

idea that you have to think exactly the way I do or you're not a spiritual person. Please don't take that as the message for this evening. Christians all too often come across as narrow in this way, and I don't want to be of that sort.

I do hope all of you who have sat through this long discussion will go away with a sense that this journey is a fascinating one to be on, and that there are answers out there—though not easy ones. There are other people around you who would love to talk about this, including the students who organized this gathering. Therefore I hope this will not be just one more evening that comes and goes, but something that has more lasting significance for at least some of you. It will for me. You've asked great questions. It's been wonderful being here at Caltech.

THE NEW ATHEISTS AND THE MEANING OF LIFE

Alister McGrath and David J. Helfand

The Veritas Forum at Columbia University, 2006



ALISTER MCGRATH

IS GOD A DELUSION? That certainly is the view you find in Richard Dawkins's recent book *The God Delusion*. I want to talk a little bit about that book, and set out the agenda we will talk about, and then see where our thinking goes.

When I was younger, if I had known I would be speaking here at Columbia University tonight on this topic, I would have been extremely surprised. I grew up in Northern Ireland. And those of you who know Ireland well will know that it is not an island of great excitement. As I remember it, one of the greater things I looked forward to was the annual donkey derby. So, the idea of actually coming to Columbia to give a lecture like this is very exciting.

But the other reason I think it would have surprised me is this: when I was growing up in Northern Ireland, I was an atheist. Atheists, as you know, come in different shapes and sizes. There is the very gracious kind of atheist, who doesn't believe in God but is so pleased you do. Then there's the other kind of atheist, and I have to say with a certain degree of

embarrassment that I belonged to this second category of atheist, who basically held that religious people were simply utter fools who would one day discover the true light. In the meantime, one had to tolerate them. But a godless dawn was on its way.

I was one of those who, back in the late 1960s, was absolutely convinced that religion was on its way out, that the brighter godless dawn was just around the corner. I took the view that sociology was on my side, that there was this very strong expectation that religion was just fading away into the past and would simply cease to be a major social and cultural and intellectual force in the very near future.

Of course, I was encouraged in that view by the situation in Northern Ireland. As you know, it was a very difficult situation with Catholics and Protestants being pitted against each other. That, I think, led me to the conclusion that religion simply led to polarization and violence.

The story is told of the Englishman who went to visit Northern Ireland and he was in Belfast on a Saturday night, rather late. He was confronted by a group of youths with baseball bats and they asked him

menacingly, "Are you a Protestant or
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"Are you a Protestant atheist, or . . . ?"

There was a pause. They asked,
"Are you a Protestant atheist, or . . . ?"

As I was growing up studying the
sciences and atheism, and that religion was on its way out. But when I

went up to Oxford to really begin to study the sciences seriously, I found
myself going through a radical rethink. Basically, I came to the conclu-

sion that the intellectual case for atheism wasn't that good, and cer-
tainly did not rest adequately on the scientific foundation. And so, I

made an intellectual pilgrimage from atheism to Christian belief.
But interestingly, here is a point I'd like you to think about. Those of

you who have read Richard Dawkins's book *The God Delusion* will know
that for Dawkins the only valid intellectual pilgrimage is from religion
to atheism. That is a constant theme throughout his books—that God
is a delusion, that real science disproves Christianity and that religion
simply lingers on because in some way, we are biologically or psycho-
logically preprogrammed to believe in God.

And so, what I'd like to do is try to open up some of the arguments
in that book for discussion tonight. The first point very simply is this:

Why does Richard Dawkins have to write four hundred pages telling
us that God is an illusion when religious belief is meant to have disap-
peared generations ago?

Certainly, back in the 1960s there was a very strong expectation that
religion was on its way out. "We will not be having this conversation in
forty years time," and yet, we are tonight. And the fact that so many of
you are here is indication that (a) this is interesting. (b) this is impor-
tant, and (c) this is a live issue, not a debate that our grandparents might
have had but has ceased to be relevant to us.

SCIENTISTS BUT NOT ATHEISTS

So, it's a very significant question. Let's begin to look at what Richard
Dawkins says. First, he argues that science is an intellectual superhigh-
way to atheism—that real scientists are atheists.

In the same year, three other very interesting books appeared.
Owen Gingerich at Harvard University published his very interesting
book *God's Universe*. And many of you will have read Francis Col-
lin's book *The Language of God*. Collins is director of the Human
Genome Project. Also some of you will have read Paul Davies's very
intriguing book *The Goldilocks Enigma*, all about this phenomenal
fine-tuning.

Gingerich and Collins give what I think are traditional Christian
responses arguing that their astronomy and their biology are per-
fectly compatible with Christian faith, and that it actually brings
enhanced intellectual appreciation to the disciplines. Paul Davies
argues that while the God of Christianity is at some distance from
this, there is something out there that has to be described in terms

of some kind of intelligent Author—in other words, God, by some name or other.

Besides these three books I've mentioned, I could add many others to the list. But the simple fact is there are an awful lot of scientists who do believe in God, who do not see this as being intellectual suicide and, indeed, believe their faith brings added resilience and dynamism to their scientific studies.



Alister McGrath, Ron Chloong and David Heland on stage at Columbia.

How does this fit with Richard Dawkins's rather simplistic worldview: science leads to atheism? I think that the real issue is much more complex and much more interesting: I think as I read things very carefully, it seems to me that we can read nature in a Christian way. We can read nature in an atheist way. In fact, we can read nature in an agnostic way, as well. Nature is patient of all these interpretations, but in and of itself, it mandates and demands none of these.

Now, take someone like Stephen Jay Gould, a very interesting person who died in 2002 from lung cancer. Gould was an atheist. But he was very clear that it wasn't his science that brought him to that position. He argues in his very interesting book *Rocks of Ages* that science simply cannot, by the legitimate application of its method, comment on the God question. In other words, it simply lies beyond the scientific method. That raises for me a fascinating question about whether there are limits to what the sciences can tell us. Again, I can explore that later.

FAITH VERSUS SCIENCE

But let's move on and look at Dawkins's other arguments. A very im-

portant argument throughout *The God Delusion* is that religious people engage in the process of nonthinking called faith. In other words, faith, to quote from his *Selfish Gene*, is a process of simple disengagement, refusal to look at the evidence, running away from reality. It is simply about believing impossible things, whereas science proves things with absolute certainty. In other words, there's a very strong polarization. Science means 100 percent certainty; religion, 0 percent. Only fools, charlatans and dishonest people would therefore believe in religion.

There are some very interesting points made there. I think it's extremely important to say that evidence-based thinking matters enormously for anyone who takes the sciences seriously. Certainly, although I disagree with Dawkins on many things, he is right to stress that. Without evidence, we are nowhere. The importance of evidence is, for me, supreme. But evidence is open to multiple interpretations. That is what radical theory change in science is all about.

My real problem is that Dawkins does not seem to take into account the intellectual malleability of nature. In other words, we can all look at this and yet see it in different ways. Terry Eagleton, in a very powerful review of Dawkins's book in the *London Review of Books*, simply makes the point that we all know that people hold views they know cannot be 100 percent defended and justified, but nevertheless believe that they are right in doing so.

I think that is an extremely important point, here. I want to argue that atheism is certainly a defensible interpretation of things—as is Christianity—but there is no knock-down argument on either side. This remains a live issue about the best interpretation of nature. Gilbert Harman's famous foundational paper "Inference to the Best Explanation" establishes that there is a real debate about what the best way of evaluating things is, and what criteria should be used.

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RELIGION CAUSES VIOLENCE

It I move on to the third point. It seems to me this is Dawkins's longest point: religion leads to violence. Certainly, from my own northern Ireland situation, I can easily relate to this. As I was growing up, it seemed to me to be self-evident that religion led to violence. I thought that if we got rid of religion, there would be none of this violence that we saw, for example, in my homeland of Northern Ireland. That was what I thought back in the 1960s. Nowadays, I'm not quite sure. Let me try to explain why. Let me begin by saying there is no doubt that religion can cause violence. But I don't believe that religion is either a necessary or a sufficient cause of violence. Robert Pape's very interesting study of suicide bombings makes very telling points in relation to this.¹

I also want to make the point that in the twentieth century, we have seen an atheism move from being on the periphery of things to actually having power in the Soviet Union and elsewhere. And certainly for me, to read the history of the twentieth century, atheism also has been a history of violence and oppression.

It seems to me, actually, it's not really either religion or anti-religion that is the issue. It may well be there's something about human nature: it inspires us to do great things but also draws us down to do some awful things. In other words, inspiration can cause us to do good but to do bad things as well.

Again, I go back to Terry Eagleton's review in the *London Review of Books*. Professor Dawkins, he says, spends four hundred pages "scientifically" and "impartially" evaluating religion, but not in one of those ways that we find a single good thing to say about it. It does have its good points, but it also has its bad points, but therefore surely, the idea ought to be working for reformation, not abolition.

Which brings me to the final point I want to make in this opening section. Suppose Dawkins were to get his way; suppose religion were to be abolished, would that end violence in our societies? Sociologists will tell you the point that it won't because in many ways societies are extremely good about constructing causes for disagreement. These social instructions could be religious. They could be gender-based. They

could be class-based. They could be race-based. They could be tribal-based. They could be financially based. They could be whatever you want, but the issue is that humanity possesses a remarkable capacity of generating division and then offering explanations and motivations which move these from mere differentiation to lethal conflicts between people groups.

So, I wonder if religion were to be abolished whether the violence we see would actually disappear at all. Certainly, specifically religious violence would, but others would come in very quickly to fill that vacuum. Dawkins shows us very powerfully that religion can cause things to go wrong, but he tends to present the pathological as if it were the normal. It seems to me that needs to be challenged.

I end with one very simple example. When I was studying chemistry at Oxford, one of my set texts was called *Reagents for Organic Synthesis* by Louis Fieser and Mary Fieser. It was a long book, and I have to say it was a rather dull book. I later learned more about Louis Fieser, professor of chemistry at Harvard, a remarkable man who invented synthetic roots to various steroids, to the blood's anticoagulating factor. He's done a lot to help hemophiliacs. But back in 1942, he invented something else: Americans were discovering the Japanese were rather deeply entrenched in certain well-defended positions in the Pacific. A weapon was needed to be able to deal with this. Fieser came to the rescue and invented napalm. Now, I could take a very simplistic view and say, Hey, that shows science is evil. Let's stop it.

But I wouldn't say that, and none of you would either. It just brings home to us that that's what human nature is like. Sometimes, we do great things, sometimes bad things. Those bad things need to be critiqued, and we need to get rid of them. But there are still some good things there. I want to say that religion is like that. Let's work to reform it, but actually trying to get rid of it will simply bring in its wake much worse things than Richard Dawkins, I think, allows.

AVID HELFAND

I can probably tell I'm not Richard Dawkins, although I do confess I cover his title, which is Professor in the Public Understanding of Science, which I thought is a very nice title to have. I will not, therefore, on a point-by-point basis attempt to defend his book *The God Question* or his opinions, although I must say that I share the underlying basis of many of his opinions.

Throughout history, and I have no doubt prior to recorded history, humans have found meaning in mystery. A comet in the sky (a "guest star" as the Chinese so charmingly called it) would appear, and the armies and empires were sealed. The sun, the seasons, tsunamis, storms all found explanation in supernatural phenomena until, of course, we understood them.

HROPOMORPHIC, ANTHROPOCENTRIC, ANTHROPOMETRIC PERSES

Harrison, the cosmologist who wrote a wonderful book called *Cosmos: The Science of the Universe*, divides human thinking about these things of our existence in the universe, and our reality, into three eras of time: the anthropomorphic universe, the anthropocentric universe, and the anthropometric universe.

The anthropomorphic universe is an age of magic in which there is no distinction between the self, the mind, and the external environment. Some notion, which we imagine dominated prehistory, remains in our age. We talk about "angry" storms and "gentle" breezes, investing natural phenomena with human emotions. That is largely thought to be the realm of prehistory, although I must confess that I find it rather prevalent in certain places today, in Southern California, for example. The anthropocentric universe, which came next, was the age of myth.

Created pantheons of powerful gods that controlled the forces of nature, and yet, of course, they were driven by human emotions and ruled by human concerns. This, in a very deep sense, was an earth-bound universe. We sit here and look out on the universe, and the rest of the universe is controlled by these powerful gods.

The anthropometric universe is the age of science, not (as Protaras would have it) that man is the measure of all things, but that we can use our rational cognitive capabilities to take their measure, to assess rationally our place in the universe and attempt to explore what the universe is from within this interesting product of biological evolution that is our minds.

NONOVERLAPPING MAGISTERIA

Now, I'm not an expert on this subject, as Professor McGrath is. So, I had to do a little reading to get prepared for this. Besides his book, and Richard Dawkins's book, one of the books I read was by Kenneth Miller. Kenneth Miller is a professor of biology at Brown University, a very distinguished professor there and winner of many teaching awards, and I would like to meet him someday. He has been known to the public mostly for his spirited, articulate defenses of evolutionary biology against the attacks, first, of young earth creationists and, then more recently, of intelligent design; he was the principal witness at the Dover, Pennsylvania, case in 2005.

He's written this wonderful book called *Finding Darwin's God*, in which the first two hundred pages is a detailed dissection and destruction of the arguments for intelligent design, young earth creationism and various other fantasies that some of the (out of the mainstream, I would hope to say) religious people in the United States have come up with recently and attempt to inflict on the government.

But in the last two chapters he goes on to take what I must confess I regard as a sophistic misunderstanding of quantum mechanics, and uses it to prove the existence of God to justify his deep Catholic faith. I must say I find this truly mysterious. He makes statements like the following: "Any God worthy of the name has to be capable of miracles, but what can science say about miracles? Nothing. By definition, the miraculous is beyond explanation, beyond understanding, beyond science."

Well, if this is so, I have to ask, why is it that the Vatican convenes learned panels of experts to adjudicate the reality of each miracle attributed to a potential saint, a candidate for beatification or canoniza-

n? I don't understand why they would do this if science had nothing to do with it.

Stephen Jay Gould had an acronym—NOMA: nonoverlapping magisteria—for the notion that was mentioned by Professor McGrath there being two separate entities; religion is religion and science is science. I've always had trouble with this. First, I think on Gould's part was quite disingenuous because he was, as Professor McGrath said, atheist. I find it even more disingenuous and disturbing that the National Academy of Sciences of the United States of America also puts the NOMA view despite the fact that polls of its members, the most distinguished scientists in the country, have shown that over 90 percent of them are atheists. Nonetheless, they adopt this view that science is science and religion is religion.

The problem I have with this is that it's a one-way nonoverlap. I take the Shroud of Turin project for an example. The Shroud of Turin project began in the late 1970s when a group of scientists and engineers, a large fraction of whom came from the Los Alamos Nuclear Weapons Laboratory (which I find a frightening thought) lugged tons of pounds of equipment over to Turin and were granted unlimited access to the shroud in order to perform scientific experiments on it to prove that it was the burial shroud of Christ. And initially, the first experiments, all released through press releases and not scientific journals, were very encouraging. There was iron in the shroud on the places where the nails had gone through the hands. The presence of iron on the cloth was not possible to produce prior to the age of photography and on and on.

Finally, ten years later, when the church relented and allowed two more centimeters of the cloth to be shipped off to two independent laboratories for double-blind tests of the age dating of this shroud, the results in both cases came back at about 650 plus or minus 20 years, or roughly, 1351, when historians had already shown that the Avignon Pope had excommunicated a French bishop for displaying a fraudulent burial cloth of Christ, "very cleverly painted." My guess is, suppose the Carbon-14 data on the shroud had come back recently. Suppose it had come back with a date of A.D. 26. Would

then Professor McGrath or anyone else have said, "Oh, but science has nothing to do with religion, so we won't take that data into account?"

I seriously doubt it. I suspect every Christian in the world would have said, Here is a scientific validation for the belief in the Holy Scripture.

What about DNA evidence? We all read in the newspapers the remarkable fact that Neanderthal DNA from a 40,000-year-old bone was going to be sequenced—the entire genome of the Neanderthal. Suppose we found in a reliquary in some European cathedral a shard of bone, and we did DNA analysis on it, did a Polymerase Chain Reaction, and found out that lo and behold, it had one X chromosome and no Y chromosomes, and it was supposed to be a piece of Christ's body. Well, that would be sort of peculiar. I would regard that as truly miraculous, but I suspect this would be regarded as supporting faith.

And so, I don't like the whole idea of the nonoverlapping magisteria because the nonoverlap only goes one way. When it doesn't work out, we say, Well, we have faith and there's religion. When it does work out, we say, Oh, science supports our faith in religion.

I have a number of things I want to say in response to what Professor McGrath said, but rather than stand up here and say them, I think it might be more productive if we tried to have a conversation. And so, I'm going to sit back down again and our moderator will lead that.

DIALOGUE

Moderator. Professor McGrath, would you respond to Professor Helfand's argument?

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rath. I'll just make some very preliminary remarks. And then I'm sure we can have a much more detailed discussion. Yes, Kenneth Miller is a fascinating author, but I wouldn't want to be judged by him, if I can help it like that.

Richard Gould: it's very interesting. I probably didn't express myself very well—I don't agree with his nonoverlapping magisteria argument. I think it's wrong. The point I was simply making, if he was arguing out the thesis of the epistemological limits of science, I think that's a very defensible thesis. For example, take Peter Medawar's famous book *The Limits of Science*. One of the points he makes is that there are fundamental big questions. For example, why are we here? What's the point of life? Those are real questions, and I think that science isn't able to give answers. The point he's trying to make is that scientists may well need to recognize there are limits to what science can actually answer. So, I think the basic issue here is whether we can calibrate the sciences as to where they're able to answer these big metaphysical questions and where they're not.

Richard: for example, I prefer the approach we find in Collins's book *Language of God*, which I would say is a partially overlapping magisteria. In other words, these things do interpenetrate. They do have overlapping areas, and my own view, for what it's worth, is that these things reinforce each other.

Richard: I think that's certainly something I'd be very interested to talk about. I'm just very anxious to see where this conversation goes. So, I'll let it rest now.

d. Yes, I had to smile when I saw the posters advertising this, I had the famous quote, "The unexamined life is not worth living." I'd my wife will be smiling at this now because my dictum tends to be "The examined life is not worth living."

[laughter]

Richard: That's good.

d. And therefore, my only difference with you is that I don't think "why are we here" is an interesting question. I agree science can't answer it, but I don't find it interesting, and it's not because science

can't answer it. I just simply don't find it interesting.

I find it quite marvelous that our one kilogram of a trace constituent of the matter of the universe can apprehend its age and size and composition, and can understand its origin in the evolution of primitive bacteria out of the amino acids found in interstellar clouds. I find all that fascinating, but I don't see a need for why.

McGrath: I think it is an interesting question, and I think it's a very fundamental question for many. And I think, as I read Richard Dawkins, what I see is a kind of "let's keep this out of the question" almost as a matter of principle, that to even begin to speak of purpose is seen as something kind of illegitimate.

It seems to me, that while it may be a very difficult question to ask (and I take your point about it not being very interesting), I find it very interesting. It does seem to me to be a question which many people want to ask. Therefore we might say, "Well, maybe the scientists can't answer these, so maybe there's no answer available at all." Or we might have to say, "Maybe this has to be answered on the basis of something else." In which case, we're trying to say, "Well, the sciences are very good insofar as they go. Maybe we need to look somewhere else if this question can be answered at all."

Helgard: Well, I think it's actually possible, while I personally don't find it interesting, that this question can be answered by science. In a very fascinating, deeply flawed but deeply interesting book called *The Robot's Rebellion*, Keith Stanovich, a cognitive psychologist at the University of Toronto, discusses how the development of the human brain has a number of mechanisms or kinds of processes it uses. Most of the processing in the brain is done autonomously. Most of it is developed over several hundred thousand years of evolution in order to be able to reproduce, to be able to avoid getting eaten, and to be able to find food. And so, we do lots of things like:

[Helgard throws a ball at McGrath.]

Oh, you flinched, you didn't react. You flinched because circuits in your brain over which you have no control quickly responded to the fact that a ball was coming at you. Now, those circuits are very useful for

surviving. Most of those circuits are very useful for surviving, and all were developed on the plains of the Serengeti. Those circuits are not so useful in the modern technological society. (The scariest thing about living in this country is that we have a president who goes with his gut feeling. Those gut feelings developed in a rather different environment and therefore are highly inappropriate most of the time in today's modern world. Not just his, but anybody's gut feelings.)

Stanovich points out, however, that we have an overlay on this; a set of processes that are not running in parallel all the time but are serial in nature, are intimately linked to language. Therefore, the notion that we might uncover why our brain (most brains, not mine, but everybody else's) finds it an interesting question to ask, Why are we here? might be a question accessible to science through cognitive research.

McGrath. I'm sure that's right. But take someone like Bertrand Russell, who says that once we've learned how to survive, we then start asking really big questions. In other words, when we were struggling for existence, maybe we haven't the time to ask why are we here because if we start asking that question, we won't be here much longer because we'll be eaten by a lion or something.

So Russell in many ways is saying that there may well be processing capacity in excess of what we are required to survive, but the questions that raises are nonetheless important. For example, his classic example is, "What is the good life, and how would we lead it?" That does seem to me to be a very important question. Now, if I can

ss this point, because I think it's a very interesting point: Dawkins himself, in *A Devil's Chaplain*, says science has no means for determining what is good and what is bad. I'm not at all implying his views to you here, but it's interesting to note there that if we take this classic question, What is the good life, and how may it be lived? Dawkins seems to be saying that scientists can't really answer that question.

Now, that's no criticism of science whatsoever. But it is, I think, saying there may be questions that need to be asked which are not simply thrown up by excess brain capacity, which is redundant because we don't have to worry about survival, but actually might well be significant questions about what it means to be human.

Helgand. That, the second question—what is the good life, and how is it to be lived?—that I do find an interesting question. But I'm nowhere near yet despairing of the fact that science will have something to contribute to the answer.

McGrath. Well, shall we move on, then?

One of the things that I found very intriguing about Richard Dawkins's book is this whole question of religious violence. Now, again, it's something I touched on. That's one thing—if it's something you'd like to explore.

Helgand. No, I think I'm more or less fully in agreement with you, there. I think there is no doubt that religion has engendered and engenders today enormous amounts of violence. I think the lack of religion does the same, and I have no argument with your supposition, and it's only a hypothesis at the moment, that the complete obliteration of religion from society would not lead to the obliteration of violence. I do not agree with Dawkins on that at all.

McGrath. Well, then, I'd like to move on and talk about a question which Dawkins raises, which I sense is an issue between us. That is whether religious faith can be thought of as being evidence-based, or whether actually it orbits a separate planet.

Let me say what I think and then give you a chance to come back. I personally would base no faith on the Turin Shroud or anything like that. Nor would I want to go back to a very early understanding of, for example, natural forces.

My understanding of natural forces, I think, is entirely scientific. But I don't see that as actually impacting on belief in God at all. What I do find is that when I put it like that, religious faith is based on evidence, but evidence is notoriously difficult to interpret.

ally, what I'm finding is that there are so many things in the natural world that require investigation or interpretation that there are possible competing explanations. If I can quote C. S. Lewis, who I put on my side of things quite well, he says—and this is from an article he wrote on theology and poetry: "I believe in God as I believe in his risen; not simply because I see it, but because by it, I see something else."

Other words, he's saying it kind of gives us an explanatory frame—a lens or a prism, which allows us to see things and actually more sense of them than we otherwise would. So, I'd want to try to defend the position that faith actually does make sense of things, at it makes sense in itself.

id. But you used the word *evidence*, and I'd be interested to hear about what "evidence" you find that supports your faith. Were you using the Lewis quote in that sense, as evidence?

th. No, I was using the Lewis quote really to make the point that a worldview really has to be valued on a number of levels. It could be: how true it is to what may be observed. In other words, evidence-based is it? My perception—which again, I'm very happy to share with you—is that all worldviews actually at some point almost always have faith, because they make assertions that cannot be proved. It's not just that they have a basis in evidence. It is, rather, how much of that basis is actually evidence. It is, rather, how much of that basis is actually evidence. It is, rather, how much of that basis is actually evidence. It is, rather, how much of that basis is actually evidence. It is, rather, how much of that basis is actually evidence.

1. Yes. One interesting observation that one of my colleagues made today when I was discussing this lecture has to do with uncertainty which is relevant to evidence. Scientists are extremely comfortable with uncertainty. We don't allow our graduate students to publish unless it has error bars on the data points. We use probability in an intuitive way, and the quantum mechanics, which you also cite in your book as somehow leading to uncertainty that leaves open the door to God, we regard as the most precise of the physical sciences.

It makes remarkably precise assertions. But it's made on a probabilistic basis, and we feel comfortable with that. I do get the feel-

ing, without going too far into your definition of *faith*, that most people are not comfortable with uncertainty, and I wonder if that's not the basis for where faith arises.

McGrath. The view I take is that I am a Christian. I believe in God, but I'm aware I cannot prove that with absolute certainty. But then, if I were to have an argument with an atheist philosopher, I would find the same thing—that actually he or she would also say, Well, this argument seems to take me in that direction, but I realize it doesn't take me all the way.

The end result of our discussion would be that both of us believe we are justified in taking our positions, but we realize we can't actually prove them with absolute certainty. And yet, we believe that the case is good enough to commit ourselves existentially, so to speak, and say, "This is good enough for us to actually base ourselves on."

Hefland. Yes. Well, I'll have to make a disclaimer, here, that as a scientist I think I'm not in the majority, but I don't believe it's possible for science to *prove* anything. We can only prove things in mathematics where we set all the rules, and then we can prove something true or false.

Science, to me, is not a mechanism to prove what's true. It's a process, a very social process, by which we build models that attempt ever more detailed and more predictive explanations of nature. And for me, that process is more than sufficient to lead my unexamined life.

McGrath. Well, and I'm very happy with that view of science, which I think actually is right, although we may find people in the audience who want to challenge both of us on that point. But again, because you and I seem to have an agreement here, I'd like to register a disagreement with Richard Dawkins.

Dawkins does seem to take what I would have to describe as a very optimistic view of science. Science proves things with certainty. And therefore, that kind of way eliminates the conceptual space for God. And again I find that to be a misstatement of what the sciences actually and I find that what you've just said actually resonates very strongly in what I think is the case.

But, of course, that doesn't have metaphysical implications, but it does, I think, help us to be realistic about what the sciences are and are not.

Helmand. Yes. I completely agree. But you do make a point of what you call radical theory change, or something like that, in science as being important. I just have two things to say about that. One is that radical theory change in science is discussed much more by philosophers of science who don't do science. In fact, the process of radical theory change in science, which our newspapers tell us every Tuesday occurs in one or two or three or four sciences, is not

way science proceeds at all. In particular, you mention in your book period of 1870 to 1900, when physics sort of decided it was all done. That's the way the historians of science write it. I think it's really far from the truth. There's a very interesting book I've read, *Einstein's Clocks and Poincaré's Maps*, about precisely that period, in which it shows there tremendous intellectual ferment among admittedly a small community that something was fundamentally wrong, that things had to be re-examined.

Science evolves. It's a highly social phenomena, and it evolves not even Gould's punctuated equilibria but in a continuous way. And times it evolves at different rates. But I'd have to say that if radical theory change does occur in science, it's a tribute to the great strength

We're perfectly capable of, willing to and enthusiastic about abandoning totally our concept, say, of Newtonian gravity and replacing it with Einsteinian relativity. But I have to say—and correct me if I'm wrong—that theology as a subject is immune to radical theory change because if it underwent a radical theory change, it would not have a subject to discuss anymore.

McGrath. Well, let me begin by saying that I think that's a very good statement for science and certainly for me. A radical theory change perhaps isn't quite as radical as made out, but simply part of the ongoing scientific process, and emphasizes the provisionality of where we are. In other words, this is the way things seem to us today, but we're aware that it may develop in future directions as we go on.

But on the theological point: I'm a Protestant, and you have heard of the Reformation? The Reformation corresponds very well to what Thomas Kuhn would describe as a radical paradigm shift. And the key thing about Protestantism is it proposes not simply one such reforming event in the past, but an ongoing process of constant reevaluation and revision to ascertain that we have the best possible handle on our knowledge of God, and we want a sort of biblical anchor for that.

In his letter to the Thessalonians, Paul talks about putting everything to the test and holding fast to what is good. And so, I represent a strand of Christianity that is always saying we've got to keep examining things again and checking things out. And that means responding to criticisms.

I happen to disagree with Richard Dawkins's book very much. But I respect his right to write it and my obligation to respond to it, and I think that's part of this process of trying to be responsive to these challenges I see coming my way and asking whether I need to rethink as a result of the challenges it raises.

Helmand. Yes, I guess I was equating Newton's theory of gravity to God and Einstein's theory to not-God, and you were taking a narrower view, which is fair. I think it's possible this audience would like to hear more about your transformation from seventeen-year-old atheist to twenty-three-year-old Christian, and I could share my opposite transformation, if you like.

If I may say, I truly find it deeply mysterious as to how someone like you could have made such a transformation. So, I would like to hear about it. I'm curious.

McGrath. Well, I'm very happy to talk about this. I mean, it puzzles me, as well. I prided myself, and probably still pride myself, as being a free thinker. In other words, no one tells me what to think. I think I would have been astonished if I knew where my process of free thinking was going to take me. But to highlight some of the issues, when I was an atheist I was a rather dogmatic atheist who actually, I think, had very simplistic understanding of the sciences. Now, the understanding of the sciences I had then is very similar to the understanding Richard Dawkins has now. Your [Helfand's] much more nuanced understanding, if I may say so, I think is right. I want to be very clear about that. I had this very simplistic take on things, that science, atheism and religion were just locked together. That seemed to me to be the way things were, and I looked forward to developing my science and becoming a much more intellectually robust atheist.

Then, I began to find a number of things happening. One of them was reading something about the philosophy of science, and I began to realize that we were talking not so much about absolute proof but rather using good reason to believe that and being prepared to keep revising things. It actually began to suggest to me a most interesting option, namely, that we might be able to hold certain views which we believe to be right, we believe to be relevant, but nonetheless are not actually capable of being totally proved. That really began to make me see religious faith in a very new way.

I think another thing which really began to impact me around that time was the whole idea of a worldview. It was something that I was just covering at that time. In other words, not just this idea and that idea, but a network of ideas which gave me a way of seeing things. I began to realize that atheism itself was a worldview, and hence one which actually went beyond the available evidence to make certain claims. Then I began to realize that all worldviews were actually very much in the same boat. Therefore, there might be a case to be made for considering

others. And so, I began to reconsider the Christian worldview, and a number of things happened.

I think, if I can just single out two, because time is not totally in our favor:

One of them was a great interest in history. In other words asking, what actually happened in the New Testament? This was in addition to kind of the philosophical kind of reflections I was having, trying to ask what actually was the significance of Jesus of Nazareth. If I could write him off as simply an interesting teacher from the past, well, that's that. But it just seemed there was rather more to it than that.

And then there was something else, which is a very difficult thing to explain. Basically I was beginning to realize that something could be right, and yet have no discernible impact on the way in which we live our lives. Then I discovered that if Christianity were right, it actually had the capacity to transform. If I could make a distinction between being true and being real, it was real as well as true. That really had a very big impact on me. So, that was really how I began that journey of faith, which is still ongoing because I keep discovering more and finding myself very excited by that.

It is interesting that my pilgrimage has been in the opposite direction to what some people might have expected.

Helfand. Yes. Well, I guess a cynic would say that a dogmatic belief in atheism would easily transform itself into a dogmatic belief in God. But since you clearly demonstrated . . .

McGrath. Well, I shall watch Dawkins with great interest and see what happens.

Helfand. One never can tell when one gets very ill, for example, and I think that's right. Einstein once said that good young physicists turn into bad old philosophers, which may be relevant here. Well, all right. Because the audience may be interested, I'll give you a briefer explanation of my transformation.

I grew up in a very small and very boring town. I had a mother who was British and a Methodist in Britain, but in our little town, there were no Methodist churches. So, she became what were then called

regionalists, and is now called United Church of Christ, which of on the left side politically of American Protestantism.

father was Jewish, but he was the kind of Jew that cooked the for Easter breakfast at the sunrise service. However, he did fast m Kippur every year, even after his mother died at the age of nine. So, I was brought up in a somewhat, you might say, cultural home—I mean, I'm sure my father was the only Jew in the we lived in. It was not a very big town. We didn't go to synagogue; we went to church. I went to church every day. I sang in the I played the organ. I was president of my church fellowship in my and senior year.

I guess I never had a deep feeling (well, my wife would say I could here: I've never had a deep feeling); I didn't have a deep emotional use to this. It was all nice ritual, and actually I like rituals, so that's can't reconstruct this because of my lack of examination of my life, the battle of Jericho played a role here. I think I was learning about waves at the time in physics in high school and, for some reason, sson had to do with the battle of Jericho: you may recall that Joshua d the walls and blew the trumpets and the walls fell down, and the WAS OVER.

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thrown in one's face, as it is constantly in this country through its influence on the political process, which I find deeply scary.

It's for that reason that last week I gave a press conference in Washington about the influence of religion on our supposedly secular government. I feel that it's important to take a more active stand than I otherwise might, not perhaps to the extent of Dawkins's polemics, but nonetheless from a rather firmly rooted belief that faith, at least as practiced in this country, is irrational and dangerous.

Moderator: Thank you.