

Does science make belief in God obsolete?

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H I T C H E N S V . M I L L E R



No, but it should.

Christopher Hitchens is the author of God Is Not Great and the editor of The Portable Atheist.



Of course not.

Kenneth R. Miller is a professor of biology at Brown University and the author of Finding Darwin's God: A Scientist's Search for Common Ground between God and Evolution and of Only a Theory: Evolution and the Battle for America's Soul.

Hitchens:

I am not scientifically certified in any field, but when I read a "creationist" account of an Eden-based evolutionary fairy-story, I consider myself sufficiently qualified to understand and to refute the mental process by which it is argued. On the other hand, I do possess some small qualifications in the world of language and its relationship to cognition, and I have to confess that I simply cannot make sense of a single one of your most important assertions or (perhaps I should better say) avowals.

What does it mean to say, "The Deity they reject so easily is not the one I know"? If you have such an extraordinary acquaintanceship, or source of information, is it only humility that keeps you confined in the small compass of Rhode Island? You go on to state that a rather intriguing and immense question (why is the world "bursting" with so much bio-diversity?) has in fact a rather obvious answer. You write: "To a person of faith, the answer to that question is God."

Well, I hope I may be excused if I state that I already knew about the things that faith can apparently cause people—without a rag of evidence—to believe. But is this same reply also the answer to the question: "why have 99.9 percent of all known species on our planet become extinct?" If so, then god—I don't capitalize my concepts—explains everything and nothing with equal ease.

This same tenacious addiction to tautology and non-sequitur must be the explanation for the latter part of your essay, in which you accuse atheists of trying to make god "an ordinary part of the natural world" (no we don't: the pantheists and the Paleyites do that). You make the circular assertion that god is "the reason for nature, the explanation for why things are" and the incoherent proposal that "He is the answer to existence, not part of existence itself." I have heard Zen koans uttered with more articulation. It would be unkind to ask you how you proceed from such deistic assumptions to your theistic ones—the Resurrection, for example. Why do you believe in such things? Do you believe that you have superior access to the numinous, and because such beliefs—in common with all other superstitions—are not subject to direct disproof or falsifiability? If so, you will, by the same token, have to accept my deeply held belief that such opinions are the moral and verbal equivalent of white noise.

Before any further damage to the good name of science is done, let me point out that it is perfectly absurd to say that there is a "scientific faith" which assumes that all matters are reducible to the immediately comprehensible. I would briefly cite J.B.S. Haldane's observation that the universe is not just queerer than we imagine, but queerer than we *can* imagine. I might add Einstein's remark that the miracle is that there *are* no miracles: that the natural order is in fact harmonious and not to be interrupted by capricious supernatural interventions. If that doesn't take care of deism, it takes care of theism—and it's religion we are talking about in this debate. Professor Miller, you appear to me to fail the elementary test of being able to say what your opponents are talking about. But then, by your absurd use of the term "validate" in the closing sentence of your essay, you would seem to have no idea what you yourself are talking about, either.

Miller:

I must confess that I am surprised by the tone and content of your writing, and especially by your eagerness to move the discussion away from science. You invoked history, writing that revelation came at the wrong time and to the wrong people. Apparently a proper God would have avoided "gaping peasants," and delivered his message instead to high table at Oxford. You deliberately misread my reference to personal belief as a claim of special revelation, and even found time to ridicule a tiny American state—ironically, the very one which first gave birth to the concept of religious freedom. Why such departures from the issue at hand?

Perhaps it is because you sense the inherent weakness of your argument. Your essay cited three scientific points, which, you were confident, would have kept us from "adopting monotheism." Ironically, in essence these were: 1) our species had a beginning, 2) the universe had a beginning, and 3) our existence will come to an end. Last time I looked, each of these was actually a teaching of the great monotheistic faiths. So much for the profound contradiction you sought.

You tip your hand when invoking extinction as a problem for faith, having fixed your arrow on nothing more sophisticated than an "Eden-based evolutionary fairy-story." You declare yourself, just as young-earth creationists do, unable to stretch the cloth of Genesis around the Big Bang, mass extinction, and human evolution. But scripture reflects the flawed cosmology of its age, just as one might imprint today's imperfect and incomplete science on the specifics of either your disbelief or my faith. Finding that old conceptions of nature are wrong, just as many of today's theories surely are, does not even begin to invalidate the religious message that we live in a universe reflecting the will and rationality of a creator. You say that the natural order is harmonious. I agree. At issue is the source of that harmony.

You say that the grand sweep of the cosmos makes "pathetic nonsense" of the notion that human existence is part of a plan, but on what *scientific* basis do you make that judgment? In reality, the potential for human existence is woven into every fiber of that universe, from the starry furnaces that forged the carbon upon which life is based, to the chemical bonds that fashioned our DNA from the muck and dust of this rocky planet. Seems like a plan to me.

I was particularly impressed—but not in a good way—by your misuse of Einstein. In saying that there are "no miracles," he was not ruling out the divine, but speaking to the scientific

comprehensibility of nature. Einstein also said there are two ways to live: as though nothing is a miracle, or as though everything is. I choose the latter, and clearly, so did he. Finally, you say that I am an "opponent" who simply does not know what you are talking about. Mr. Hitchens, I regard you as a friend not an opponent, and would suggest that the real problem is I understand what you are talking about all too well.

Hitchens:

To take these points in reverse order: Albert Einstein took a Spinozist worldview that excluded the idea of a personal god or a deity that intervened in human affairs. The natural order does not respond to prayer or propitiation: it maintains its extraordinary regularity. This may not rule out a certain non-specific deism or pantheism, but it does make nonsense of the idea of a god to which human beings can address themselves.

The argument from design has seldom been stated more sloppily than in the "grand sweep" paragraph that (in ascending order) undergirds this misreading of Einstein. Pray tell, is it *all* designed, or just the apparently harmonious bits? The impending collision between our galaxy and Andromeda: part of the plan or not? A series of lifeless failed planets in our own solar suburb: good design or random coincidence? As with every other such invocation, the fans of the designer must convict him either of a good deal of waste and fumbling or a great deal of cruelty and indifference, or both.

It is cheap to compare me to a young-earth creationist just because I suggest that one must choose between "scripture" and science. The former does indeed reflect "the flawed cosmology of its age," but that is precisely because it is a work of man and not a work of a deity. Which was my original point.

I cannot see how this insistence on an apparently designed harmony can be squared with your original assertion that god is "the answer to existence, not part of existence itself" or with your scorn for the idea that god is "an ordinary part of the natural world." Is he or isn't he the key to the natural order, or at any rate a dynamic element in it? I can understand your avoiding my question about resurrection, but if you want to stay focused on science then you can't have this both ways.

It's good of monotheists to accept that things have beginnings and ends. ("By god, sir," as Samuel Johnson said in a slightly different connection, "they had better".) I suppose one difference here is the eschatological one, or the way in which religion *looks forward* to the end. That important distinction to one side, the materialist view is simply that science can provide us, and indeed has provided us, with explanations for the origin and the terminus of our cosmos and our species that require no supernatural element. If this is not a scientific refutation of faith (which it isn't, since faith isn't susceptible to such procedures), it makes faith and science look increasingly hard to reconcile.

I was ridiculing you and not Rhode Island, as any careful reader will see. And yes, I do think that the Archangel Gabriel and the Virgin Mary and other apparitions ought at least once in human history to have shown themselves to people who were able to read and write, who were not terrified of demons and ghosts, and who possessed the ability to test evidence in the crucible of experiment. It hasn't happened yet, and I predict that it isn't going to happen, either. Nonetheless, the witchdoctors and shamans can always count on the credulity of second-and-third-hand witnesses, descending to tenth-and-twentieth hand, some of whom will sadly claim to base their beliefs on scientific method.

Miller:

You know, Christopher, I think we're making progress. In your invocations of Einstein and Spinoza there is a grudging, if indirect, deference to the argument in my original essay—specifically, that faith "includes science, but then seeks the ultimate reason why the logic of science should work so well." In each of your contributions to this dialogue, you've dismissed this as implying nothing more than deism, as if that alone was sufficient to refute it. As you well know, it is not.

Classic deism involves a God who is creator and prime mover, yet uninvolved in the affairs of his universe. But apply some logic here. By what principle would a God, capable of creating such vastness, be constrained from intervening in its affairs? Clearly, that restraint could only come by choice, and given such power, it would have to be a willing choice. The distinction between theism and deism, therefore, is really a claim about the personality of God, and the nature of his actions (or lack of same) in our created world. Earlier, I wrote that the atheist places God within the realm of science to investigate and test. The arguments you raise against scripture and reports of the miraculous take this form exactly, and that is also why they fall short—because they consider God to be a part of nature rather than nature's cause. I do wonder what sort of God would meet your tests for clarity of teaching and evidence of existence, and I would love to hear your answer.

I accept that your first response was an attempt at personal ridicule. However, I wonder why you resort to such tactics if the logic of your case is so compelling. You note sarcastically that it is "good of monotheists to accept that things have beginnings and ends." Can you possibly be serious, when Abrahamic monotheism has always spoken of ends and beginnings? As you acknowledge, science has indeed given explanations for "our cosmos and our species that require no supernatural element." On that point you and I agree. But this means only that science has now confirmed nature's sufficiency to fulfill the promised work of its creator.

You ask if all is designed, including galactic collisions, "failed planets," and the extravagant waste of nature. Yet by what rubric do you know the "purpose" of galaxies and planets, in order to pronounce them "failed?" There is waste and death in nature and the cosmos, but there is something else as well. Amid the material from which you draw the bleak conclusion of purposeless chaos, there are the very laws and elements that make evolution (and humanity) possible. A great biologist, whom we both admire, once wrote that there was "grandeur in this view of life," and science has done nothing since to set that judgment aside. A world of "endless forms, most beautiful and most wonderful" is the one in which we find ourselves, and I believe there is a reason for that.

Hitchens:

That there might have been a "mind" at the beginning of the cosmos does not in the least entail that there still is one, or that its abstention from intervention in human affairs is conscious. (If the mind took the form of an intelligent and self-conscious "god," as Lucretius pointed out, it would obviously wish to stay out of our petty quarrels and strivings.) And this mind would also need to have been created or inspired by still another mind, as in turn would that mind. No wonder that Christians prefer to start speaking about "mysteries" at this point.

Incidentally, are you a Christian? I have no idea which religion you do or do not believe in. Do you think that this eternal mind waited until two thousand years ago, then donated a son for a human sacrifice and thus enabled us to purge ourselves from sin? Or do you prefer to think that Mohammed is god's messenger, or that the eternal mind has made a covenant with one special tribe? With atheists, it is always possible for our opponents to know and understand (if they choose to) what we believe (or do not believe). With religious people it is possible to spend a long time in discussion without ever discovering precisely what role they believe the supernatural to play in our lives. And no two claims are ever quite the same—further proof that the whole religious enterprise is improvised by primates.

To answer your challenge: if I had faith I would not presume to act or think as if god owed me an explanation. Surely that is the point of faith to begin with: to fill the unbridgeable void between evidence and the entire lack of it. That's why I consider it the most over-rated of the virtues.

Miller:

As we conclude, I am struck by your careful avoidance of our question—whether science makes belief in God obsolete. Instead you puzzle over my religion (I'm a Catholic) and invoke the old standbys: scripture is unreliable, faiths contradict, miracles are delusional fabrications, and God's reported interventions in human affairs make no sense (to you). You dismiss a "mind" as first cause by invoking an infinite regression of minds—ironically unaware that your own view requires exactly that—an infinite regression of natural causes. A theist sees the logical problem here, but apparently you do not.

You avoided my direct question (to you, a "challenge") of what might convince you of God's reality. You wrote, in effect, that no evidence would do—a very fair summary of your views on this issue, I admit.

In the end you have no answer to why science works, why the physical logic of natural law makes life possible, or why the human mind is able to explore and understand nature. And I agree that there is no scientific answer to such questions. That is precisely the point of faith—to order and rationalize our encounters with the world around us. Faith is human, and therefore imperfect. But faith expresses, however poorly, a reality that includes the scientific experience in every sense, and therefore has become more relevant than ever in our scientific age.

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G R O O P M A N V . S H E R M E R



No, not at all.

Jerome Groopman is the Recanati Professor of Medicine at Harvard and author of How Doctors Think.



It depends.

Michael Shermer is the publisher of Skeptic magazine (www.skeptic.com), a monthly columnist for Scientific American (www.michaelshermer.com), a professor at Claremont Graduate University, and the author of How We Believe, Why Darwin Matters, and The Mind of the Market.

Groopman:

The argument in your essay is provocative and well constructed. As you state, belief is belief, so asking whether science makes belief obsolete misses the point. And, by imagining an extremely powerful "really smart" extra-terrestrial intelligence (ETI), you show the folly of those who look to science to prove an Intelligent Designer. Since I, as a person of faith, am not in the "intelligent design" camp, key aspects of my beliefs still ring true and are not disproven by your thought experiment.

But the God that you posit for Intelligent Designer, omniscient and omnipotent, is only half of the God that my faith imagines. You mention "Western religions," and by this I assume you mean the three major monotheistic faiths: Judaism, Christianity, and Islam. Judaism, my faith, is, of course, the first "Western" monotheistic creed, and has endured through the millennia. Jews define God differently from the way that God is defined in your essay. Yes, God is omniscient and omnipotent, the creator of all things. But God is also ineluctable, without form, immeasurable.

This description of God is set out metaphorically in the Hebrew Bible. There is a wonderful section in Exodus where Moses encounters God and asks to learn the nature of the divine. The response from God is anthropomorphic, but nonetheless, extraordinary in sophistication, particularly given its historical context. God tells Moses that He will put the prophet into the cleft of a rock and Moses can gaze on God's wake, but no one can see God "face to face." The rabbis interpret this as representing a fundamental and strikingly complex conception of God, a divine presence that is beyond human understanding and cannot be perceived or described with our senses or our symbols. This view distinguishes sharply between gods as idols and the Jewish God that has no image or form.

This important difference from your description of an ETI brings us back to points that I made initially. Science and religion, at least my religion, exist in different realms. God cannot be reduced to an "extremely powerful and really smart ETI." The full nature of God, all of God's attributes, exist in a dimension that cannot be quantified or depicted by science, the paramount expression of human intelligence. If we directly encountered and encompassed your ETI, Jews would know that the ETI was not God, because we are unable to grasp fully God's nature and dimensions.

This belief is integrated into both prayer and ritual. For example: the hymn that ends the Sabbath service, taught to school children and chanted throughout life, is (in Hebrew) Adon Olam. One of its key verses is "*b'li reshit b'li tachlit*," translated as "without beginning and without end." That is, in Judaism, God exists outside of time and cannot be bound by space. Thus, God exists outside any form of scientific measurement or logical encounter. For that reason, despite the power of your thought experiment, which succeeds in unmasking the flaws in the popular conception of the Intelligent Designer, at least the Jewish idea of God is not rendered obsolete by science.

Shermer:

If only religious believers throughout the world were as thoughtful, open-minded, ecumenical, and tolerant as you! Then, indeed, we could imagine no 9/11, no 7/7 bombings in London, no suicide terrorists, or abortion clinic bombers. And your declaration that science and religion are noncontradictory—"non-overlapping magisteria" in Stephen Jay Gould's apt phrase—is an honest and honorable position that helps to resolve potential disputes between these two ways of knowing. Indeed, I embrace that position myself in arguing that any deity that science could find would be indistinguishable from an extra-terrestrial intelligence of great power. If God is outside space and time, as you (and your faith tradition) assert, then science cannot know God because science traffics only in this space-time continuum. On these matters, we are in agreement.

Here is my honest problem with your position, the same problem that drove me from believer to nonbeliever: if God is, in your words, "without form, immeasurable" and exists "in a dimension that cannot be quantified or depicted by science," how do you know God exists? How can I—or anyone else for that matter—know God exists?

As corporeal beings who form beliefs about the world based on percepts (from our senses) and concepts (from our minds), how can we possibly know a being who by definition lies outside of both our percepts and our concepts? At some point doesn't God need to step into our space-time to make himself known in some manner—say through prayer, providence, or miracles? And if so, why can't science—which is itself a most human enterprise dependent on those percepts and concepts, not to mention a host of misperceptions and cognitive biases—measure such divine action?

If there is some other way of knowing—say, that of the mystics or of the faithful through deep meditation or prayer—why couldn't neuroscience say something meaningful about that process of knowing? If we came to understand (as studies with meditating monks and praying priests have shown) that a part of the parietal lobe of the brain associated with the orientation of the body in space is quiescent during such meditative states (breaking down the normal distinction one feels between self and non-self and thus making one feel "at one" with the environment), wouldn't this imply that rather than being in touch with a being outside of space and time, it is actually just a change in neurochemistry?

Groopman:

Again, your words resonate with reason. Indeed, it is not possible to prove that God exists; we cannot be sure, and people of faith do doubt. Such doubt is not restricted to my own tradition. Paul Tillich, a Protestant theologian, asserted that the basis of true faith is doubt.

I am skeptical about the reductionist approach of neuroscience to replicate religious and mystical experiences based on brain function. This has been popularized by religious believers who want to assert that there is a "God spot" in the brain and that we are formed by God to have faith based on our neuro-anatomy. Why do I reject this? For the very reasons you so cogently articulate. And it may be that certain mystical experiences do represent neurochemistry. As you know, there is much speculation that the sensations reported by certain mystics may be manifestations of temporal lobe epilepsy.

Does God step in to space-time? People of faith believe this. How would we measure such a moment? I don't know. If religious texts reflect such moments, they are based on metaphor, and they seem to acknowledge the limits of human perception. For example, the description of the Israelites gathered at Mount Sinai to receive the Ten Commandments is a subject of great discussion in the Talmud and religious commentaries. The bottom line is that "hearing" God is beyond words.

There are times when people like me step back and wonder whether this is all folk tale, narratives of the imagination with no basis in history or reality. Then there are times when they feel deeply true. Believers need not deny the tension that comes with such doubt. This makes us akin to agnostics. Atheists assert God does not exist. How do they know? It is a matter of assumption, just like blind faith. That blind faith is what drives people to fly planes into the World Trade Center or to launch Inquisitions.

Funny, but the line from *Hamlet* keeps playing in my mind, how there are more things in heaven and earth than are dreamt of in our philosophies (to paraphrase). Some of us take this as true. Others demand objective proof.

Shermer:

It does seem that we have come to an impasse. We agree that God's existence cannot be proven or disproven, and that those who think it can are the dogmatic extremists on both sides. Maybe God steps into our space-time, maybe he doesn't. Who knows? An invisible God is indistinguishable from a nonexistent God. How can we tell the difference? One answer comes to mind from a bumper sticker I once saw: MILITANT AGNOSTIC: I DON'T KNOW AND YOU DON'T EITHER.

So I have one final question for you: why believe in God at all? Why not just be an agnostic, in the original sense that Thomas Huxley meant when he coined the word in 1869: "one who holds that the existence of anything beyond and behind material phenomena is unknown and so far as can be judged unknowable, and especially that a First Cause and an unseen world are subjects of which we know nothing." Here I am reminded of Sir Peter Medawar's description of science as the "art of the soluble." If science is the art of the soluble, then belief in God is the art of the insoluble. So why believe?

From reading your work I can see that you are a nuanced thinker, a careful logician, and especially a humanitarian physician of warmth and empathy. And the 5,000-year tradition of your people has instilled in you (and the rest of us by diffusion) a deep sense of morality derived through debate and disputation by some of the greatest minds and scholars of the Western intellectual tradition. Why is that not enough? It was enough for Carl Sagan and Stephen Jay Gould, both Jewish, both non-believing agnostics, and two of the most spiritual scientists of our time. Why add to this rich heritage an invisible and incomprehensible deity who may or may not answer prayers, may or may not heal our wounds, may or may not care for us, and may or may not even exist? Why not celebrate humanity for what we are, just as we are—as natural beings no more and no less—and abandon the supernatural altogether?

Groopman:

Why believe? I have no rational answer. The question seems to be in the domain of why do we love someone? You could reduce it to certain components, perhaps refer to neurotransmitters, but somehow the answer seems to transcend the truly knowable. This is the cognitive dissonance that people like me live with, and with which we often struggle.

Shermer:

On one level I have no rebuttal to this final belief statement because none is necessary. If no empirical claim is made, then there is little more that science can say on the matter. Life can be a painful struggle, and filled with mysteries, so whatever one needs to do to get through the day to find happiness, and to bring some resolution to those nagging mysteries, well, who am I to argue? As declared in Psalms 46:1: "God is our refuge and strength, a very present help in trouble." On another level, however, I can't help but think that had you been born to Hindu parents in India rather than Jewish parents in the West, you would believe something entirely different about the ultimate nature of the universe that would be equally defensible with the means you have employed.

What science offers for explaining the feelings we experience when believing in God or falling in love is complementary, not conflicting; additive, not subtractive. I find it deeply interesting to know that when I fall in love with someone my initial lustful feelings are enhanced by dopamine, a neurohormone produced by the hypothalamus that triggers the release of testosterone, the hormone that drives sexual desire, and that my deeper feelings of attachment are reinforced by oxytocin, a hormone synthesized in the hypothalamus and secreted into the blood by the pituitary. Further, it is instructive to know that such hormone-induced neural pathways are exclusive to monogamous pair-bonded species as an evolutionary adaptation for the long-term care of helpless infants. We fall in love because our children need us! Does this in any way lessen the qualitative experience of falling in love and doting on one's children? No more than unweaving a rainbow into its constituent parts reduces the aesthetic appreciation of it.

Religious faith and belief in God have equally adaptive evolutionary explanations. Religion is a social institution that evolved to reinforce group cohesion and moral behavior. Religion is an integral mechanism of human culture to encourage altruism, reciprocal altruism, and indirect altruism, and to reveal the level of commitment to cooperate and reciprocate among members of the social community. Believing in God provides an explanation for our universe, our world, and ourselves; it explains where we came from, why we are here, and where we are going. God is also the ultimate enforcer of the rules, the final arbiter of moral dilemmas, and the pinnacle object of commitment.

But it is time to step out of our evolutionary heritage and our historical traditions and embrace science as the best tool ever devised for explaining how the world works, and to work together to create a social and political world that embraces moral principles and yet allows for natural human diversity to flourish. Religion cannot do the job because it has no systematic methods of explanation of the natural world, and no means of conflict resolution on moral issues when members of competing sects hold absolute beliefs that are mutually exclusive. Flawed as they may be, science and the secular Enlightenment values expressed in Western democracies are our only hope for survival.

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Yes, if by...

"science" we mean the entire enterprise of secular reason and knowledge (including history and philosophy), not just people with test tubes and white lab coats.

Traditionally, a belief in God was attractive because it promised to explain the deepest puzzles about origins. Where did the world come from? What is the basis of life? How can the mind arise from the body? Why should anyone be moral?

Yet over the millennia, there has been an inexorable trend: the deeper we probe these questions, and the more we learn about the world in which we live, the less reason there is to believe in God.

Start with the origin of the world. Today no honest and informed person can maintain that the universe came into being a few thousand years ago and assumed its current form in six days (to say nothing of absurdities like day and night existing before the sun was created). Nor is there a more abstract role for God to play as the ultimate first cause. This trick simply replaces the puzzle of "Where did the universe come from?" with the equivalent puzzle "Where did God come from?"

What about the fantastic diversity of life and its ubiquitous signs of design? At one time it was understandable to appeal to a divine designer to explain it all. No longer. Charles Darwin and Alfred Russel Wallace showed how the complexity of life could arise from the physical process of natural selection among replicators, and then Watson and Crick showed how replication itself could be understood in physical terms. Notwithstanding creationist propaganda, the evidence for evolution is overwhelming, including our DNA, the fossil record, the distribution of life on earth, and our own anatomy and physiology (such as the goose bumps that try to fluff up long-vanished fur).

For many people the human soul feels like a divine spark within us. But neuroscience has shown that our intelligence and emotions consist of intricate patterns of activity in the trillions of connections in our brain. True, scholars disagree on how to explain the existence of inner experience—some say it's a pseudo-problem, others believe it's just an open scientific problem, while still others think that it shows a limitation of human cognition (like our inability to visualize four-dimensional space-time). But even here, relabeling the problem with the word "soul" adds nothing to our understanding.

People used to think that biology could not explain why we have a conscience. But the human moral sense can be studied like any other mental faculty, such as thirst, color vision, or fear of heights. Evolutionary psychology and cognitive neuroscience are showing how our moral intuitions work, why they evolved, and how they are implemented within the brain.

This leaves morality itself—the benchmarks that allow us to criticize and improve our moral intuitions. It is true that science in the narrow sense cannot show what is right or wrong. But neither can appeals to God. It's not just that the traditional Judeo-Christian God endorsed genocide, slavery, rape, and the death penalty for trivial insults. It's that morality cannot be grounded in divine decree, not even in principle. Why did God deem some acts moral and others immoral? If he had no reason but divine whim, why should we take his commandments seriously? If he did have reasons, then why not appeal to those reasons directly?

Those reasons are not to be found in empirical science, but they are to be found in the nature of rationality as it is exercised by any intelligent social species. The essence of morality is the interchangeability of perspectives: the fact that as soon as I appeal to you to treat me in a certain way (to help me when I am in need, or not to hurt me for no reason), I have to be willing to apply the same standards to how I treat you, if I want you to take me seriously. That is the only policy that is logically consistent and leaves both of us better off. And God plays no role in it.



Absolutely not!

Now that we have scientific explanations for the natural phenomena that mystified our ancestors, many scientists and non-scientists believe that we no longer need to appeal to a supernatural God for explanations of anything, thereby making God obsolete. As for people of faith, many of them believe that science, by offering such explanations, opposes their understanding that the universe is the loving and purposeful creation of God. Because science denies this fundamental belief, they conclude that science is mistaken. These very different points of view share a common conviction: that science and religion are irreconcilable enemies. They are not.

I am a physicist. I do mainstream research; I publish in peer-reviewed journals; I present my research at professional meetings; I train students and postdoctoral researchers; I try to learn from nature how nature works. In other words, I am an ordinary scientist. I am also a person of religious faith. I attend church; I sing in the gospel choir; I go to Sunday school; I pray regularly; I try to "do justice, love mercy, and walk humbly with my God." In other words, I am an ordinary person of faith. To many people, this makes me a contradiction—a serious scientist who seriously believes in God. But to many more people, I am someone just like them. While most of the media's attention goes to the strident atheists who claim that religion is foolish superstition, and to the equally clamorous religious creationists who deny the clear evidence for cosmic and biological evolution, a majority of the people I know have no difficulty accepting scientific knowledge and holding to religious faith.

As an experimental physicist, I require hard evidence, reproducible experiments, and rigorous logic to support any scientific hypothesis. How can such a person base belief on faith? In fact there are two questions: "How *can* I believe in God?" and "Why *do* I believe in God?"

On the first question: a scientist can believe in God because such belief is not a scientific matter. Scientific statements must be "falsifiable." That is, there must be some outcome that at least in principle could show that the statement is false. I might say, "Einstein's theory of relativity correctly describes the behavior of visible objects in our solar system." So far, extremely careful measurements have failed to prove that statement false, but they could (and some people have invested careers in trying to see if they will). By contrast, religious statements are not necessarily falsifiable. I might say, "God loves us and wants us to love one another." I cannot think of anything that could prove that statement false. Some might argue that if I were more explicit about what I mean by God and the other concepts in my statement, it would become falsifiable. But such an argument misses the point. It is an attempt to turn a religious statement into a scientific one. There is no requirement that every statement be a scientific statement. Nor are non-scientific statements worthless or irrational simply because they are not scientific. "She sings beautifully." "He is a good man." "I love you." These are all non-scientific statements that can be of great value. Science is not the only useful way of looking at life.

What about the second question: why *do* I believe in God? As a physicist, I look at nature from a particular perspective. I see an orderly, beautiful universe in which nearly all physical phenomena can be understood from a few simple mathematical equations. I see a universe that, had it been constructed slightly differently, would never have given birth to stars and planets, let alone bacteria and people. And there is no good scientific reason for why the universe should not have been different. Many good scientists have concluded from these observations that an intelligent God must have chosen to create the universe with such beautiful, simple, and life-giving properties. Many other equally good scientists are nevertheless atheists. Both conclusions are positions of faith. Recently, the philosopher and long-time atheist Anthony Flew changed his mind and decided that, based on such evidence, he should believe in God. I find these arguments suggestive and supportive of belief in God, but not conclusive. I believe in God

For all these reasons, it's no coincidence that Western democracies have experienced three sweeping trends during the past few centuries: barbaric practices (such as slavery, sadistic criminal punishment, and the mistreatment of children) have decreased significantly; scientific and scholarly understanding has increased exponentially; and belief in God has waned. Science, in the broadest sense, is making belief in God obsolete, and we are the better for it.

[Close Essay](#)

Steven Pinker is the Johnstone Family Professor in the department of psychology at Harvard University. He is the author of seven books, including The Language Instinct, How the Mind Works, The Blank Slate, and most recently, The Stuff of Thought: Language as a Window into Human Nature.

because I can feel God's presence in my life, because I can see the evidence of God's goodness in the world, because I believe in Love and because I believe that God is Love.

Does this belief make me a better person or a better physicist than others? Hardly. I know plenty of atheists who are both better people and better scientists than I. I do think that this belief makes me better than I would be if I did not believe. Am I free of doubts about God? Hardly. Questions about the presence of evil in the world, the suffering of innocent children, the variety of religious thought, and other imponderables often leave me wondering if I have it right, and always leave me conscious of my ignorance. Nevertheless, I do believe, more *because* of science than in spite of it, but ultimately just because I believe. As the author of Hebrews put it: "faith is the substance of things hoped for, the evidence of things not seen."

[Close Essay](#)

William D. Phillips, a Nobel Laureate in physics, is a fellow of the Joint Quantum Institute of the University of Maryland and the National Institute of Standards and Technology.

Pinker:

It is a privilege to exchange ideas with a scientist whose accomplishments are as stunning as those of William Phillips, especially by responding to such a clear and thoughtful essay.

I agree that not all valuable statements are scientific statements. Nonetheless, before we believe any statement that is not inherently subjective—that is not exclusively about our inner lives—I think we should have reasons for the belief. "I love you" is subjective, so we need no reason to believe it other than the underlying feeling. "She sings beautifully" is largely subjective. Even "I believe in God" is subjective and needs no justification beyond that of other subjective beliefs, such as "I feel God's presence in my life."

But the statement "There is a God" is not subjective. It is about the nature of the world, and as soon as it is put forward as a proposition for other people to consider, they are entitled to ask whether or not there are good reasons to believe it. Science is basically an extension of that standard. I don't think a sharp line can be drawn between scientific and philosophical statements about the world on the one hand and religious statements about the world on the other.

Nor do I think that Dr. Phillips's belief in God is exclusively subjective. He offers us grounds for his belief, grounds that we—and he—can evaluate, just as we do scientific hypotheses. Dr. Phillips takes the orderly and elegant nature of the universe as evidence for God—which means that if the universe had been chaotic and messy, he would have concluded that God does not exist (or at least that God is very different from the way most people imagine him to be). Dr. Phillips takes the apparent fine-tuning of the physical constants of the universe—the fact that these parameters have exactly the values they must have for complex, stable things like us to evolve—as a sign that the universe was created with a purpose in mind. This, too, is scientific thinking. If a radical new theory convinced us that those constants had to have the values they do because of some deep physical principle, and thus that there is nothing to fine-tune, presumably Dr. Phillips would either abandon his belief in God or base his belief on other considerations. The same would happen if the most convincing cosmological theory turns out to posit multiple universes with different physical constants, implying that there is no tuning of our universe at all; we simply find ourselves, not surprisingly, in one of the rare universes that does allow stability.

As a good scientist, Dr. Phillips is incapable of banishing doubt from his mind. And his doubts, like his grounds for belief, are inspired by empirical facts—by the existence of suffering, by the existence of evil, by the multiplicity of religious beliefs (with the uncomfortable implication that each of us irrationally adopts the faith of the community we happen to be born into). If every toddler teetering on the edge of a swimming pool were blown to safety by a gust of wind; if Hitler had been killed by a truck in 1933; if pathogens and parasites and predators and other causes of misery had never evolved—then he would not harbor those doubts. As a fellow scientist, I would allow this evidence to overturn my even stronger doubts, and join him in believing in a loving and purposeful God.

The belief that the earth was the center of the universe was once taken as evidence for the centrality of humanity in a purposeful universe (that's why Galileo got into trouble for challenging it). Are we not entitled to ponder the implications of our earth being just one planet revolving around the sun, or of our solar system being one of billions in the universe, or of terrestrial life being obliterated when the sun turns up its radiation in a billion years, or of the universe itself expanding into oblivion with the passage of time? Does this look like a universe created with a purpose that includes us?

It seems to me that all reflections on the existence of God or a divine purpose, other than purely subjective expressions of faith, are rooted in empirical assumptions about the world, and can be evaluated by looking at what the world is like. That would make them not so different from scientific hypotheses. And the evidence seems to speak against the hypothesis that the universe was created for a moral purpose by a loving God.

Phillips:

In his own essay, Professor Pinker gives an excellent account of why a certain kind of belief in God has indeed been made obsolete by science. If my concept of God were tied to a literal reading of the book of Genesis as a description of the sequence of events of creation, then science would have made that God obsolete. If my belief in God were tied to the failure of the science of an earlier era to explain natural phenomena, then science would have made my belief obsolete. A "God of the gaps," invoked to fill holes in the body of scientific knowledge and to explain certain features of our universe, is a tenuous foundation for faith, as Pinker makes clear. Science constantly advances. Today's inability to explain adequately the emergence of consciousness from physics, the nature of most of the matter and energy in the universe, or even the reason that our universe seems so well-designed for the existence of life may be wiped out by the brilliance of future researchers.

If my belief in God depended on the existence of such current mysteries, I might very well expect my belief to be made obsolete by future progress in science, just as the belief claims from earlier generations that Pinker describes have been made obsolete by today's science. But my belief in God does not depend on such gaps in scientific knowledge, nor does the belief of most of the people who, like me, take both science and religion seriously. Rather, our belief depends on a rational choice to accept certain truths as a matter of faith. It depends on our understanding that science is not the only standard of truth. For many of us, our belief depends on the personal experience of having been touched by God's spirit. And that belief leads us to a commitment to live in accordance with the same moral principle enunciated by Pinker (and by Jesus and any number of other religious figures)—to behave toward others as we would have them behave toward us.

Pinker observes that some terrible things have been done in the name of religion, contributing to his conclusion that we are better off without religious belief. Though I can understand that point of view, and certainly people have committed many evil acts in the name of religion over the millennia, I do not agree that society would be improved if religion disappeared. Much societal good has come from religious thought. The elimination of slavery in the West and the civil-rights movement in the United States were largely driven by people responding to their religious principles.

Furthermore, atheistic, non-religious, and anti-religious societies have also perpetrated incredible horrors. Religion isn't responsible for all our ills, and it has promoted much of the societal progress that Pinker applauds. Humankind's practice of religion has been far from perfect, but I believe that it makes me and many of my fellow believers better equipped to achieve the kind of society that both Pinker and I would like to see.

Pinker:

I certainly agree that religion is not responsible for all our ills! Nor, of course, is an absence of religion a sufficient barrier to the horrors of humanity, since the absence of a questionable belief is just the absence of a questionable belief. To have a humane society, one needs a defensible moral and political system, which I would argue consists of secular moral philosophy and liberal democracy.

I don't agree, however, that religion deserves credit for the elimination of slavery or the civil-rights movement. Slavery is sanctioned in the Bible and coexisted with religion for millennia. The defenders of slavery and of legalized segregation were strongly religious people. The rise of abolitionism in the 19th century followed on the heels not of any revelation or religious reorganization but of the Enlightenment. It is true that Martin Luther King effectively used religious imagery in his rhetoric—and one certainly must credit religion with evocative words and images—but the arguments of King's that stirred the country's conscience were not religious commandments but secular Enlightenment ideals of individual rights: living out the true meaning of the creed that "all men are created equal"; ensuring that people "will not be judged by the color of their skin but by the content of their character."

Phillips:

This stimulating conversation has moved from the question of whether science has made belief in God obsolete to the question of whether, on balance, society would be better off with or without religious faith. This latter question, like the former, will have no clear answer upon which all will agree. For good or ill, the study of history (or, for that matter, of theology) is not like the study of science. In science, observation and experiment are the final arbiters of truth. If a conclusion is inconsistent with clear observations, or with repeated, consistent experiments, it is simply wrong. Not so with history, theology, or a myriad of other non-scientific pursuits.

I agree that many of the 19th-century abolitionists were motivated by the secular legacy of the Enlightenment. Many others, like the courageous Quakers who sheltered runaway slaves, were motivated by their religious faith. In fact, it is not so easy to separate the two. The Enlightenment ideal that "all men are created equal" is followed, in the Declaration of Independence, by the assertion that their "inalienable rights" are "endowed by their Creator." My own experience of the civil-rights movement is that churches, both black and white, were central to much of the motivation and the organization of that struggle. But many in the movement were wholly secular. Even in the churches, many used religious arguments to resist the movement, just as in earlier times some people had supported slavery with the same type of arguments. Religious thinking is neither uniform nor static. People in churches can no more lay claim to absolute truth than can those in academia.

The church I attend today was born in the 1960s from a fusion of black and white churches, and I can attest to the fact that not all, on either side, were in favor of the merger. But today we worship together and revere and respect one another's history, perspective, and experience. I consider our church to be one of the strongest forces promoting good interpersonal relationships in our community and in my own life. My church experience is one of the most valuable I have ever had, and I feel very strongly that I, and some small part of the society around me, are better off because it exists.

I believe, Steven, that you and I want that same things. We want people of religious faith and without religious faith to act with genuine concern for the well-being of others. In the end, I think we should agree with Charles Darwin that in matters of faith all of us must make our own decisions.