. At the moment there are a large number of philosophers, scientists, and others who maintain a pure, natural scientific approach to the large scientific problems they are dealing with, but in matters of ethics and personal belief they are able to be religious, or to concede that part of the universe to the theologian. I don't believe that honesty will permit us to continue this easy compromise much longer.

Saver: Do you think that this affluent elite who are able to take on the materialist view should seek to expand its following? Should they proselytize it at all?

Wilson: Yes, I think they should. That's something I worry about a lot. As you know, humanism right now is a dirty word around the country. I was really surprised to see that happen, frankly—that the fundamentalists, the New Right, would take as their target something called secular humanism. And, to put a lighter touch on the matter, I'm disappointed that *On Human Nature* has not been a major target by the right wing. It would have made my life at Harvard much more comfortable to be targeted by the New Right and its allies instead of just the New Left. But I do think that, faced with this kind of challenge, and with the real dangers that organized fundamental, dogmatic

religion presents around the world, a more powerful counterforce has to be mounted.

Religion is a great deal more than just the opiate of the people, the happy pill for people to take during rites of passage—death, marriage, and so on. If it were only that, it would be fine. I'm willing to swallow that pill myself. If it really did simply provide personal comfort, I think most scientists and materialist philosophers would say, "Indeed, religion for the rest and we won't worry about it." But it is much more than that.

The emotional power of religion is too easily captured by nationalism and madmen's fantasies. Parts of the Muslim world now are a perfect example of this—religion has become the substance in a new sea of fanaticism. It has been adopted by people who are quite capable of leading their followers to suicidal actions. In the newspaper this morning I read Khomeini's latest pronouncement. He said, "What is a dictatorship? A dictatorship is that movement which opposes the will of the Muslim Council." You have madness like this that is predicated . . .

Saver: Such doublespeak . . .

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Wilson: . . . It's obvious doublespeak and its powered by the authority people are able to surround themselves with in the name of religion. Elsewhere in the world we can see how in other cultures religion or religionlike fervor produces fanatical political movements. I would include here many of the world's revolutionary Marxist movements.

But remember too that a large part of the leadership in many places does consist of upper-middle-class, educated people. It doesn't really matter if the population of the state of Tennessee believes in the literal interpretation of the Bible if enough of its leaders are educated enough—have been reached by enough training and experience, including science training—to know what the score is.

Saver: What do you think of the threat to biology posed by the creationists in the United States? Will the creationist movement sputter or is it here for some time?

Wilson: I couldn't predict. As I said, I was taken by surprise at its revival, so I don't consider myself a very good social prophet. I would say it's a menace and hope it's just a passing movement.

Remember, it's easy to exaggerate the power of groups like this. One could get the impression from part of the New Right and some organized religious groups that to end abortion is the overwhelming will of the American people—and of course, as always, God. Not at all. I don't have the exact figures, but something like 60 to 70 percent of the American

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people are in favor of abortion. A substantial percentage of that, probably a majority of the American people, would favor some kind of governmental support for abortion, at least for people who are disadvantaged or victims of rape. So the absolutists constitute a minority group that may wear out its welcome in a few years.

Saver: Do you think that, in the contest for adherents, scientific materialism has any competitive advantages over the various religious faiths or other intellectual frameworks?

Wilson: Well, scientific materialism does have a unique advantage in that no competing scientific materialisms exist. There have supposedly been about 100,000 religions in the history of man, but only one scientific materialism. The church of scientific materialism is kept united and pure because its assumptions and conclusions are always being tested. Any found impure—a theory that doesn't work, a fact that turns out to be incorrect when double-checked—are banished.

But as to how well it can compete with the religions, that's hard to say, because, as I pointed out in *On Human Nature*, it doesn't have their emotional punch. It does not have the capacity to trigger those deep limbic responses that give you such satisfaction when you hear a beautiful Haydn mass or watch a parade on the Fourth of July. You just don't have that with scientific materialism, and that's its great disadvantage. In this case, enlightenment really does short-circuit and circumvent the elaborate biological reinforcing mechanisms that have made us a group-oriented, religious species.

Saver: Would you oppose a Positivist, Comtean scheme to elaborate rituals around scientific materialism?

Wilson: Yes, absolutely. Let me say I'm a great believer in rituals, but the pathetic example of Robespierre and Comte in the history of this subject suggests caution in any attempt to ritualize scientific materialism itself. I think it was Robespierre who, shortly before he was arrested and deposed, wanted to change all the churches in France to Cathedrals of Reason, with pomp and ceremony devoted to the god Reason. His fate and that of the revolution do not speak very well for the impulse. And Comte, as you mentioned, wanted to do much the same thing: enthrone reason and materialism.

I think the way out is not to enthrone materialism, but to employ it as a cleansing fire through which all our assumptions and decisions about ourselves, our meaning, and our ethics and morals are passed. And that will come about increasingly, I believe, as the social sciences get a firmer underpinning—when they finally give up this ridiculous resistance to biology and accept it as what it is, a powerful potential ally. When we start bringing neurobiology, genetics, and evolutionary theory together to build a much stronger social science, then we can finally begin to put our basic assumptions and procedures through purifying tests to evaluate their truthfulness and effectiveness.

And, also, I *am* a great believer in ritual and ceremony of a secular nature when it is connected with real events in life. I don't know if the Harvard Commencement (the oldest truly American ceremony) moves you the way it does me, but for most people it's a reaffirmation and an uplifting experience, in the same way that religion is. One can surround the rites of passage—birth, assumption to adulthood, marriage, death—with beautiful ritual and in so doing draw on the whole history of the species and human social institutions in a way that provides the kind of deep satisfaction that religion also provides. Combine this with a more realistic and scientific view of the world and ultimately we could satisfy both parts of the brain.

Saver: The “second dilemma” you stated in *On Human Nature* asked on what grounds and in what direction we shall decide to aim our energies once a more powerful biology of social behavior has revealed to us the evolutionary sources of our basic drives and goals. This concern calls to mind similar questions raised by thinkers like William James in *The Moral Equivalent of War* and Konrad Lorenz in *On Aggression*. Both of these men recommended that mankind undertake a commitment to tame and overcome nature as a way to beneficially redirect the aggressive biological drives that lead to conflict and warfare in modern society. You seem to offer instead an ideal of scientific discovery as a higher goal to which we might commit ourselves. This raised in my mind two questions. First, why did you not suggest the ideal of taming nature?

Wilson: Because I'm a biologist. In particular, I'm an evolutionary biologist and a naturalist, and that makes an enormous difference in the way I view the world. Typically, the grand scientific thinkers have not been trained in natural history. That may sound strange to say about Konrad Lorenz because he is naturalistic in his approach, yet he knows only a very small number of animals. When you have been trained in the tradition of natural history, particularly in the tropics, you have a better appreciation of the staggering complexity of the biosphere. You acquire a sense of true awe at the astounding range of species diversity that has stretched across billions of years of history.

I like to say that you can scoop almost anywhere two handfuls of earth and have enough in your hand to occupy you for a lifetime, be able to embark on a kind of Magellanic voyage through inches of soil. It's not generally appreciated, but there's more complexity in such a fistful of life on earth than there is on the entire surface of all the other planets put together. One ant contains genetic information that, if measured in bits and then transformed into words, would just about fill all the editions of the *Encyclopaedia Britannica*, from the first one published in 1768. If we could turn inward, not narcissistically to ourselves and the human species, but inward to the biosphere, and recognize its special character, we'd have an almost unlimited scope for discovery, exploration, and appreciation.

Sure, tame nature to the extent necessary for human welfare. Convert that arable portion of the earth necessary for food production to maximum productivity. But look forward to gaining almost unlimited satisfaction for the human mind from scientific exploration of the living world we have inherited. In terms of what could be known, despite the fascinating

information we've already gathered, we must count ourselves at the dawn of biology and naturalism. This exploration would also include a study of ourselves, the history of our own species and how the human mind works. To me, that's an outward-looking, potentially almost endlessly satisfying enterprise to offer the world.

Saver: You may have just touched upon an answer to my second question, but let me nevertheless ask it. How would you reply to the charge that—unlike the ideal of conquering nature, which would require the efforts of people on all levels of society, galvanizing individuals at every intellectual level—your future would unleash the energies of only a scientific, intellectual elite?

Wilson: I would disagree. To discover doesn't entail being first to make an important abstract generalization. It includes that of course, but it also can mean discovering in the sense of the gardener or the amateur naturalist. Even the average person today could be transported to the Amazon or Costa Rica and within a week be seeing things that no other person has ever seen, or at least rediscovering known phenomena for themselves in new places and new contexts. And as education gets better, this sort of personal exploration can really become much more advanced than it is now. I don't think this is an exclusionary, elitist view of the world at all.

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In fact I see it as by far the best, most human way to view the world. Otherwise, without any kind of appreciation of the biosphere for its own sake, without the joy of exploring it and knowing it that you can transmit to people so readily, you are in danger of having the mass of people defining themselves with reference to inherently inferior artifacts. I don't think the human mind evolved hundreds of thousands of years to live in a steel and concrete cage. It evolved in a way that tends to open it out toward exploration, especially the exploration of life.

People do have a strong tendency to appreciate and love life. I use the word *biophilia* to stress this natural human impulse to affiliate with and even to love living things. It's no coincidence, for example, that most science fiction entails life, either at the fairly crude level of a transference of human life, politics, or social existence to some distant imagined place, or at the more speculative level of envisioning contact with other forms of life. Very little sci-fi entails the real substance of physics and chemistry. How compelling is it in the end to know what lies one kilometer below the surface of Jupiter? But people become truly excited when writers start talking about the prospect of making contact with extraterrestrial life. Then unlimited possibilities seem to open.

Saver: You have offered a majestic evolutionary epic of the mind as scientific materialism's "mythopoeic" vision of the beginning, but I haven't seen you discuss scientific materialism's rather less attractive vision of the end—that is, the running

down of the universe according to the second law of thermodynamics with all its nihilistic implications. Do you see any way to successfully integrate this element of the scientific world-view into an attractive scientific materialism?

Wilson: Each person uses a personal timescale to reflect on the meaning of life. Some, hedonists, live on essentially a weekly timescale. The average person tends to live on a timescale of years or decades. Young adults think in terms of at most ten to twenty years. As they age they tend to extend the scale a bit, thinking about the span of time that remains until the day of their death. Evolutionary biologists are a bit different—they are trained to reason in terms of generations or thousands of years, but still not on a scale of millions of years. Perhaps some physicists feel an anxiety about proton decay over billions of years, but I don't think on that scale. Such a cosmic projection is meaningless not just for our generation but literally for millions of generations stretching as far into the future as one can reasonably conceive. It's a problem that one puts out of mind.

Saver: You have written that "all religions are probably oppressive to some degree." Would a mythopoeic scientific materialism be oppressive, and, if so, in what ways?

Wilson: Well that's an interesting question. It may be that it could become oppressive. It is likely that materialism will gain increasing influence over our thinking, in social planning, in technology, in everyday life. If so, then the need for scientific training and thinking in the scientific mode will grow correspondingly intense, to the extent that young people might be captured by it and virtually forced into a much more scientific education, à la the Soviet Union, which now has its whole population taking two years of calculus. In the wrong hands or with poor planning, the trend could lead to a withering of certain of the creative enterprises—art, music, poetry—that are more prominent in our present culture. Surely there is a powerful call at the moment for *more* science in education. The humanities are on the retreat. Science is on the march. I don't think that it must necessarily work this way, but it is possible that science and scientific materialism could become so overwhelmingly important in everyday life and education that it would be oppressive in this narrow sense. And certainly there is a feeling among humanistic scholars that science is becoming oppressive.

Saver: Let me ask you about the charge that some critics have advanced that sociobiologists sometimes fall prey to the naturalistic fallacy—violating the categories of logic by trying to derive moral values from scientific facts. In contrast, you have argued that we can no longer naively go about deriving "oughts" without any reference at all to what "is," that all our ethical decisions must be informed by scientific information . . .

Wilson: I have attempted to weaken the naturalistic fallacy or, more precisely, to rework the naturalistic fallacy into less of a fallacy. Yes.

Saver: But your argument seems to leave behind an important residual issue. Even if social planners make full use of scientific knowledge, you seem to envision that they could still be confronted by several different "oughts" to choose between, several different possible and desirable biological-social patterns.

Wilson: I think that will always be the case.

Saver: Now is there any way that a “biologized ethics,” such as the one you have called for, could help us make a final choice among competing societal goals in addition to telling us what the cost and benefits of choosing each would be?

Wilson: That’s a profound question, and at the moment I can’t answer it. It’s just as simple as that. In *On Human Nature*, I felt satisfied to get as far as offering a means of performing the cost-benefit analysis. Even there we’re still on shaky ground, though our recent work is moving in the direction of making such evaluations more feasible. Also, I tried to identify those present injustices that are clearly due to outdated religious dogma about what is natural in human behavior, as opposed to modern biological understanding, which I consider to be much closer to the truth.

But aside from that, I don’t have any prescriptions. This is a fundamental philosophical issue that has yet to be properly addressed by philosophers. Peter Singer did try to deal with it in *The Expanding Circle*, but to my mind not very successfully. He reaches the point you described, accepting the main premises of sociobiology but then asking, “Where do we go from here?” His answer is to propose that humanity continue to allow the circle of its concern to expand, insofar as we are able in practical terms and consistent with our nature. As an ethical precept, that’s hard to argue with, and at the moment I don’t have any additions or newer ideas on how to handle the implications. But I don’t think it is grounded solidly enough to be a really satisfying solution.

Saver: In *On Human Nature* you wrote, “I also believe that it will soon be within our power to identify many of the genes that influence behavior.” How close do you think we are?

Wilson: We’ve come much closer since I wrote that. The number of genes actually identified in the four years after I wrote *On Human Nature* jumped 50 percent, thanks to the new techniques being developed in molecular biology, and quite a few of those have been associated with behavior. Since that time, for example, investigators have identified genes that alter reactions to particular odors and other genes that differentially affect performances on four of an array of fifteen standard cognitive tests. The chances of actually specifying the genes affecting schizophrenia, or the rate of certain mental processes, or fluctuations in temperament, are now much more likely. We know that much of mood and mental activity is based on neurohormones and neurotransmitters. Such molecules are being chemically defined at a rapid pace. They are used increasingly in psychiatry to diagnose and correct certain conditions, and the evidence has become quite strong that their levels of production are under genetic control. So I would say that the odds are very high that within ten years—twenty on the outside—a number of genes will have been identified whose effects can be traced through the actual production of particular chemicals in the brain to measurable properties of temperament, mood, and even cognitive ability.

Saver: This progress in specifying the genetic basis of behavior makes even more urgent the “third dilemma” that you raised at the end of *On Human Nature*: the issue of taking charge of our own evolution through eugenics or genetic engineering. It seemed to me that there you shirked trying to

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solve this dilemma, even though you had not hesitated to at least grapple with the similar second dilemma, which also demanded that we choose a future course by selecting among the component elements of human nature, albeit culturally and not genetically. Do you now have any feeling about how to approach the third dilemma?

Wilson: You’re right, I side-stepped the third dilemma, in part because I already had enough controversy on my hands in that book. At the time *On Human Nature* was written, genetic engineering was still quite a controversial subject on its own. Now that has abated somewhat. Attitudes among scientists and the educated public have visibly shifted in the past several years, and people are a lot more sensible. Not only has much of the fear of recombinant techniques and genetic engineering in bacteria dissipated, but medical scientists have been able to talk seriously about such topics as genetic surgery, using advanced techniques to modify the most defective human genes, the ones that cause sickness and death.

And you’re correct in observing that the second and third dilemmas are basically similar. In one we merely have the difficulty of deciding which of these limbic satisfactions we want to cultivate and which we must find a detour around, and in the other we actually have the option of engineering the genes at a more basic level so that we can permanently wipe out a drive or enhance another drive. At first the two sound different, but they are fundamentally the same moral problem.

I had thought when I wrote the book that the time when we would have to confront the dilemma was sufficiently far ahead of us that we could concentrate on the first two, and on the biology of the mind and the problems of ethics. I didn’t expect the pace of technological development to accelerate so quickly. So I was surprised when Matthew Meselson, a molecular biologist very much involved in biotechnology, stated at a recent meeting of the American Academy of Arts and Sciences that the advent of genetic engineering of human beings is possibly closer than we had ever dreamed. He said that we are going to have to soon start thinking about the biological basis of our own humanity, in order to make decisions about what we wish to tamper with and what not. He even went so far as to cite sociobiology as a possible means of getting at the fundamental problem.

So the experiment is probably now worth talking about. How could we change our basic nature with genetic intervention? With more knowledge of the genetic assembly of the mind, you could tinker with the strength of the sex bond, or the pleasure we get from children. It still sounds like science fiction to me, but it is possible that in a couple of generations human beings can actually be created who respond to the world very differently from the way you and I do, people who

take deep pleasure in rural communes or space colonies—human nature could go in any of a great many directions.

Saver: Do you think that we should indeed desire to tamper with our basic nature? Leaving aside the matter of which direction we might move in, do you think that we should intervene at all?

Wilson: Again, that's a question I can't answer. Suppose we really could do it. Should we? And, if so, what direction would we choose? How might we go about making such a momentous decision? There may well be something within us that will prevent us from making *any* changes. In the end we could say, "All right, fellow hominids, we are sad, mixed-up monsters, but we are what we are, and this is the way we would like to remain. That is our basic humanity, and there is something fundamentally wrong with changing basic humanity. Let's improve our life without leaving home."

The artificial intelligence (AI) people are coming at this problem from a fascinating and entirely different direction that is nevertheless converging on sociobiology. They are talking realistically now about the actual duplication of human intelligence in machines. They have started to add to AI devices not just the capacity to solve problems but also the capacity to formulate them. And they might soon supplement rationality with a limited form of emotive feelings, building in rewards for going in certain directions and not others. In short, they are creating machines that are increasingly human in at least a few rudimentary features. The most adventurous are also beginning to pose a troublesome question: "What will be left to human beings? If machines can perform most of our reasoning, even seek *new* problems to solve for us, what does that leave us?"

One possible answer is that it leaves human beings with their limbic system. It leaves us with all the nuances of altruism, jealousy, sex bonding, exhilaration, tribal lore, and other mostly primate traits that we inherited and do so relish on a day-to-day basis. Maybe it's these that we will try to preserve. Of course we will continue to train our reasoning faculties and be better educated than we are now. But we will not try to advance with AI to the point of being able to actually produce a fully human-primate brain in a machine. And, for the same reasons, we will decide not to alter mankind genetically so that we ourselves become more like machines. We will refuse to start tampering with the limbic controls and become cool, rational superdrones. Instead we will choose, I believe, to live in symbiosis with artificial intelligence. We will have the emotional limbic system; it will have a still indeterminately larger part of the rational cortex.

Saver: In suggesting that evolutionary pressures have selected for an inherent indoctrinability in man, you wrote: "In support of this simple biological hypothesis is the fact that the blinding force of religious allegiance can operate in the absence of theology." Does it operate in the dedication of scientists?

Wilson: Yes, I think, a great deal. Scientists work with very variable motivations. Most scientists are not excessively bright—and this includes university professors. Some of the most successful are essentially supertechnicians. They're very bright people, remarkable, and have done extraordinary things, but if you looked inside them you'd find basically business people—success-oriented careerists with great fascination for a

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certain kind of problem solving. They may well devote their lives to being the first to isolate a particular hormone to develop a certain technique. And that's it, *finis*. Many of them go home to their families in the evening without ever thinking about the evolutionary biosocial significance of their families; some attend church without being bothered by the incongruities between prayers and science.

For those who do think beyond these confines, who have philosophical ambitions or unsatisfied needs in growth of spirit, I would say that scientific materialism is very much of a belief system and can be blinding in terms of its effects on attitudes and ways of thinking. However, I believe that this effect is likely to be lessened in the future as the social sciences, sociobiology, and neurobiology become more sophisticated. Then when we ask, "What is the meaning of man?" or "What is religion?" there will be more ready answers available in textbooks and the popular press. It won't be so much a matter of blind faith, but instead a domain of intellectual inquiry open to everyone.

Saver: In your own textbook, *Life on Earth*, you call the evolutionary struggle for survival "the ultimate existential game," and in *Sociobiology* you sympathetically quote Camus. How would you distinguish scientific materialism from a competing atheism, existentialism?

Wilson: What I like most about Camus is the poetry in his prose, the way he vividly captures the existentialist attitude. As much distaste as I have for most French philosophy I've read, I have an almost unnatural attraction for that common French style of writing that is polemical, heated, and tends to cut to the center of things quickly.

As I understand the original French version, existentialism is a relatively uninformed and attitudinal approach to the meaning of human life. Its central pronouncement is that man is alone and that he makes himself, that each individual must create himself in life. Now that of course is not incompatible

with a full-fledged scientific materialism. The difference is that the latter is informed. It recognizes that in shaping ourselves we make choices among different biological channels of development along which we naturally tend to move. We have certain epigenetic rules of mental development that guide us with varying strengths in the different categories of behavior. Certain activities give us deep satisfaction innately and hence require a very small amount of learning and effort; others are acquired only with great difficulty but may eventually be very rewarding, while still others automatically repel us. So I look on sociobiology as a development that is not incompatible with existentialism, but which provides a program for acquiring information toward a rational reconstruction of humanity. It can expand the spirit in a way that is a great deal more comforting, efficient, and hopeful than the original existentialism.

Saver: This hopefulness runs counter to what seemed to

“I look on sociobiology as a development that is not incompatible with existentialism, but which provides a program for acquiring information toward a rational reconstruction of humanity.”

me to be an apocalyptic element in some of your writings. You have suggested that at some point, roughly one hundred years from now, man will subscribe to a fully materialistic view of behavior and so be deprived of the support of all religious “illusions,” be facing momentous decisions about where to aim his evolutionary future, and, having overcome the problem of supplying his material needs, be confronting his residual spiritual emptiness. You often seem very happy that you can say that all this is one hundred years away, that it’s not for our generation to confront. But do you have any words that you think would be of help to those who will be living at that critical time, if it indeed comes to pass?

Wilson: Yes. Your question is drawn, I think, from the wistful note with which I ended *Sociobiology*. I was thinking very much in terms of sociobiology’s contrast with dogmatic religion, with all the pleasures and, as Camus said, the “illusions and lights” of unexamined beliefs that compel us to feel awe and mystery and sustain us over a lifetime, if we are somehow able to remain committed to mysticism. I was enthusiastic about neurobiology and sociobiology and envisioned that one hundred years would be enough to produce an exact social science and a pretty complete understanding of how the mind works, where it came from, and what the meaning of it is. And I concluded that this knowledge will take away the illusions and the lights that most of humanity so conspicuously enjoys—but that we still have a century before that really takes hold.

My thinking brightened somewhat as I wrote *On Human Nature*. I now feel that, once we have achieved that understanding, we will have opened up endlessly branching new avenues of exploration in the examination of life and mind. Once you know how the violin is constructed, you can still compose and produce original melodies of unimagined beauty, and perhaps with even greater frequency. And then there will

be the rest of the world, the rest of life, which a fuller materialistic view will free us to explore in an unhampered and more satisfying manner. I’m not sure if I’ve answered your question, but it is true that from the somewhat gloomy, fatalistic position at the close of *Sociobiology* I’ve moved to a more open, optimistic way of looking at the future.

Saver: I’d like to ask you a more personal question. One cannot help but be struck by the impression that, despite being an opponent of dogmatic religion, you have a genuine sensitivity to the religious viewpoint and a very real sense of what it is the atheist has lost. Does this knowledge spring from a source in your upbringing and religious background?

Wilson: Yes, it does. I was raised a Southern Baptist in Alabama and Florida, and had a traditional Baptist upbringing, including baptism and being born again at the age of seventeen. I was immersed, literally immersed in the chapel water tank, in a strong evangelical tradition. One holdover to which I readily admit is the delight I take in constructing a good sermon, and I suppose *On Human Nature* reflects this. In a recent *Time* article, the writer was uncomfortably close to the truth when he called me “the chief preacher of sociobiology.”

I abandoned the doctrines of my religious background rather early, in the traditional manner of an emancipated young college student and intellectual. Yet I remained very sensitive to the deep religious needs of people that I had perceived so vividly when I was growing up. Mine was not the experience of a young wealthy New York Episcopalian or secular upper-middle-class Jew with a certain ethnic affiliation blended with rational detachment. I saw the power of the charismatic religion all around me, in my family and the people I lived with, and therefore could appreciate the strength of the need that people have for some kind of satisfaction of the religious impulse. Probably a major motivation in my later research, particularly now that I’ve become more involved in philosophical and other generalizing scholarship, has been an attempt to recapture that religious feeling, but in a more sustainable form.

Saver: My last question is this. You’ve said that the cosmological God is a last, unassailable redoubt of theology, that science will never be able to disprove the concept of God as creator of the universe. You have also said this concept of God cannot alone sustain organized religion, for by itself it is unable to unleash the deep emotions and allegiances of man’s biological religious impulse. However, I’ve never seen you discuss whether you yourself believe in the cosmological God. Do you?

Wilson: I am at this point uncommitted. I won’t say that I’m an agnostic, since agnosticism maintains that one *cannot* know. But I’m not averse to the idea of some intelligence or organizing force that set the initial conditions of the universe in such a way that ultimately generated stars, planets, and life. Physicists tell us that the physical constants and certain parameters of the known physical laws had to fall within a limited range in order to permit the evolution of molecules and aggregate matter. If they had been set otherwise, you would have had a universe that was eternally composed entirely of energy or low-level subatomic particles. But in fact the variables are adjusted and do exist within the limits required for atomic build-up, planetary bodies, and the potential for life to develop. And that’s worth pondering. ●