Scientists' interest in religion seems to come in waves. One arrived after the publication of Darwin's Origin of Species in 1859. Another followed in the 1930s and 1940s, inspired by surprising revelations from quantum mechanics, which suggested the insufficiency of conventional physical theories of the universe. And now scientists are once again writing about religion, apparently provoked this time by the controversy surrounding intelligent design.

During the last year, a number of popular books on religion by scientists or philosophers of science have appeared. Daniel Dennett kicked things off with his Breaking the Spell (2006), an investigation into the possibility of a science of religion. Reviewing evolutionary, psychological, and economic theories of the origin and spread of belief, Dennett covered much ground but reached few conclusions. In the last few months, three prominent scientists—all biologists—have published their own books on belief. Richard Dawkins, the Charles Simonyi Professor of the Public Understanding of Science at Oxford University, has given us The God Delusion, an extended polemic against faith, which will be considered at length below.

Lewis Wolpert, an eminent developmental biologist at University College London, has just published Six Impossible Things Before Breakfast, a pleasant, though rambling, look at the biological basis of belief. While the book focuses on our ability to form causal beliefs about everyday matters (the wind moved the trees, for example), it spends considerable time on the origins of religious and moral beliefs. Wolpert defends the unusual idea that causal thinking is an adaptation required for tool-making. Religious beliefs can thus be seen as an odd extension of causal thinking about technology to more mysterious matters. Only a species that can reason causally could assert that "this storm was sent by God because we sinned." While Wolpert's attitude toward religion is tolerant, he's an atheist who seems to find religion more puzzling than absorbing.

Joan Roughgarden, on the other hand, is sold on religion. An evolutionary biologist at Stanford University and a recent convert to Christianity, she attempts in Evolution and Christian Faith both to explain evolutionary biology to fellow believers—laying out what is known, what is speculative, and what is unknown—and to discuss what the Bible has to say on matters relevant to evolution. These are ambitious aims, particularly for so brief a book, and Roughgarden's own views—that, as she writes, "what evolutionary biologists are finding through their research and thinking actually promotes a Christian view of nature"—are not supported by sufficiently detailed arguments.

Among these books, Dawkins's The God Delusion stands out for two reasons. First, it's by far the most ambitious. While Wolpert and Roughgarden preach to the choir—each has his or her own audience, rationalist and religious, respectively—Dawkins is on a mission to convert. He is an enemy of religion, wants to explain why, and hopes thereby to drive the beast to extinction. Second, Dawkins has succeeded in grabbing the public's attention in a way that other writers can only dream of. His book is on the New York Times best-seller list and he's just been featured on the cover of Time magazine.

Dawkins's first book, The Selfish Gene (1976), was a smash hit. An introduction to evolutionary theory, it explained a number of deeply counter-intuitive results, including how an apparently self-centered process like Darwinian natural selection can account for the evolution of altruism. Best of all, Dawkins laid out this biology—some of it truly subtle—in stunningly lucid prose. (It is, in my view, the best work of popular science ever written.) While Dawkins has published several other popular books on Darwinism, he has, in recent years, turned to larger issues. In such works as Unweaving the Rainbow (1998) and A Devil's Chaplain (2003), he's explored our sense of wonder.
before the natural world and, increasingly, the tension between science and religion.

His new book continues this last theme. Dawkins clearly believes his background in science allows him to draw strong conclusions about religion and, in The God Delusion, he presents those conclusions in language that's stronger still. Dawkins not only thinks religion is unalloyed nonsense but that it is an overwhelming pernicious, even "very evil," force in the world. His target is not so much organized religion as all religion. And within organized religion, he attacks not only extremist sects but moderate ones. Indeed, he argues that rearing children in a religious tradition amounts to child abuse.

Dawkins's book begins with a description of what he calls the God Hypothesis. This is the idea that "the universe and everything in it" were designed by "a superhuman, supernatural intelligence." This intelligence might be personal (as in Christianity) or impersonal (as in deism). Dawkins is not concerned with the alleged detailed characteristics of God but with whether any form of the God Hypothesis is defensible. His answer is: almost certainly not. Although his target is broad, Dawkins discusses mostly Christianity, partly because this faith has wrestled often with science and partly because it's the tradition Dawkins knows best (he was reared as an Anglican).

The first few chapters of The God Delusion are given over to philosophical matters. Dawkins summarizes the traditional philosophical arguments for God's existence, from Aquinas through pre-Darwinian arguments from biological design, along with the traditional arguments against them. In a later chapter entitled "Why There Almost Certainly Is No God," Dawkins himself plays philosopher, presenting the chief argument of his book. The God Hypothesis, he tells us, is close to "ruled out by the laws of probability." Dawkins's demonstration involves what he calls the Ultimate Boeing 747 gambit. This is his variation on a standard creationist argument. By tweaking that argument in a clever way, Dawkins claims it now leads to a conclusion that's the opposite of the traditional creationist one.

The creationist argument works like this. Living things are enormously complex. Even the simplest of present-day organisms, like bacteria, are far more complicated than anything found in the nonliving world. All organisms carry genes, built from a replicating molecule like DNA (which is itself very complex). But DNA alone doesn't make an organism. Organisms also possess many different proteins (each, in turn, made of amino acids), as well as other molecules that help make structures like cell membranes. Moreover, all these parts must be arranged in just the right way: membranes on the outside of the cell and DNA on the inside, and so on. Creationists argue that the idea that such organized complexity could arise by natural means—without the intercession of a designer mind—is absurd. In particular, they argue that the probability that life could assemble itself spontaneously is extremely close to zero. To dramatize this, they suggest that thinking life could arise by natural means is like thinking a tornado could tear through a junkyard and assemble a Boeing 747. Such an event is not, strictly speaking, impossible but it's so extraordinarily unlikely that it is, according to creationists, unworthy of serious consideration.

Dawkins's variation on this argument involves a judo-like move in which he turns its logic against itself. In particular, Dawkins claims that rejecting natural means to explain life and instead invoking a designer God leaves us with a hypothesis that's even more improbable than the naturalistic one:

A designer God cannot be used to explain organized complexity because any God capable of designing anything would have to be complex enough to demand the same kind of explanation in his own right. In short, only complicated objects can design simpler ones; information cannot flow in the other direction, with simple objects designing complicated ones. But that means any designer God would have to be more complex —and thus even more improbable— than the universe he was supposed to explain. This argument, Dawkins concludes, "comes close to proving that God does not exist": the God Hypothesis has a vanishingly small probability of being right.
The latter half of The God Delusion is partly devoted to Dawkins's discussion of religion as practiced. Not surprisingly, he finds little good to say about it: religion for him is the root of much evil and its disappearance from the world would be an unmitigated good. Religion, he tells us, is certainly not the source of our morality (indeed the God of the Old Testament is, he claims, nothing short of monstrous) and believers are no better morally than nonbelievers; in fact they may be worse. Dawkins regales us with tales of Christian cops who threaten to beat up an atheist; presents statistics on the higher rates of crime in regions that are religious; and argues that, when considering religiously inspired violence and terrorism, "we should blame religion itself, not religious extremism—as though that were some kind of terrible perversion of real, decent religion." Late in his book, Dawkins defends a faith-free morality and provides his own, secular, Ten Commandments. (For example, "Do not indoctrinate your children" and "Enjoy your own sex life (so long as it damages nobody else).")

As you may have noticed, Dawkins when discussing religion is, in effect, a blunt instrument, one that has a hard time distinguishing Unitarians from abortion clinic bombers. What may be less obvious is that, on questions of God, Dawkins cannot abide much dissent, especially from fellow scientists (and especially from fellow evolutionary biologists). Indeed Dawkins is fond of imputing ulterior motives to those "Neville Chamberlain School" scientists not willing to go as far as he in his war on religion: he suggests that they're guilty of disingenuousness, playing politics, and lusting after the large prizes awarded by the Templeton Foundation to scientists sympathetic to religion. The only motive Dawkins doesn't seem to take seriously is that some scientists genuinely disagree with him.

Despite my admiration for much of Dawkins's work, I'm afraid that I'm among those scientists who must part company with him here. Indeed, The God Delusion seems to me badly flawed. Though I once labeled Dawkins a professional atheist, I'm forced, after reading his new book, to conclude he's actually more an amateur. I don't pretend to know whether there's more to the world than meets the eye and, for all I know, Dawkins's general conclusion is right. But his book makes a far from convincing case.

The most disappointing feature of The God Delusion is Dawkins's failure to engage religious thought in any serious way. This is, obviously, an odd thing to say about a book-length investigation into God. But the problem reflects Dawkins's cavalier attitude about the quality of religious thinking. Dawkins tends to dismiss simple expressions of belief as base superstition. Having no patience with the faith of fundamentalists, he also tends to dismiss more sophisticated expressions of belief as sophistry (he cannot, for instance, tolerate the meticulous reasoning of theologians). But if simple religion is barbaric (and thus unworthy of serious thought) and sophisticated religion is logic-chopping (and thus equally unworthy of serious thought), the ineluctable conclusion is that all religion is unworthy of serious thought.

The result is The God Delusion, a book that never squarely faces its opponents. You will find no serious examination of Christian or Jewish theology in Dawkins's book (does he know Augustine rejected biblical literalism in the early fifth century?), no attempt to follow philosophical debates about the nature of religious propositions (are they like ordinary claims about everyday matters?), no effort to appreciate the complex history of interaction between the Church and science (does he know the Church had an important part in the rise of non-Aristotelian science?), and no attempt to understand even the simplest of religious attitudes (does Dawkins really believe, as he says, that Christians should be thrilled to learn they're terminally ill?).

Instead, Dawkins has written a book that's distinctly, even defiantly, middlebrow. Dawkins's intellectual universe appears populated by the likes of Douglas Adams, the author of The Hitchhiker's Guide to the Galaxy, and Carl Sagan, the science popularizer, both of whom he cites
repeatedly. This is a different group from thinkers like William James and Ludwig Wittgenstein—both of whom lived after Darwin, both of whom struggled with the question of belief, and both of whom had more to say about religion than Adams and Sagan. Dawkins spends much time on what can only be described as intellectual banalities: "Did Jesus have a human father, or was his mother a virgin at the time of his birth? Whether or not there is enough surviving evidence to decide it, this is still a strictly scientific question."

The vacuum created by Dawkins's failure to engage religious thought must be filled by something, and in The God Delusion, it gets filled by extraneous quotation, letters from correspondents, and, most of all, anecdote after anecdote. Dawkins's discussion of religion's power to console, for example, is interrupted by the story of the Abbess of Ampleforth's joy at learning of a friend's impending death; speculation about why countries, such as the Netherlands, that allow euthanasia are so rare (presumably because of religious prejudice); a nurse who told Dawkins that believers fear death more than nonbelievers do; and the number of days of remission from Purgatory that Pope Pius X allowed cardinals and bishops (two hundred, and fifty, respectively). All this and more in four pages. Gone, it seems, is the Dawkins of The Selfish Gene, a writer who could lead readers through dauntingly difficult arguments and who used anecdotes to illustrate those arguments, not to substitute for them.

One reason for the lack of extended argument in The God Delusion is clear: Dawkins doesn't seem very good at it. Indeed he suffers from several problems when attempting to reason philosophically. The most obvious is that he has a preordained set of conclusions at which he's determined to arrive. Consequently, Dawkins uses any argument, however feeble, that seems to get him there and the merit of various arguments appears judged largely by where they lead.

The most important example involves Dawkins's discussion of philosophical arguments for the existence of God as opposed to his own argument against God, which he presents as the intellectual heart of his book. Considering arguments for God, Dawkins is careful to recite the many standard objections to them and writes that the traditional proofs are "vacuous," "dubious," "infantile," and "perniciously misleading." But turning to his own Ultimate Boeing 747 argument against God, Dawkins is suddenly uninterested in criticism and writes that his argument is "unanswerable." So why, you might wonder, is a clever philosophical argument for God subject to withering criticism while one against God gets a free pass and is deemed devastating?

The reason seems clear. The first argument leads to a conclusion Dawkins despises, while the second leads to one he loves. Dawkins, so far as I can tell, is unconcerned that the central argument of his book bears more than a passing resemblance to those clever philosophical proofs for the existence of God that he dismisses. This is unfortunate. He could have used a healthy dose of his usual skepticism when deciding how much to invest in his own Ultimate Boeing 747 argument. Indeed, one needn't be a creationist to note that Dawkins's argument suffers at least two potential problems. First, as others have pointed out, if he is right, the design hypothesis essentially must be wrong and the alternative naturalistic hypothesis essentially must be right. But since when is a scientific hypothesis confirmed by philosophical gymnastics, not data? Second, the fact that we as scientists find a hypothesis question-begging—as when Dawkins asks "who designed the designer?"—cannot, in itself, settle its truth value. It could, after all, be a brute fact of the universe that it derives from some transcendent mind, however question-begging this may seem. What explanations we find satisfying might say more about us than about the explanations. Why, for example, is Dawkins so untroubled by his own (large) assumption that both matter and the laws of nature can be viewed as given? Why isn't that question-begging?

Exercises in double standards also plague Dawkins's discussion of the idea that religion encourages good behavior. Dawkins cites a litany of statistics revealing that red states (with many conservative Christians) suffer higher rates of crime, including murder, burglary, and theft, than do blue states.
But now consider his response to the suggestion that the atheist Stalin and his comrades committed crimes of breathtaking magnitude: "We are not in the business," he says, "of counting evils heads, compiling two rival roll calls of iniquity." We're not? We were forty-five pages ago.

Dawkins's problems with philosophy might be related to a failure of metaphysical imagination. When thinking of those vast matters that make up religion—matters of ultimate meaning that stand at the edge of intelligibility and that are among the most difficult to articulate—he sees only black and white. Despite some attempts at subtlety, Dawkins almost reflexively identifies religion with right-wing fundamentalism and biblical literalism. Other, more nuanced possibilities—varieties of deism, mysticism, or nondenominational spirituality—have a harder time holding his attention. It may be that Dawkins can't imagine these possibilities vividly enough to worry over them in a serious way.

There's an irony here. Dawkins's main criticism of those who doubt Darwin—and it's a good one—is that they suffer a similar failure of imagination. Those, for example, who argue that evolution could never make an eye because anything less than a fully formed eye can't see simply can't imagine the surprising routes taken by evolution. In any case, part of what it means to suffer a failure of imagination may be that one can't conceive that one's imagination is impoverished. It's hard to resist the conclusion that people like James and Wittgenstein struggled personally with religion, while Dawkins shrugs his shoulders, at least in part because they conceived possibilities—mistaken ones perhaps, but certainly more interesting ones—that escape Dawkins.

Putting aside these philosophical matters, Dawkins's key empirical claim—that religion is a pernicious force in the world—might still be right. Is it? Throughout The God Delusion, Dawkins reminds us of the horrors committed in the name of God, from outright war, through the persecution of minority sects, acts of terrorism, the closing of children's minds, and the oppression of those having unorthodox sexual lives. No decent person can fail to be repulsed by the sins committed in the name of religion. So we all agree: religion can be bad.

But the critical question is: compared to what? And here Dawkins is less convincing because he fails to examine the question in a systematic way. Tests of religion's consequences might involve a number of different comparisons: between religion's good and bad effects, or between the behavior of believers and nonbelievers, and so on. While Dawkins touches on each, his modus operandi generally involves comparing religion as practiced—religion, that is, as it plays out in the rough-and-tumble world of compromise, corruption, and incompetence—with atheism as theory. But fairness requires that we compare both religion and atheism as practiced or both as theory. The latter is an amorphous and perhaps impossible task, and I can see why Dawkins sidesteps it. But comparing both as practiced is more straightforward. And, at least when considering religious and atheist institutions, the facts of history do not, I believe, demonstrate beyond doubt that atheism comes out on the side of the angels. Dawkins has a difficult time facing up to the dual facts that (1) the twentieth century was an experiment in secularism; and (2) the result was secular evil, an evil that, if anything, was more spectacularly virulent than that which came before.

Part of Dawkins's difficulty is that his worldview is thoroughly Victorian. He is, as many have noted, a kind of latter-day T.H. Huxley. The problem is that these latter days have witnessed blood-curdling experiments in institutional atheism. Dawkins tends to wave away the resulting crimes. It is, he insists, unclear if they were actually inspired by atheism. He emphasizes, for example, that Stalin's brutality may not have been motivated by his atheism. While this is surely partly true, it's a tricky issue, especially as one would need to allow for the same kind of distinction when considering religious institutions. (Does anyone really believe that the Church's dreadful dealings with the Nazis were motivated by its theism?)
In any case, it's hard to believe that Stalin's wholesale torture and murder of priests and nuns (including crucifixions) and Mao's persecution of Catholics and extermination of nearly every remnant of Buddhism were unconnected to their atheism. Neither the institutions of Christianity nor those of communism are, of course, innocent. But Dawkins's inability to see the difference in the severity of their sins—one of orders of magnitude—suggests an ideological commitment of the sort that usually reflects devotion to a creed.

What of the possibility that present-day churchgoers are worse morally than those who stay away? They might be. Indeed C.S. Lewis, in perhaps the most widely read work of popular theology ever written, Mere Christianity, conceded the possibility. Emphasizing that the Gospel was preached to the weak and poor, Lewis argued that troubled souls might well be drawn disproportionately to the Church. As he also emphasized, the appropriate contrast should not, therefore, be between the behavior of churchgoers and nongoers but between the behavior of people before and after they find religion. Under Dawkins's alternative logic, the fact that those sitting in a doctor's office are on average sicker than those not sitting there must stand as an indictment of medicine. (There's no evidence in The God Delusion that Dawkins is familiar with Lewis's argument.)

In any case, there are some grounds for questioning whether Dawkins's project is even meaningful. As T.S. Eliot famously observed, to ask whether we would have been better off without religion is to ask a question whose answer is unknowable. Our entire history has been so thoroughly shaped by Judeo-Christian tradition that we cannot imagine the present state of society in its absence. But there's a deeper point and one that Dawkins also fails to see. Even what we mean by the world being better off is conditioned by our religious inheritance. What most of us in the West mean—and what Dawkins, as revealed by his own Ten Commandments, means—is a world in which individuals are free to express their thoughts and passions and to develop their talents so long as these do not infringe on the ability of others to do so. But this is assuredly not what a better world would look like, to say, a traditional Confucian culture. There, a new and improved world might be one that allows the readier suppression of individual differences and aspirations. The point is that all judgments, including ethical ones, begin somewhere and ours, often enough, begin in Judaism and Christianity. Dawkins should, of course, be applauded for his attempt to picture a better world. But intellectual honesty demands acknowledging that his moral vision derives, to a considerable extent, from the tradition he so despises.

One of the most interesting questions about Dawkins's book is why it was written. Why does Dawkins feel he has anything significant to say about religion and what gives him the sense of authority presumably needed to say it at book length? The God Delusion certainly establishes that Dawkins has little new to offer. Its arguments are those of any bright student who has thumbed through Bertrand Russell's more popular books and who has, horrified, watched videos of holy rollers. Dawkins is obviously entitled to his views on God, ballet, and currency markets. But I doubt he feels much need to pen books on the last two topics.

The reason Dawkins thinks he has something to say about God is, of course, clear: he is an evolutionary biologist. And as we all know, Darwinism had an early and noisy run-in with religion. What Dawkins never seems to consider is that this incident might have been, in an important way, local and contingent. It might, in other words, have turned out differently, at least in principle. Believers could, for instance, have uttered a collective "So what?" to evolution. Indeed some did. The angry reaction of many religious leaders to Darwinism had complex causes, involving equal parts ignorance, fear, politics, and the sheer shock of the new. The point is that it's far from certain that there is an ineluctable conflict between the acceptance of evolutionary mechanism and the belief that, as William James put it, "the visible world is part of a more spiritual universe." Instead, we and Dawkins might simply be living through the reverberations of an interesting, but not especially fundamental, bit of Victorian history. If so, evolutionary biology would enjoy no particularly exalted pulpit from which to preach about religion.
None of this is to say that evolutionary biology cannot inform our view of religion. It can and does. At the very least it insists that the Lord works in mysterious ways. More generally, it demands rejection of anything approaching biblical literalism. There are facts of nature—including that human beings evolved on the African savanna several million years ago—and these facts are not subject to negotiation. But Dawkins's book goes far beyond this. The reason, of course, is that The God Delusion is not itself a work of either evolutionary biology in particular or science in general. None of Dawkins's loud pronouncements on God follows from any experiment or piece of data. It's just Dawkins talking.

We should not, though, conclude that there's no debate whatever to be had between science and religion. The view championed by Stephen Jay Gould and others that the two endeavors are utterly distinct and thus incapable of interfering with each other is overly simplistic. There have been, and likely will continue to be, real disagreements between legitimate science and authentic religion. Some of the issues involved are epistemological (Do scientific and religious claims simply begin with different premises, the first material-ist and the second not?), and others ethical (Where do we draw the line between what medicine can accomplish and what it should be allowed to accomplish?). These questions are difficult and might well merit extended discussion between scientific and religious thinkers. But if such discussions are to be worthwhile, they will have to take place at a far higher level of sophistication than Richard Dawkins seems either willing or able to muster.