



# SCIENCE, RELIGION, AND SOCIETY: THE PROBLEM OF EVOLUTION IN AMERICA

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Received December 29, 2011

Accepted March 27, 2012

American resistance to accepting evolution is uniquely high among First World countries. This is due largely to the extreme religiosity of the United States, which is much higher than that of comparably advanced nations, and to the resistance of many religious people to the facts and supposed implications of evolution. The prevalence of religious belief in the United States suggests that outreach by scientists alone will not have a huge effect in increasing the acceptance of evolution, nor will the strategy of trying to convince the faithful that evolution is compatible with their religion. Because creationism is a symptom of religion, another strategy to promote evolution involves loosening the grip of faith on America. This is easier said than done, for recent sociological surveys show that religion is highly correlated with the dysfunctionality of a society, and various measures of societal health show that the United States is one of the most socially dysfunctional First World countries. Widespread acceptance of evolution in America, then, may have to await profound social change.

**KEY WORDS:** Creationism, education, evolutionary biology, religion, sociology.

This year ends my third decade of teaching evolution, in both regular university courses and public lectures. I have also written a nontechnical book about the massive and multifarious evidence for evolution (Coyne 2009a), hoping to reduce America's resistance to my own branch of biology.

But the resistance remains. Consider, for example, Miller et al.'s (2006) survey of 33 European countries and Japan, asking whether the residents agreed with, disagreed with, or were unsure of the statement, "Human beings, as we know them today, developed from an earlier species of animals." Americans ranked next to lowest, showing 40% agreement, 39% disagreement, and 21% uncertainty. Only Turkey fell below us, with figures of 27%, 22%, and 52%, respectively. In contrast, countries such as Iceland, Denmark, France, Japan, the United Kingdom, Spain, and Germany all showed more than 70% agreement (J. D. Miller, pers. comm.).

This is a national embarrassment. Imagine if America ranked as low in international surveys about our acceptance of atoms or the "germ theory" of disease! (Actually, according to a survey by the U.S. Department of Education, Center for Education Statistics [2011], America is about average in general science and math

literacy when compared to countries like those surveyed by Miller et al.)

Matters become worse when you deconstruct the evolution data. Many Americans who seem to accept evolution in principle nevertheless claim that God somehow intervened in or guided the evolution of *Homo sapiens*, thereby exempting us from the naturalistic evolution accepted by scientists. A recent Gallup Poll (2011a), for instance, gave these results: 40% of Americans saw humans as having been directly created by God in their present form within the last 10,000 years or so (i.e., young-earth creationism), 38% saw them as having developed from less advanced forms of life over millions of years, but through a process guided by God (theistic evolution), while only 16% accepted that humans evolved from earlier species through a process *unguided* by God (nontheistic evolution). And although "God-guided evolution" is a vague term, and not all of the 38% who accept theistic evolution could be strictly counted as creationists, all of them find naturalistic evolution objectionable for religious reasons.

The Gallup figures have remained pretty steady since these surveys began in 1982. The recent figures do show slight

improvement: the 9% who accepted unguided evolution in that year are now 16%, a 77% increase. Still, this is well below figures for Europe and Japan, and even now only one in six Americans accept a form of human evolution that does not invoke divine intervention or guidance.

Creationist views seem even more entrenched when one asks Americans about what, regardless of their personal beliefs, should be taught in public schools about human origins. According to a 2005 Harris poll summarized at [PollingReport.com](http://PollingReport.com), just 12%—one in eight—respondents thought that only naturalistic evolution should be taught, but nearly twice as many (23%) favored teaching the creationist view alone. Four percent thought intelligent design only should be taught, 3% thought *no* explanation should be taught, and 3% were unsure. But the American penchant for “equal time,” deeply misguided in this case, was evinced in the whopping 55% of Americans who thought that evolution, creationism, and intelligent design should *all* be taught!

Answers to polls can, of course, be swayed by how questions are asked, but a recent book analyzing all the polls reaches this conclusion (Berkman and Plutzer 2010, p. 62):

Even if the actual percentages might differ from poll to poll, there can be no doubts that the large majority of Americans want creationism taught in the public schools. A large plurality of this group wants creationism taught as science and in science classes, whereas others apparently would be satisfied to see some ideas of creationism validated by their discussion as a religious perspective or belief.

Here I offer some thoughts about why America—uniquely among First World countries—is so refractory to evolution, and discuss some solutions. My opinions are, of course, mine alone, not official views of the Society for the Study of Evolution.

### WHY DO AMERICANS HATE EVOLUTION?

The resistance of Americans to evolution, and our mediocre understanding of science in general (California Academy of Sciences 2009), are often laid partly at the door of scientists themselves: we are accused of cloistering ourselves in the laboratory rather than reaching out to the public (see, for example, Mooney and Kirshenbaum 2009). But there has been plenty of outreach. Now, more than at any time in my life, I see Americans awash in popular science—evolution in particular. Bookstores teem with volumes by Stephen Gould, Steven Pinker, Richard Dawkins, Edward O. Wilson, and Jared Diamond; evolutionary psychology is all the rage; natural history museums have become user friendly; there are dozens of blogs about evolution; and entire television channels are devoted to science and nature. Science education for laypeople is not hard to come by, and we have more popular commentary on evolution than ever before. Yet our record of accepting evolution is still abysmal. Why?

The answer seems pretty clear: religion. (I define it as “those systems of belief that accept and worship the existence of supernatural beings whose actions affect the universe”.) Religion is an answer that many people do not want to hear, but there is much evidence that America’s resistance to evolution is truly a byproduct of America’s extreme religiosity. (I use “religiosity” in the first sense given by the Oxford English Dictionary, as “religiousness; religious feeling or belief”.) Evolution, of course, contravenes many common religious beliefs—not just those dealing with Biblical literalism, but those dealing with morality, meaning, and human significance.

It is well known that the United States is one of the most religious First World nations. Paul’s (2009) data from 15 such countries, for example, showed that America harbored the highest proportion of people who say they believe in God *with absolute certainty*—63%—with the next closest nation being Ireland (50%), while 10 countries were below 20%. These data underestimate our religiosity, of course, because they neglect people who are not absolutely certain about God. A recent Gallup Poll (2011b), for instance, showed that when Americans were asked, “Do you believe in God?”, 92% answered “yes.”

It is palpably obvious that, despite the presence of a few atheists or agnostics who deny evolution, virtually all opposition to evolution in America, and other countries as well, has religious roots. The religious underpinnings of creationism and its stepchild Intelligent Design (ID) have been repeatedly discerned by American courts, which have banned the teaching of those views in public schools because they breach America’s legal wall between church and state—the wall buttressed by the “establishment clause” of the First Amendment to the Constitution. And of course there are statements by many churches and believers themselves (most often of fundamentalist or sectarian Protestant stripe) that evolution violates the tenets of their faith, erodes morality, dispels the idea of human purpose and meaning, and threatens the specialness of humans that is embodied in scripture.

But it is not just religious fundamentalists who oppose evolution in America. As I mentioned above, 40% of Americans see God as having created humans directly, but a recent Gallup Poll (2011c) shows that only 31% of us see the Bible as literally true. And although some religious denominations have no *official* opposition to evolution, many of their adherents still reject it. The Catholic Church, for example, accepts a form of theistic evolution, mostly natural but still guided by God when it comes to the evolution of humans and their supposed souls (John Paul II, 1996). Nevertheless, 27% of American Catholics think that modern species were created instantaneously by God and have remained unchanged ever since, while 8% do not know or refuse to answer (Masci 2009). Statistics for mainline, nonevangelical Protestants are virtually identical. Even “liberal” believers, then, show religiously based opposition to evolution.

This conclusion is echoed by a Pew survey comparing acceptance of evolution among the American public as a whole versus Americans unaffiliated with any religion (Masci 2009). Sixty percent of the unaffiliated see species as having evolved by natural processes (the figure for the general public is 32%), 15% as involving a God-guided evolutionary process (22% for the general public), and only 11% of the unaffiliated (and 31% of the general public) saw life as having existed in its present form from the beginning of time. Clearly, naturalistic evolution is more congenial to the less religious.

That survey also showed that church attendance is negatively correlated with acceptance of evolution. Just 14% of those who go to church at least weekly thought that evolution occurred by natural processes. This figure rose to 36% for those who attend church monthly or yearly, and to 51% among those who seldom or never go to church.

One sees a negative relationship between religiosity and acceptance of evolution not just within America, but among other countries as well. In Figure 1, I have plotted the data for 32 countries in Europe—plus Japan and the United States—relating belief in God to acceptance of human evolution. The strong negative correlation is obvious, even if one omits the high-religion, low-evolution point for the U.S. Religiosity explains 37% of the variance among nations in acceptance of evolution. Obviously, correlation is not causation, and one could interpret this result as showing not that religion prevents acceptance of evolution, but that accepting evolution makes one less religious. Undoubtedly both factors operate (or there could be other correlated but unexamined variables), but the former explanation seems more robust given that in most countries people acquire their faith before they learn about evolution.

There is ample evidence, then, that aversion to evolution stems from religious belief not just in the United States but in the world as a whole, and no evidence that resistance to evolution reflects a lack of outreach on the part of teachers and scientists. A final bit of data (Masci 2007) supports this conclusion:

When asked what they would do if scientists were to disprove a particular religious belief, nearly two-thirds (64%) of [American] people say they would continue to hold to what their religion teaches rather than accept the contrary scientific finding, according to the results of an October 2006 Time magazine poll. Indeed, in a May 2007 Gallup poll, only 14% of those who say they do not believe in evolution cite lack of evidence as the main reason underpinning their views; more people cite their belief in Jesus (19%), God (16%) or religion generally (16%) as their reason for rejecting Darwin's theory.

#### **INCOMPATIBILITIES BETWEEN SCIENCE AND FAITH**

As the last paragraph suggests, religion breeds resistance not only to evolution, but also to *science itself*. Yet, we often hear that these two spheres of thought are perfectly compatible. Some argue that

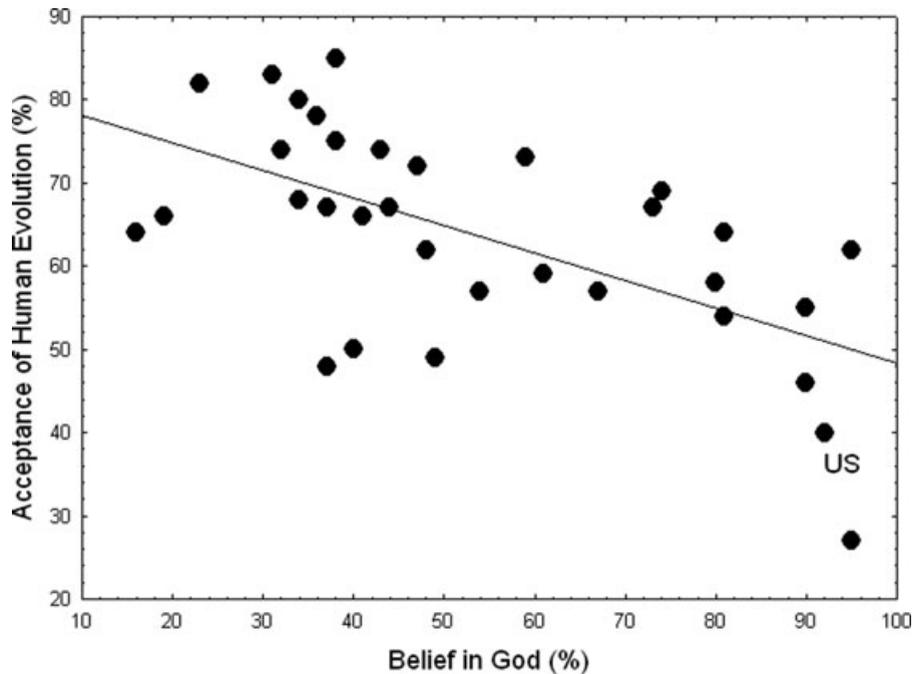
the mere existence of religious scientists proves this compatibility, but that is specious. That people can simultaneously hold two conflicting worldviews in their head is evidence not for compatibility but for Walt Whitman's (1855) solipsistic admission, "Do I contradict myself?/ Very well, then I contradict myself,/ (I am large, I contain multitudes.)" This argument for science/faith compatibility is like saying that Christianity and adultery are compatible because many Christians are adulterers.

As I have discussed previously in more detail (Coyne 2009b, 2010), I see religion and science as incompatible in several ways. The first involves methodology. Science's method of finding truth, which relies on reason, empirical investigation, criticism, doubt, predictive power, and repeatability of observations by different investigators, is incompatible with religion's methods for understanding the universe—methods based on dogma, authority, and revelation. Scientific truth changes in response to new findings about the world, while religious "truth" (the quotes denote my doubt that such truth exists, because it differs among individuals and among faiths) changes rarely, and most often in response to scientific advances (e.g., evolution) or shifts in secular morality (e.g., recognition of rights for women and gays). In science faith is a vice, in religion it is a virtue. Science finds out truths about the universe that are universally accepted (although always provisional); religion can *ask* questions about the universe (e.g., "what is the purpose of the cosmos?") but cannot answer them in a way that satisfies all believers, even within a single religious denomination.

Second, this methodological incompatibility results in disparities of outcome between scientific and religious "investigations." Many of the "truths" once revealed by the Abrahamic faiths, for instance, have been disproven by science: these include special creation, the Adam and Eve story, and the Great Flood. Science has also rendered implausible other religious claims, such as the existence of virgin births, bodily resurrections, a soul separate from the brain and body, and so on. Needless to say, not one scientific truth has ever been disproven by religion. And, as we know well, different religions produce different and often incompatible claims about reality, making hash of the very notion of "religious truth." Many Christians claim not only that Jesus was divine, but that the road to heaven requires accepting that claim, while the Qur'an states flatly that those who hold this belief will spend eternity in hell. These claims cannot both be true.

In contrast, there is only one brand of scientific truth, independent of the ethnicity and faith of its practitioners. Experience has shown only one way to discover what is true about our planet and universe: a combination of empiricism and rationality—that is, science conceived broadly.

The incompatibility between religious claims and scientific truths is most evident when it comes to evolution. As I noted



**Figure 1.** The correlation between belief in God and acceptance of human evolution among 34 countries. Acceptance of evolution is based on the survey of Miller et al. (2006), who asked people whether they agreed with the statement, “Human beings, as we know them today, developed from earlier species of animals.” (Original data provided by J. D. Miller.) “Belief in God” comes from the Eurobarometer survey of 2005, except for data for Japan from (Zuckerman 2007) and for the United States from a Gallup Poll (2011b). “US” is the point for the United States. The correlation is  $-0.608$  ( $P = 0.0001$ ), the equation of the least-squares regression line is  $y = 81.47 - 0.33x$ .

above, not only do 40% of Americans hold the profoundly anti-scientific view that humans were created within the last 10,000 years in their present form, but an additional 38% favor a form of human evolution guided by God. That is also unscientific because biologists see humans, like every other species, as having evolved by purely natural processes. There is a reason, after all, why Darwin’s greatest idea was called *natural* selection. Those who wish to harmonize science and faith tend to sweep this problem under the rug, but the fact remains that 78% of Americans disagree with the scientific view of evolution. This dichotomy between the public and scientists is starkly delineated by the Protestant theologian and philosopher Alvin Plantinga (2011, pp. 4–5):

What is *not* consistent with Christian belief, however, is the claim that evolution and Darwinism are *unguided*—where I’ll take that to include *being unplanned and unintended*. What is not consistent with Christian belief is the claim that no personal agent, not even God, has guided, planned, intended, directed, orchestrated, or shaped this whole process. Yet precisely this claim is made by a large number of contemporary scientists and philosophers who write on this topic.

Beyond the two incompatibilities of methodology and outcome is a *philosophical* incompatibility: the scientific view that supernatural beings are not just unnecessary to explain the universe (methodological naturalism), but can be *taken as nonexistent*

(philosophical naturalism). Forrest (2000, p. 21) explains the link between these two forms of naturalism:

Taken together, the (1) proven success of methodological naturalism combined with (2) the massive body of knowledge gained by it, (3) the lack of a comparable method or epistemology for knowing the supernatural, and (4) the subsequent lack of any conclusive evidence for the existence of the supernatural, yield philosophical naturalism as the most methodologically and epistemologically defensible world view.

This is where philosophical naturalism wins—it is a *substantive* worldview built on the cumulative *results* of methodological naturalism, and there is nothing comparable to the latter in terms of providing epistemic support for a worldview. If knowledge is only as good as the method by which it is obtained, and a world view is only as good as its epistemological underpinning, then from both a methodological and an epistemological standpoint, philosophical naturalism is more justifiable than any other world view that one might conjoin with methodological naturalism.

The idea that deities do not affect the universe, then, is not an unjustified a priori assumption, as theologians often claim, but a conclusion born of experience: the experience that only a naturalistic attitude—that is, a scientific one—has helped us understand nature and make verified predictions about it. As our confidence that science helps us understand the universe grows,

so wanes our notion that immaterial and supernatural forces exist.

Further evidence for incompatibility comes from the huge disparity in religiosity between scientists and laypeople. While only 6% of the American public describe themselves as atheists or agnostics, 64% of scientists at “elite” American universities fall into these classes (Ecklund 2010; similar results were found by Larson and Witham 1997). This figure is much higher for more accomplished scientists. A survey by Larson and Witham (1998) showed that 93% of members of the National Academy of Sciences, America’s most elite body of scientists, are agnostics or atheists, with just 7% believing in a personal God. This is almost the exact reverse of figures for the American public as a whole.

This disparity bespeaks a profound disconnect between faith and science. Regardless of whether it reflects the attraction of nonbelievers to science, or the fact that science erodes religious belief—both are undoubtedly true—the incompatibility remains.

Finally, that incompatibility is widely perceived by Americans themselves. A recent Pew Forum survey (Masci 2009) asked Americans, “Are science and religion often in conflict?” The response: 55% of the general public said “yes,” 38% “no,” and 7% “don’t know”. Another question, “Does science sometimes conflict with your own religious beliefs, or doesn’t it?” yielded answers of 36% “yes” and 61% “no.” Among Catholics, one of the more evolution-friendly faiths, 54% see a general conflict while 44% see science as sometimes conflicting with their own beliefs.

Much of this conflict surely involves evolution, which among all sciences hits faith hardest in its solar plexus. No other realm of science, save perhaps cosmology, so discomfits the faithful. And the disparity between scientists and the general public on the issue of religion is profound: while 32% of the public think that humans evolved by natural processes and 31% claim humans were created in their present form, the figures for scientists are 87% and 2%, respectively (Pew Research Center, 2011).

But conflict between religion and science exists independent of evolution. Sherkat (2011) used survey data from the National Opinion Research Center on the scientific literacy of Americans and correlated that literacy with demographic variables such as gender; income; education; religion; and whether people believed the Bible was literally true, not literally true but inspired by God, or a manmade book of fables. The survey deliberately omitted questions on the politically and religiously fraught topics of evolution and global warming. Yet the results were striking: religion was strongly and significantly associated with lower science literacy. Sectarian Protestants and—surprisingly—Catholics scored lower on the tests than did “other Protestants” and “non-Christians” (e.g., Jews and Buddhists), who in turn fell below nonbelievers. The three categories of Bible belief also affected science literacy in the expected direction: more literalism was associated with less

literacy. Multivariate regression showed that the effect of religion was independent of income, gender, and education. Further, the effect of religion was independent of degree of belief in the Bible, and vice versa. Sherkat concluded (p. 1145):

The gap between sectarians and fundamentalists and other Americans is quite substantial. Indeed, only education is a stronger predictor of scientific proficiency than are religious factors . . . Scientific literacy is low in the United States relative to other developed nations, and this research suggests that religious factors play a substantial role in creating these deficits.

Many Americans are also *theologically* illiterate. A survey in 2010 (Pew Center Research Publications) found that “large numbers of Americans are uninformed about the tenets, practices, history, and leading figures of many faith traditions—including their own.” (Curiously, atheists were more literate about religion in general than members of any religious group.) It is possible, then, that some of the faithful reject evolution simply because they are unaware that their own denomination accepts it.

## SOLUTIONS

How can we overcome religiously based opposition to evolution and science in general? Two strategies have come to the fore. The first involves convincing religious people that neither evolution nor science pose threats to their faith, a strategy known as “accommodationism.” The hope is that by showing the faithful that science and evolution do not automatically lead to atheism, many of them will retain their faith but abandon creationism. This tactic has been widely embraced by theologians, religious organizations, scientists, and even scientific societies.

To a large degree, accommodationism is financially supported by the largesse of the John Templeton Foundation, which annually dispenses \$70 million in grant money to scientists and theologians, much of it to projects—usually grouped under the rubric of “Big Questions”—meant to reconcile science and faith (Bains 2011). It also annually awards a Templeton Prize of 1 million British pounds (deliberately made larger than the Nobel Prize) to honor “a living person who has made an exceptional contribution to affirming life’s spiritual dimension, whether through insight, discovery, or practical works” (Templeton Foundation 2011). The BioLogos Foundation, funded by Templeton and founded by Francis Collins, now director of the National Institutes of Health, is aimed at convincing evangelical Christians that they can accept both Jesus and Darwin.

The prevalence of accommodationism is best conveyed by a few official statements of scientific organizations. In 2006, the American Association for the Advancement of Science (AAAS) issued a statement about the teaching of evolution that includes the following:

The sponsors of many of these state and local proposals [to limit or eliminate the teaching of evolution in public schools] seem to believe that evolution and religion conflict. This is unfortunate. They need not be incompatible. Science and religion ask fundamentally different questions about the world. Many religious leaders have affirmed that they see no conflict between evolution and religion. We and the overwhelming majority of scientists share this view.

The AAAS, (2011) also sponsors a “Dialogue on Science, Ethics and Religion” program that strongly promotes the view that there is no incompatibility between science and religion. This initiative was funded by an 18-year grant of \$5,351,707 from the John Templeton Foundation.

The National Academies (2008), a consortium of elite scientists, put a similar statement on their “Evolution resources” site:

Science and religion are based on different aspects of human experience. In science, explanations must be based on evidence drawn from examining the natural world. Scientifically based observations or experiments that conflict with an explanation eventually must lead to modification or even abandonment of that explanation. Religious faith, in contrast, does not depend only on empirical evidence, is not necessarily modified in the face of conflicting evidence, and typically involves supernatural forces or entities. Because they are not a part of nature, supernatural entities cannot be investigated by science. In this sense, science and religion are separate and address aspects of human understanding in different ways. Attempts to pit science and religion against each other create controversy where none needs to exist.

Leaving aside the obvious conflicts in methodology and results described above, the claim that “supernatural entities cannot be investigated by science” is questionable, for the claimed *actions* of those entities can be investigated empirically. Studies of intercessory prayer, for instance, have yielded no evidence for the supernatural (e.g., Galton 1872; Aviles et al. 2001), and many similar studies—the efficacy of rain dancing and animal sacrifice come to mind—are possible.

Finally, the website of the National Center for Science Education, the premier anticreationist organization in America, has a section on “God and evolution” that asserts (Hess 2009):

The science of evolution does not make claims about God’s existence or non-existence, any more than do other scientific theories such as gravitation, atomic structure, or plate tectonics. Just like gravity, the theory of evolution is compatible with theism, atheism, and agnosticism. Can someone accept evolution as the most compelling explanation for biological diversity, and also accept the idea that God works through evolution? Many religious people do.

And many do not.

In contrast, the “Statement on the teaching of evolution” by the Society for the Study of Evolution, which does not mention religion, is a model of how to promote evolution on its scien-

tific merits alone, without wading into the marshy hinterlands of theology and religious compatibility:

Evolutionary theory should be taught in public schools because it is one of the most important scientific theories ever generated, and because it is the accepted scientific explanation for the diversity of life. As a scientific theory, it is testable and has been extensively tested. As stated by the great geneticist and evolutionist Theodosius Dobzhansky, “Nothing in biology makes sense except in the light of evolution.” The theory of evolution is subject to refinements and revisions, but this is no different from any other major scientific theory, such as those providing the explanatory frameworks of geology, physics, or chemistry. There is no pedagogical or scientific reason to treat evolutionary theory any differently than any other well-accepted scientific theory, and it should be taught in public schools as the firmly established, accepted unifying scientific principle that it is.

Several of the official statements quoted above show that accommodationism rests largely on the notion that religion and science are disjoint areas—“different ways of knowing” that answer different questions about the world. This assertion, historically common among accommodationists, was made famous by Stephen J. Gould’s 1999 book *Rocks of Ages: Science and Religion in the Fullness of Life*. Gould proposed a doctrine called “NOMA,” short for “non-overlapping magisteria,” whose essence is this:

Science tries to document the factual character of the natural world, and to develop theories that coordinate and explain these facts. Religion, on the other hand, operates in the equally important, but utterly different, realm of human purposes, meanings, and values—subjects that the factual domain of science might illuminate, but can never resolve (Gould 1999, p. 4).

The biggest problem with accommodationism is the absence of studies showing that it works. One could argue, for instance, that asserting the compatibility of evolution and scripture will not budge those 31% of Americans who see the Bible as literally true, nor sway those who feel that the idea of evolution is ineluctably tied to immorality, a life devoid of purpose and meaning, and the view that *H. sapiens* is not the special goal of God’s creation.

The idea of NOMA, too, is problematic. As both Orr (1999) and Coyne (2000) noted when reviewing Gould’s *Rocks of Ages*, religion and science occupy distinct magisteria only if one defines “religion” in a peculiar way. Gould’s view that genuine religion does not conflict with science is tautological because he considered religions that *do* conflict with science, such as fundamentalist Protestantism, as not “genuine.” And it is not only fundamentalist Protestants whose religion is not really “religion” by Gould’s lights, but also the many Mormons, Jehovah’s Witnesses, Orthodox Jews, Scientologists, Muslims, Hindus, and mainstream Protestants and Catholics who subscribe to creationist narratives. It is simply not kosher to delimit “religion” in a way that excludes a huge fraction of the world’s believers.

Further, despite Gould's assertion, religion does not have a corner on morality, either. There has been a vigorous secular tradition of morality since ancient Greece, and many tenets of *religiously* based morality, including the pervasive disenfranchisement of women, nonbelievers, and gays, are rejected in liberal quarters. In the end, any theistic religion is doomed to conflict with both NOMA and science, because theism makes claims about how gods affect the workings of the real world, claims that can in principle be tested or adjudicated by science.

I contend, then, that when scientific organizations argue for the compatibility of religion and evolution, or of religion and science in general, they are engaged not in science or philosophy but in theology. That is because accommodationism endorses a particular *form* of religion—a liberal faith that sees scripture as almost entirely metaphorical. Such a viewpoint marginalizes the many forms of religion whose opposition to evolution is based on stricter adherence to scripture and dogma, as well as those religions, like Catholicism, that endorse a form of God-guided evolution. Scientific organizations should follow the lead of the Society for the Study of Evolution in maintaining strict neutrality toward faith, avoiding *any* statement about whether religion is compatible or incompatible with science. When we make *official* statements about the need to teach evolution, let us stick to our expertise—the science—and leave theology to the theologians.

Because accommodationism has been historically unsuccessful, what else can we do? An alternative or complementary strategy is to work actively to weaken the grasp of religion on America—or at least of those species of religion that immunize people against evolution and science. This is the course chosen by many scientists. After having taught evolution for years, we have finally recognized where our real opposition lies: creationism is simply one of many symptoms of religion. A continuous stream of anti-evolution propaganda pours from the religiously motivated, distorting the public understanding of evolution. It follows that naturalistic evolution will not attract a majority of Americans until our nation becomes less religious. That, of course, is contrary to accommodationism, which takes religion as a given. But one suspects that we could best promote evolution not by the BioLogos strategy of trying to get evangelicals to embrace a worldview they find repugnant, but by concentrating on bringing Catholics and mainline Protestants into the “no religion” category!

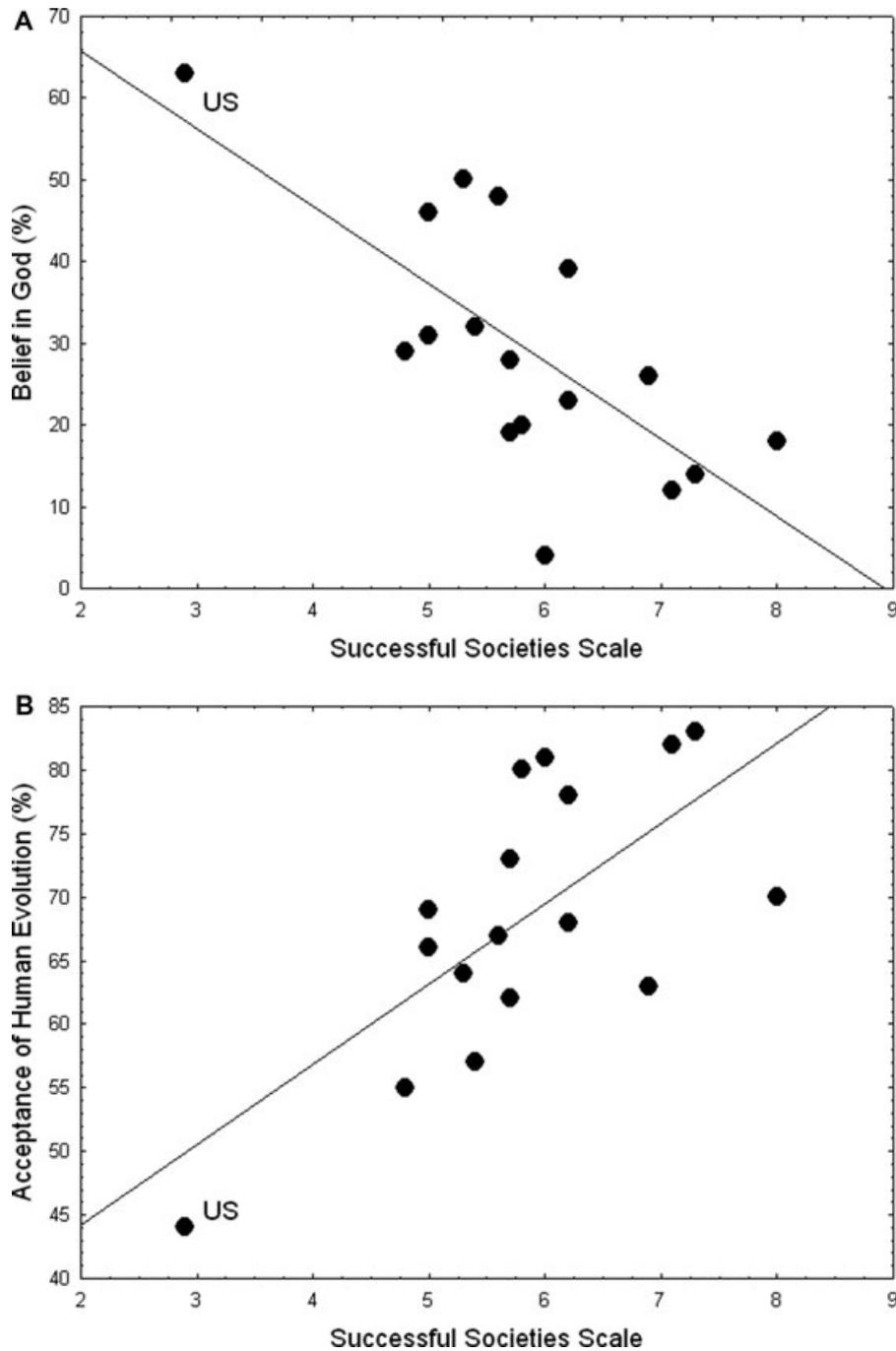
An obvious riposte is this: “That’s useless, for religion will always be with us.” To this I have two responses. First, look at Europe, which used to be deeply religious but is now largely nonreligious. While 92% of Americans believe in God (Gallup 2011b), other First World nations show a much lower fraction of believers: 23% in Sweden, 34% in Norway and France, 38% in the United Kingdom, 43% in Belgium, and 47% in Germany, to name but a few (Eurobarometer 2005). This reflects rapid secularization

in nations where nearly everyone was religious only a few hundred years ago. Secularization is of course a complex phenomenon, and Europe’s experience cannot necessarily be taken as universally applicable. Still, it surely gives us reason to be skeptical of claims that the grasp of faith can never be loosed. It also shows that even if religious belief is innate—perhaps something hardwired in our brains by evolution—it is sufficiently malleable to be completely overcome by many individuals.

Second, virtually all indicators show that religion is also waning in the United States, a trend that may explain the small but significant rise in evolution acceptance since 1982. For example, Solt et al. (2011) showed that America’s aggregate religiosity, a statistic incorporating both attitudes and practices, dropped nearly 30% between the 1960s and 2005. And a Pew Forum survey in 2008 showed that the biggest changes in religious affiliation over a lifetime occur in the “unaffiliated” group (atheists, agnostics, or no religion in particular): 7.3% of adults say they were unaffiliated with religion as children, but 16.1% are unaffiliated today. This 8.8% increase far outstripped the changes among individuals of other childhood faiths, most of whom showed either increases of less than 1% or declines in belief when their adherents reached adulthood.

Another argument against weakening religion is that it will also weaken morality. There are many who think that because God is the ultimate source of morality, a world without religion would be a world rife with cheating, corruption, and crime (e.g., Lewy 1996). Yet there is not a scintilla of evidence for such a claim. Much of Europe—especially Scandinavia—is largely or predominantly populated by atheists and agnostics, and yet those societies are, if anything, more moral than the religious United States (Zuckerman 2008), and are certainly not hotbeds of sin. This conclusion also follows from the work of Greg Paul (2009) described below, which shows that religious societies are, on average, more dysfunctional than secular ones. Finally, Pyysiäinen and Hauser (2009) conducted an online questionnaire posing novel moral dilemmas to people of various backgrounds. They conclude (p. 106), “in dozens of dilemmas, and with thousands of subjects, the pattern of moral judgments delivered by subjects with a religious background do not differ from those who are atheists, and even in cases where we find statistically significant differences, the effect sizes are trivial.” This jibes with one’s everyday experience that nonbelievers do not stand out as especially immoral.

But this still leaves the problem of why, among technologically advanced First World nations, the United States is uniquely high in religious belief. There is no shortage of theories, but recent sociological work points to one in particular. This proposes that the United States, although wealthy and technology heavy, is socially dysfunctional compared to other nations. In other words, some aspects of American society reduce the well-being of its members. Tellingly, that social dysfunction is associated with



**Figure 2.** The correlation among 17 First World countries between social functionality on the Successful Societies Scale—ranging from 1 (least successful) to 10 (most successful)—and belief in God (A) or acceptance of human evolution (B). Figures are replotted from data given by Paul (2009). “US” indicates points for the United States. (A) Correlation among all points is  $-0.709$  ( $P = 0.0014$ ); correlation excluding the United States is  $-0.551$  ( $P = 0.027$ ). Least-squares regression line for all points is  $y = 84.68 - 9.48x$ . (B) Correlation among all points is  $0.690$  ( $P = 0.0022$ ), correlation excluding the United States is  $0.501$  ( $P = 0.048$ ). Least-squares regression line for all points is  $y = 31.51 + 6.33x$ .

high degrees of religious belief: In hard times, people turn to God and ask for help.

The most comprehensive study, which summarizes earlier work and evaluates other theories, is that of Gregory Paul (2009). Paul constructed an index of social health for 17 prosperous First

World democracies, the “Successful Societies Scale” (SSS). This incorporated 25 indices of social well-being, including rates of homicide, incarceration, juvenile morality and adolescent abortion, the incidence of venereal disease and alcohol consumption, corruption, levels of poverty and income disparity, and

so on. It turns out that on the 10-point SSS scale, the United States, which scored 2.9, ranked lowest, with many countries substantially higher (e.g., Sweden was 7.1, Japan 6.0, Italy 5.6, and Australia 4.8). In fact, the United States ranked dead last in 14 of the 25 categories and was above average in only five. Despite America's self-image as a healthy and wealthy nation, Paul's data show that, compared to other countries, we are a sick society.

Paul correlated SSS scores among nations with statistics on both religiosity and acceptance of human evolution. Figure 2 shows that both correlations were substantial: social dysfunction is significantly and positively correlated with belief in God, and religiosity is negatively correlated with acceptance of human evolution. (As expected from Figure 1, religious belief is also negatively correlated with acceptance of evolution.)

What do these correlations mean? Paul suggests two interpretations. The first, which he calls "passive," is this:

America's high-risk circumstances, the strong variation in economic circumstances, and chronic competitiveness help elevate rates of social pathology, and strongly contribute to high levels of personal stress and anxiety. The majority of Americans are left feeling sufficiently insecure that they perceive the need to seek the aid and protection of a supernatural creator, boosting levels of religious opinion and participation" (p. 421).

In other words, pathology breeds religiosity. Paul calls his other interpretation "active":

...high levels of conservative theism directly contribute to the poor societal circumstances and faith-based charitable work that encourage popular religiosity and creationist opinion (p. 423).

Using other data, Paul judges the passive factor most important.

Paul's results are supported by Rees (2009), who found, in a survey of 67 nations, a highly significant positive correlation between income inequality, as measured by the Gini index, and religiosity, as measured by the frequency of prayer among citizens. Income inequality, while having a significant effect on its own, was also highly correlated with other indices of societal insecurity, including low life expectancy, high infant mortality, and high levels of homicide. Rees concluded that either high religiosity leads to higher income inequality, or, more plausibly, that income inequality is causal, promoting greater insecurity and hence deeper faith.

The causality is clearer in the study of Solt et al. (2011), who showed that income inequality both across countries and across years within the United States is positively and significantly correlated with each of 12 measures of religiosity. Further, time-series analysis within the United States found that changes in income inequality appear to be causal, for income inequality in a given year affects religiosity in subsequent years, but not vice versa. Solt et al. argue that this correlation reflects social control

by the wealthy, because in situations of greater inequality the rich actually become *more* religious than the poor. This may give the wealthy "the motive and the means to disseminate religion more widely throughout their societies" (p. 448), urging conformity and quelling discontent. Whether this be true, the studies of Paul and Solt et al. both suggest that greater belief in God, and hence more opposition to evolution, may be a product of dysfunctional societies.

Creationism in America, then, may be a symptom of religion, but religion in the modern world may itself be a symptom of unhealthy societies. Ultimately, the best strategy to make Americans more receptive to evolution might require loosening the grip of religion on our country. This may sound not only invidious but untenable, yet data from other countries suggest that such secularism is possible and, indeed, is increasing in the United States at this moment. But weakening religion may itself require other, more profound changes: creating a society that is more just, more caring, more egalitarian. Regardless of how you feel about religion, that is surely a goal most of us can endorse.

#### ACKNOWLEDGMENTS

I thank J. Rosenhouse, M. Albano, and three anonymous reviewers for thoroughly critiquing the manuscript, and J. Miller for providing unpublished data.

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Associate Editor: T. Meagher

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### Data plotted in figure 1 (sources given in the figure).

Supporting Information may be found in the online version of this article.

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