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Evolutionary Philosophy

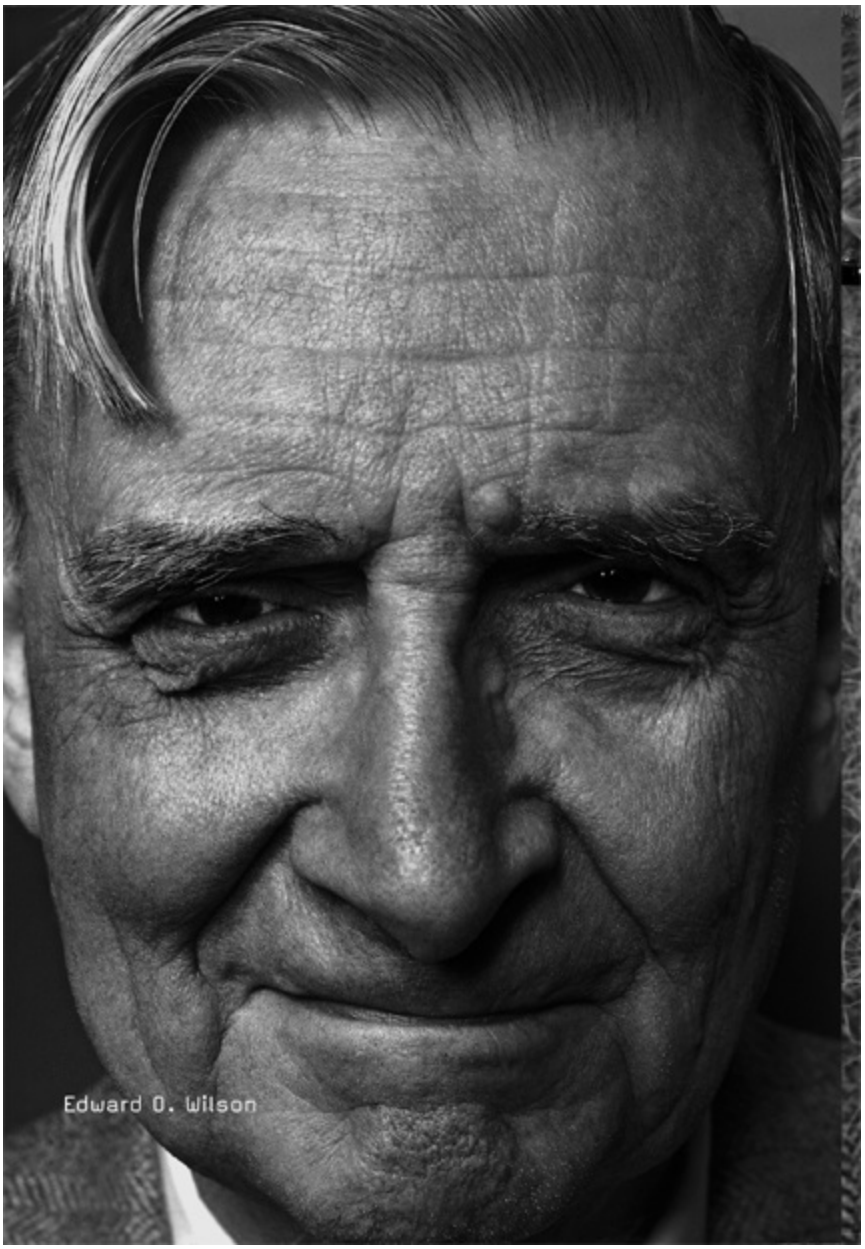
Edward O. Wilson and Daniel C. Dennett

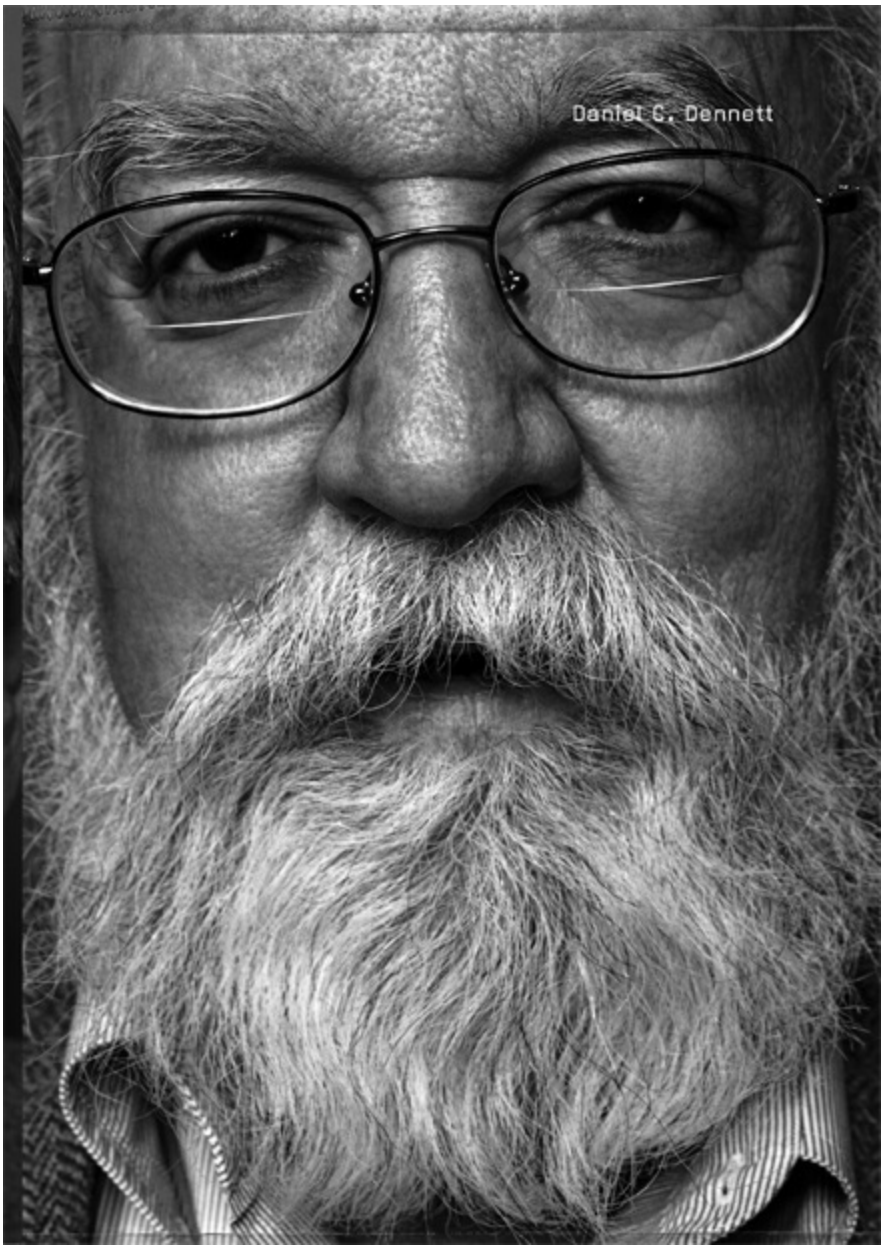
The biologist and the philosopher meet up to talk about evolution, ethics, and the origins of religion.

Edward O. Wilson is a biologist. Daniel C. Dennett is a philosopher. Both believe that understanding evolution is essential to understanding our humanity. Despite an incipient blizzard, they met up to talk about God, evolution, incest, social norms, and, of course, ants. This conversation took place in March 2004, in Edward O. Wilson's office at the Museum of Comparative Zoology at Harvard.

Edward O. Wilson is a distinguished biologist, naturalist, and author whose seminal works—including *Sociobiology, The Diversity of Life, Consilience*, and the Pulitzer Prize winners *The Ants* and *On Human Nature*—have led to insights across a wide range of fields, from evolution to animal and human behavior. As the intellectual force behind the Encyclopedia of Life, a free, online collaborative portal that will document all living species known to science, Wilson continues his work as educator, researcher, and champion of biodiversity conservation. He is currently University Research Professor Emeritus and Honorary Curator in Entomology at Harvard University.

Daniel C. Dennett is a philosopher whose research centers on models of human consciousness, the conceptual foundations of evolutionary biology, and the ideas behind the practice of science itself. Though Dennett has gained a high profile as one of the "new atheists," he is perhaps best known in academic circles for his "multiple drafts" (or "fame in the brain") model of human consciousness, which describes a computational architecture that could explain the stream of consciousness. Author of numerous books, including *Content and Consciousness, Elbow Room, Darwin's Dangerous Idea*, and *Breaking the Spell*, Dennett is currently the co-director of the Center for Cognitive Studies, the Austin B. Fletcher Professor of Philosophy, and a university professor at Tufts University.


Edward O. Wilson



Edward O. Wilson: It seems to me that the thing we have in common and why we can talk together—whereas I wouldn't be able to talk to most people in the humanities—is the perception that evolution is the key to understanding the human species. Where, in your judgment, is philosophy going, particularly the philosophy of science? Is there any merit to what Bertrand Russell once said, that science is what we know and philosophy is what we don't know? How do you see the picture between philosophy and science?

Daniel C. Dennett: I think that philosophy of science has actually become much better. We had our early period, which was very programmatic and was quite prepared to just figure out where science should go and where it shouldn't. And that was brave and foolhardy and it had some great moments, but people saw better, and now people in the philosophy of science have to be well trained. You quoted Bertrand Russell. Science is what we know; philosophy is what we don't know. I'm actually content with that, because I view philosophy as what you're doing when you don't know what the right questions are. And that's not trivial. If you can help sort out the bafflement and controversy and smoke and battle, that's work worth doing.

You may want to disagree with this, but it probably isn't too important for an entomologist to know the history of the field going back to the eighteenth century. But it really is important to know the history of philosophy if you're going to do philosophy, and the reason is actually very simple. The history of philosophy is a history of very tempting mistakes, and the people that we study in the history of philosophy—Plato and Aristotle and Kant and all the rest—they were not dummies. They were really smart people and they made stunning errors. These are very tempting mistakes. So you really have to learn the history of philosophy if you're going to do it well. Or you have to learn some of it. Because otherwise you just reinvent the wheel. You end up falling in the same old traps.

EW: Well put. I tried to encapsulate that similar notion by saying that philosophy consists of the history of failed models of the brain.

DD: Not just failed models of the brain, failed models of everything! *[Laughs]*

EW: *[Laughs]* It's true. Let me press this matter just a little bit further without descending into the abyss. Suppose that a young neuroscientist with a conception of how the brain might work proceeded with the most advanced technology. Suppose he chose not to look at the blind alleys of the past but to press on from this new phenomenology that's being produced. Wouldn't he succeed just as

well?

DD: No, I don't think so. I mean, it's possible. But I think the odds against it are actually very high. It's not as if he would be proceeding without philosophy. It's just that he would be proceeding with seat-of-the-pants philosophy—with his gut instincts and his homegrown intuitions and what seems to make sense to him. Now, if you're lucky, that carries you on just fine. But on this topic in particular, on the mind, we can be pretty sure that some things we take for granted are just wrong. If they were intuitive, we would have gotten them a long time ago. The chances of just grubbing your way through the pitfalls and making it to the finish line with really good theory, all I can say is, "Go ahead and try, buddy, but I don't think your chances of success are very high."

EW: If you have a map of the minefield, use it.

DD: Right. Take advantage.

EW: It doesn't hurt to take Philosophy of Science 101.

DD: Yes.

EW: You know, you certainly cannot proceed very far on any of the great questions of philosophy, including ethics and the significance of religion, without an understanding of the full history of humanity. And by that I mean the deep history going back millions of years.

DD: Exactly.

EW: It is when consideration of the great questions of the human existence are limited, as they typically are, to the last ten thousand years, then you really are only considering a thin slice of time for human history. To many scholars, that might seem like all you need, but if you believe that the brain is not a blank slate, that there are deeply embedded programs of prepared learning that guide people in their mental development, then it makes sense to try to understand the deep history of humanity.

DD: Absolutely. I think that the great thing about Darwin's idea is that it's a unifying idea. It is the one theoretical perspective that has the resources, not yet fully exercised, to unite the worlds of meaning

and beauty and truth and human aspirations with the world of matter and motion. As you say, the last ten thousand years are a twinkling of an eye. And if you don't understand how this is a very recent twinkling—a series of magnificent effects which had to be the result of things laid down eons before—then you're going to misconstrue your own treasures.

But beyond that it requires recognizing that such a thing as human creativity is itself a fundamentally mechanical and algorithmic process that's fed by many streams. Every single stream, every source of meaning in the world, ultimately has to be a fruit of the tree of life, and that means you have to ground it ultimately in evolution. But the idea that evolution can tie these two great aspects of the universe together is very unsettling to many people.

EW: We've agreed in our writings, both of us, that the key question to answer is exactly how the creative process came to be and why it's so extremely rare. In fact it is singular in three and a half billion years of evolution.

DD: Yes.

EW: I've dealt with this question in recent research and writings on the origin of the social insects and the fact of animal society generally, in which there's a high degree of altruism and the development of a worker caste. This is a conundrum that Darwin himself faced and thought would be fatal to his theory if he could not explain how you evolve worker ants that cannot reproduce themselves by natural selection. Of course, he essentially resolved it. The point I wanted to raise, however, in connection with this, is not how to resolve it, but rather to point out how extremely rare it is.

I recently made a count of all known cases of animal societies, in which there's a reproductive caste and there's a sterile worker caste. And the number is about twenty. And that is out of tens of thousands of independent evolving lines.

DD: I didn't know there were that many aside from the famous naked mole rats and us.

EW: Well, the rest of them are outside of that one mammal case. Or in the arthropods. In shrimp, aphids, beetles, and so on. But this is an extremely high bar to jump. So much so that even though evolving creatures in the land and sea have been poised to cross this bar, it's only been done, so far as we know, twenty times. And this takes us back to the question of why evolution has produced only one intelligent, self-reflective species like ourselves. I don't think you and I can sit here and answer that question.

DD: I don't.

EW: But it certainly has got to be one of the great remaining problems of science.

DD: But I also think there's a trap if we ask it in a certain way. I don't think you're going to fall in that trap, but a lot of people would. Evolutionary theory is unique in all of science in that it's a theory of things that almost never happen. Every birth in every lineage is a *potential* speciation event, but almost none of them are. The whole biosphere depends on these things that almost never happen. Mutations are almost never good. But it's the ones that are advantageous that do all the work. So it's tempting to ask a question like the one that you've just asked about why sociality doesn't emerge more often. Well, I don't think there's a reason why more of them don't, because like everything else in evolution, amazing things result, and one should simply get used to the fact that you don't have to explain why it doesn't happen. You only have to show the sufficient conditions, and every now and then they arise.

EW: We're back to the absolute necessity of understanding evolution, its causes and the many roads it's taken, in order to understand the human condition.

DD: Yes.

EW: I like to look at phylogeny, the actual step-by-step of evolution as it's occurring, as a maze. Species enter at one point in a certain condition. Typically we call this a primitive condition and of course it can be the opposite. It can be they're entering in order to go downhill and become parasites or cave dwellers or something regressive.

DD: Tapeworms, for instance.

EW: But let us say that it's a species that enters the niche and starts to evolve and divide into different species. What they have entered is a great maze of possibilities. A maze including the other species that serves as competitors, as biosphere engineers, as predators and food, which is constantly shifting. Most of those species passing through that maze have the opportunity to change from a purely solitary lifestyle to an advanced social lifestyle with division of labor between reproductive individuals and workers, and helpers that contribute their labor without reproducing. Most species will not make it because they will go up blind alleys. But a very small number will make their way through and come close to the breakout point. We find in those wasp and cockroach species that broke through and created what actually amounts to three-quarters of the biomass of all insects.

DD: Really?

EW: That's right. At least in a tropical environment. It's just an amazing success these social insects had. We find that the lines that achieved it evidently were pre-adapted, meaning they had reached a point where they had everything they needed. The right kind of food, the right kind of advantage that comes from living in a group, the right kind of environment that offers a stable environment.

DD: So we understand ants, termites, and other social insects by retracing the steps they've taken through the maze, and it seems to me that we need to do the same thing with explaining this great unique human breakthrough.

EW: You come to this question that you intimated earlier, having to do with our current lack of a true understanding of the human mind. That is the still hard-drawn distinction made between the great branches of learning and the belief of many on the social sciences and humanities side that there's an indelible barrier—

DD: An unbridgeable chasm.

EW: And that it's pointless and misleading and maybe even harmful

to speak of it. However, I see this not as a chasm but a large broad area of mostly unexplored terrain. Certainly the mind has a central site to explore there.

DD: It's like the two ships in the sea trying to tie alongside each other. We throw a whole bunch of lines across, but there's gonna be a lot of bumping and shoving and people pulling too hard and that's what we're in right now. There's a lot of legitimate anxiety as these two domains have been so independent of each other for so long. Once we get them tied together tight, it'll be fine, but in the meantime there's gonna be an awful lot of jostling and bumping, and that's what we're going through, I think.

EW: There's a lot of anxiety on the part of humanities scholars. I think it's in part because right now natural scientists have the greatest amount of money and prestige. But quite far from damaging the humanities by coming closer, collaborating and building the bridge, or, as you put it, tying the boats together, is one way to gain in strength and prestige.

DD: I think so.

EW: They should look at it as a process of cooperation and claim that middle ground, a good part of it, for themselves. I have noticed that quite a few young scholars in literary theory, and even the visual arts, are beginning to explore this possibility seriously. They're up against a lot of tenured old guard, but nonetheless they see it, and I think correctly, as their chance to do something really new.

DD: But at the same time there're people pulling to some degree in the wrong direction there, too. To my way of thinking, the real problem right now is that we have enthusiasts who oversell, and then we have to go in and correct the overselling and say wait a minute, that's a little too swift. And if we don't do that, then we just seem to confirm for people in the humanities who are most skeptical that this isn't an honestly brokered scientific investigation, but rather an ideological takeover.

EW: It is particularly difficult in the case of ethics, because the normative [refers to guidelines or norms; prescriptive] and the

objectively scientific are so closely mixed. They're talking about developing a science of normative reasoning. That's why I think that the evolutionary approach is absolutely critical.

DD: It is, but here is perhaps the one area where you and I have some disagreements. I think *Consilience* is a magnificent book, but there are some places where I've got to differ with you, where I think you've overlooked some points coming from the other side. The place where you draw the line between normativity and factual exploration is not where I would draw the line, and so this is an area where we should sort out the few remaining points of difference.

Think about some more trivial domain of normativity, like how to play good chess. Now, what is the status of the principles of good chess play? Not the rules, but the principles of good, winning chess play. It's normative. Now, in this trivial case, we know what the goal is. The goal is checkmate, although we can imagine other goals, too. We can imagine somebody writing a book called how to play polite, winning chess, where there would be a particular prohibition of being sort of brutal, the way, say, Bobby Fischer often was in his games. You know, don't humiliate your opponent. Well, that's a different set of norms.

EW: Aren't you conflating game theory with ethics?

DD: Am I conflating game theory with ethics? In a way I am, and on purpose. Game theory is a particular instance, a particular species of hypothetical imperatives. It's looking at two-person or many-person games, and saying this is what the optimal strategy is.

EW: Yes. To achieve a certain goal. But the goal that you pick in playing a game of chess depends upon ethics. That is, you just mentioned the thought: "Shall I humiliate and therefore make the game more exciting to the crowd?" which is one goal. And that is an ethical choice, it seems to me. Particularly since you're going to be dealing with the feelings and the mood of the group. Or one could ask, "Shall I just do it completely mechanically," or, you know, "hold the bum up until the ninth round?"

So that seems to me to raise the question of how to deal with

normative issues, and that is why I believe that ethics, or, shall I say morality, is the behavior by which, if I've got it right, we effect a common ethical goal or program. I believe that the evolutionary approach is necessary to disentangle normative from objective fact-seeking. If the naturalistic view of the origin of ethics is correct, that's essentially an evolutionary view.

DD: Yeah.

EW: Then ethics, the code that we develop, the set of goals that define a culture, evolves to different forms in different societies. Sparta was different from Athens. A society that has come to sacralize its rules and codes of behavior by fundamentalist religion is very different from a more secular country. Iran is different from France. And tracing how their ethics arose and evolved with time can be an objective study.

DD: Indeed it can. But suppose we've done that study. In the same spirit we can say, well now, some people play go and some people play chess and some people used to play chess without castling and we *could* play chess where you move the king two moves instead of one. Which game should we play? Now, that's not an insane question, and it's not just a historical question. It's asking what game should we want to play. And we can compare these different games and decide which ones best serve our purposes. Now the process of doing that can be done well or ill. If it's done well, we can use the very investigation of which game we should play to clarify our own thinking on what game it would be best to play. The question, "What game would it be best to play?" is not an idle question. And that is the ultimate ethical question, and it's a normative question. You don't answer that question, you clarify, you illuminate it, but you don't answer that question by studying the evolutionary history.

EW: You talk like a philosopher on this issue, Dan, and that is in abstractions.

DD: That's what I am.

EW: Okay. *[Laughs]* I see your point. But let's talk about some of these enormously important cultural differences that are now edge

issues in the United States, and see how an evolutionary approach could help to resolve them. Take homosexuality. And perhaps in your philosopher's all-comprehensive mind, I'm moving too quickly to example, but—

DD: No, not at all.

EW: Okay. Let me suggest homosexuality. Fundamentally at the base of arguing trivialities such as whether marriage is allowed is something that's fixed in the minds of people: whether it is natural. Catholic theologians would call it obedient to natural law. One seeks in vain—at least I seek in vain—to find out exactly what the Church means by natural law. But put that aside. People either believe that it is natural in a way that is harmless to society or maybe even to some extent good, whereas others believe it is unnatural and dissolutive in terms of its effects on society. Well, how could we resolve that? We seldom see in op-ed pages and editorials the question of naturalness of homosexuality. And there is a lot to be said: that it occurs at a fairly constant frequency across societies; that it does have at least a partial biological basis; that there is some evidence from ethnographies of other, simpler societies, that homosexuals have a positive value in the survival of families and tribes to which they belong. If these issues were pursued with reference to the key question of what is natural, and then we get down to the next level below that, what is natural in terms of natural selection and human history, we might, if not resolve the difference, at least shrink it somewhat.

DD: Yes. But I think you would agree that part of the problem with setting the question up this way is that *natural* means different things to different people. Let's make a list of some other things that are natural. Shortsightedness is natural. Hypertension is natural. Obesity is natural if you eat too much. There are many things that have deep evolutionary roots that are natural. But one of the glories of civilizations is we've learned to adjust things that might be natural but we don't like them. So I think natural cuts two ways. Artificial fibers for many purposes are just fine. And for some purposes natural

foods are no better than artificial foods. Nudists say it's natural to go without clothes, and yet there's a sense in which they're just wrong.

EW: I didn't mean to say that the guideline of ethical judgment is what is natural. Because of course tribal warfare is natural …

DD: Exactly.

EW: And has always been advantageous in terms of its survival value for groups. And there are many other human behaviors that were natural because they evolved in hunter-gatherer times and that are destructive now because they are so easily overdone. So this then brings us back to the question of the distinction between the ill effects of excess, which of course one has in overeating and the like, and something as fundamental as sexual preference. Sexual preference is not, so far as we know, the result of doing too much of one thing or another. It appears to have a real biological basis, and, if we've pegged it right, may have gotten as common as it is because in past times it was advantageous for families or tribes. So at the very least we're in a position here of trying to moderate people's behavior or develop the arts of diplomacy to reduce tension. We're in a position here of arguing whether we should have tolerance or not.

DD: First of all I want to say that I deplore the attitude of those religious groups and others who want to deny full rights to people who are homosexual. I just think the issue isn't really about whether it's in their genes or whether they decide it. I don't think it really makes any difference. I don't think we should make our policy with regard to homosexuality hostage to the question of whether or not we find that there is a specific genetic disposition for homosexuality. That's not what the moral decision should hinge on.

EW: I agree, but you see what we're doing here is not making the acceptance of homosexuality hostage to the idea of natural. We're preventing the other side from making homophobia hostage to their idea of what's natural.

DD: That's fine. I agree.

EW: Let's take another example. Incest avoidance. There have

actually been arguments that incest taboos were just another form of sexual repression of free sexual behavior. But we now know in some detail that our natural avoidance of incest at the family level has a deep genetic algorithm behind it. And we know the reason for that algorithm without any doubt at all in terms of natural selection. Namely that first-order incest between people—in other words, people who are related by half their genes—is extraordinarily destructive in the production or the rate of production of abnormal children. Now, here we have arrived at something that both by the structures of religious belief in which it's all thought to be the desire of God, and by secular belief, which arrives by studies of human nature and the consequences of actions, are in agreement.

DD: Yes.

EW: So once all that information is put together, particularly the biological information, then the matter becomes a no-brainer for all sides. Well, I'm in the hope that with the evolutionary approach to ethical interpretation of ethical precepts we might narrow the gaps in thinking between different cultures, different groups within cultures.

DD: I think we can. I think it's always going to be indirect. (And you'll say, well, this is the philosopher speaking, because he wants everything to have many curlicues. He's not gonna go straight for the win.) But I do think that the important point is that there is a logical independence between the scientific facts and the normative questions that we all have to face and answer, ultimately politically. We have to reflect on it with the largest group of people and then we have to decide as a group what we think we ought to do. That's the only way we can solve that problem.

EW: That's certainly my position. I was talking about the best route using science.

DD: And I think that using science to inform that political process is really important, and we're in complete agreement there, too. But I want to resist any suggestion, which you may not be making, that the scientific discoveries in and of themselves settle any of these issues. I don't think they settle the issues. I think they only illuminate the

issues. I think that we can't draw any conclusion at all about what we ought to do from even the most perfect knowledge of how we got to be what we are. That gives us a great factual basis then to sit down and say, well, okay, which aspects of this are we content with? We have evolved to have these dispositions and these features, and wouldn't it be good if we could do something about it. There's still room for those questions. It's still a legitimate inquiry.

EW: I think we've come back off our detour to the main highway in agreement. Certainly the precepts of ethics and the morality that comes from them is reached by consensus. It's not dictated from above and it's not dictated by our past evolutionary history. But certainly the past history is key to working out the agreement.

DD: Absolutely.

EW: I would be very interested before venturing any opinion I have, not to put you at a disadvantage, to know what is your feeling about the conflict between science and religion generally? And particularly the more traditional, organized religions.

DD: I'm currently working on a book on religion and science.

EW: I'm not surprised.

DD: And the point of the book is, and perhaps this is even comically philosophical, to acknowledge in a Socratic fashion that I just don't know. Because we don't know enough about religion. We haven't studied religion with the tools of science the way we should. So my first plea is to break the taboo against studying religion as a natural phenomenon. We have to study religion with the same intensity that we study global warming and El Niño. Religion as a phenomenon is one of the most important and influential phenomena in the world, and we are embarrassingly ignorant about it.

Several hundred years ago at the triumph of the Enlightenment, which you and I both admire and wish to restore, many wise, well-informed people were very sure that now that we had science and enlightenment upon us, religion would soon die out. They were colossally wrong. Religion is still thriving in our midst. So what didn't

they understand? What is it about religion that makes it so important to so many people? And how did it evolve? There's an evolutionary answer there, too. And we don't know. There are some very interesting forays into this examination of what you can call the evolutionary biology of religion, and I am hot on the trail of them. Until we know more about how religion evolved to be what it is, we won't know the right way to deal with it. We've certainly made a lot of mistakes in the past. Suppression of religion is almost certainly a terrible idea. Worse than Prohibition. Until we realize why religion is so important to so many people we are powerless to have policies that are wise and well-informed.

EW: Struggle as I might to find a disagreement, I can't. I agree entirely. I think we already have a rough idea of the origin of the overpowering desire to acquire religious belief and all of them are fundamental. One is the great advantage there is to having a common belief system within a society. It can be used to unite it. It can be used to excite it, to infuse courage and persistence in the face of hardship. That's also true at the family level. It just has great survival power and there isn't much doubt in my mind that some part of the brain is hard-wired to acquire through prepared learning that type of allegiance and the strong emotions that go with it.

Of course, we also have a deep fear of death because we're the first species to understand our own mortality. Religion helps us to escape that. I believe that we will gradually come to understand religion. Unfortunately, there's still so much resistance, not just in Islam but also in Western cultures, that in this country you're likely to have a fatwa of sorts issued against you if you start probing too deeply.

DD: And this is precisely why I am writing this book addressing deeply religious people and trying to explain to them why they themselves should want to explore scientifically their own religion, their own religious beliefs. Because they are very sure that their religion is the most important thing in the world, and they may be right, but they don't know. And they owe it to the rest of us to explore the grounds for their confidence that they hold the moral

high ground. And if they can show us that they do hold the moral high ground then I'll join forces with them in a moment. But I don't accept their claim that they "just know" that religion is the right path, and that I have no business asking how they know that. If they want to enlist those of us who are skeptical about where the moral high ground lies, then they have to be willing to demonstrate. They have to be willing to sit still while we take a good hard look to see if they're right. They may be right. They may not. But they themselves should be willing to undergo this.

My thought experiment to understand their position—and this is as much for my benefit as for anybody else's—is to imagine that some scientist comes along and says, "It turns out music's really bad for you. We should try to eliminate music from the world. We should forbid children to take music lessons and strictly limit our own listening time because it turns out that contrary to what we've thought for millennia, music is bad for your brain and bad for society." If somebody came along and said this, first of all I would feel a visceral urge to disagree with this person, because I'm not sure I would want to live in a world without music. Well, that's the way many people feel about religion. But then I reflect: If somebody came forward and said, "Look, are you so sure music is a good thing?" I would say, "Well, in fact, I'm so sure I'm willing to put it to the test. Study us music-lovers to your heart's content. I want you to explore every aspect of music and if you show me that music is a pernicious thing—there are, after all, people who believe that, the Taliban believe that, for instance—then I'm gonna have a hard decision, because maybe I'll have to give up music." Now, I want to put the same proposition to the deeply religious. They have to consider enough about their religion so that they can see whether their belief that they hold the moral high ground is justified.

EW: They—and even the religious fundamentalists—may be more willing to consider an argument like that, especially in view that they have now had demonstrated to them that the world is filled with people willing to commit suicide in the name of religion. Which bespeaks a deep belief in a different system of beliefs and moral

guidelines.

I know from personal experience, having been raised a Southern Baptist, that the quality of religion in billions of people is measured by the intensity of their belief and commitment, not by any factual information that they might be presented with. Also I would expect—I'll just make a broad prediction on my part—that we need the rites of passage. We need the great music and the great liturgies. We need the entire culture of religion and religion-like ceremonies and engagements and reaffirmations. This is so fundamental to human nature that it's like music.

DD: Yes.

EW: It doesn't necessarily carry with it, however, a specific mythology or an unwillingness to listen to the basic beliefs of people in other faiths. I'm inclined to think that religion will evolve as time goes on. In its constant contact with science and growing knowledge about where religion comes from, it will evolve to hollow out, in a way, its mythologies, and come to depend more on the manifest strengths of its ceremonies and reaffirmation of spirit.

DD: There's several radically different hypotheses about what's going to happen to religion in the future, and yours, I think, is one of the most hopeful. There are many, of course, who think that this benign evolution that you anticipate and hope for would be rendered less possible by the meddling intrusion of somebody asking the questions that I want to ask. They think, in fact, that I risk breaking the spell and making those very valuable ceremonial and allegiance phenomena less sustainable. Now I take that to be a really serious worry, and that's one that I want to explore most carefully in this book, because I certainly don't want to vandalize that aspect of religion. I want to explore the question of whether your hypothesis is reasonable and plausible, and if so, is this the direction in which we want to push. But in order to do that we're gonna still have to look pretty hard.

EW: I agree. That's the line of investigation we need to follow, and so I'm optimistic in part because I still am deeply moved by an

evangelical hymn, or a Catholic high funeral Mass. In other words, the emotions stay deeply embedded there. The ability to feel them as deeply as a traditionally religious person feels them is not dependent on a particular mythology. It has to do with my personal experience. My personal experience makes me believe I'm right.

DD: Yeah. I agree. My personal experience is not science, okay. You know, I think we should be coming to a close.

DD: Yes.

EW: But I was just thinking, not trying to serve as a moderator-interrogator, but I'm just wondering if you or I haven't really got this clear. In my mind, I think we've covered a lot of ground.

DD: I think we've covered a lot of ground. I could talk with you for hours about *Consilience* and your original book, *Sociobiology*, and *On Human Nature*.

EW: Well, thank you for saying that. And I'm not just expressing politesse when I say you've thrown across some real hawsers yourself. And I'm thinking perhaps down the line, if we ever have more leisure time, it would be good to continue this conversation in a different setting.

DD: Sure.

EW: You know, maybe a seminar or something like that. And do it maybe in front of a group of students and engage them. That sounds to me like a perfect course to give.

DD: Would be fun, wouldn't it?

EW: Yes. But we can talk about that later. I don't know *whether* we'll ever have time. You've seen the way I live. I can hardly find enough time to go to lunch. At any rate, the point is that I think we covered a lot of ground and I just, do you have anything in the way of a wrap-up thing you want to say?

DD: I think it's important that you and I don't agree completely, but when we discuss our disagreements, it's always constructive.

EW: Yes. Well the blankest part of the map is where naturally we're going to diverge, and I would expect that.

DD: Yes.

EW: In fact, if we didn't diverge on the blank parts of the map, we better reexamine just how dogmatic we have become.

DD: [*Laughs]* Exactly. Well, we've let it all hang out here.

EW: And now we definitely think we're done. I really enjoyed it.

DD: Yes. I knew I was going to enjoy this. ∞

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