Finding Common Ground



Science, Religion & Public Policy

If you read the newspaper or watch the news, you might think that religion and science have permanently locked horns in battle. Among the recent skirmishes is the Missouri constitutional amendment over the use of stem cells and challenges in Kansas to the teaching of evolution. History shows us that religion and science make uneasy bedfellows. Some welcome and even promote conflict between religion and science. Others pine for a truce.

As in any conflict, it is important that all involved agree upon the rules of engagement. And that is where the public has the right to expect a voice. No matter which side you're on – including the side that says we should shake hands and make up – you have a role to play. We will take a few hours to consider how this community wants religion and science to comport themselves on the field of public policy.

"[H]istory reveals a long and combative relationship between religion and science, depending on who was in control of society at the time," according to Neil Degrasse Tyson, an astrophysicist. "The claims of science rely on experimental verification, while the claims of religion rely on faith. These approaches are irreconcilable approaches to knowing, which ensure an eternity of debate wherever and whenever the two camps meet. Just as in hostage negotiations, it's probably best to keep both sides talking to each other."

As Tyson notes, at the heart of the disagreement is a profound difference in how religion and science determine what is true.

To the truth via experimentation and revelation

Imagine presenting the most perfect, most elegant, most convincing argument possible for your point of view, only to have the other side go, "Huh?" When religion and science talk to one another, it can feel like that. What one considers absolute truth the other can't really consider at all.

Philosopher Paul Kurtz provides a thumbnail sketch of what makes science distinct: "Science requires an open mind, free inquiry, critical thinking, the willingness to question assumptions, and peer review. The test of a theory or hypothesis is independent (at least one would hope) of bias, prejudice, faith, or tradition; and it is justified by the evidence, logical consistency, and mathematical coherence. Science claims to be universal (though postmodernist critics deny this), transcending specific cultures and replicable in any and every laboratory in the world."

While scientists says that there is one science, there are many religions and, within religions, a continuum of belief that can vary wildly from one end of the spectrum to the other. Religion can be defined as a set of rules and beliefs that a people have about the nonmaterial universe and its inhabitants. Religions "rely on the acceptance of faith in specific revelations and their interpretation by differing prophets, priests, ministers, rabbis, monks, or mullahs," Kurtz writes. In science, nothing is taken on faith, while in religion, faith is at the heart of belief. Kendrick Frazier, editor of the *Skeptical Inquirer*, writes, "In science all knowledge is tentative, continually subject to revision when better explanations and evidence…are acquired; religion asserts the presence of unchanging and unchallengeable eternal truths."

About 90 percent of the U.S. population as a whole and about 40 percent of scientists say that they are religious.

For science, the bottom line is that it simply has no way of incorporating the concept of God. "Since it cannot be approached by scientific principles and methods, the supernatural is automatically off limits as an explanation of the natural world. It's not a factor in the equation; it's not in the same ballpark. All science can go on is material evidence….We can acknowledge supernatural beliefs about life, but those beliefs are irrelevant scientifically," writes botanist Barry Palevitz.

While science itself cannot acknowledge the supernatural, individual scientists can believe in God. About 90 percent of the U.S. population as a whole and about 40 percent of scientists say that they are religious, according to a Gallup poll and the same poll administered to 1000 persons listed in *American Men and Women of Science*.

Within religions, people vary in their beliefs about where truth can be found. For Christians, faith in Jesus Christ is the path to truth. Quoting The Rev. Billy Graham: "Jesus said, 'You will know the truth and the truth will set you free' (John 8:32, NIV). We can be free. Jesus said, 'I am the…truth.' He is the

truth, the embodiment of all truth." (Ellipses in original.) Other religions find truth elsewhere, but share a belief that faith in a particular entity or book is the path to truth.

Christians vary in their beliefs about the Bible. In May of 2007, Gallup pollsters asked U.S. residents to describe their views. Thirty-two percent said the Bible was the actual word of God and was to be taken literally, word for word, while 45 percent said it was the inspired word of God but not everything in it should be taken literally, and 21 percent said it was an ancient book of fables, legends, history and moral precepts recorded by man. In 1976, 38 percent of those polled said the Bible should be taken literally.

A brief look at how science and religion have related to one another over the centuries can provide some useful context for today.

A look at the relationship over time

We can start by agreeing that religion got here first. Judaism, Christianity, Islam, Hinduism, Buddhism…these and many others took root in human history long before the growth of modern science. "These religious institutions are ingrained in the very fabric of human civilization – its languages, concepts and values; they define who and what we are," Kurtz writes.

So let's fast-forward to the 13th century. That's when Thomas Aquinas studied the metaphysical and scientific system of Aristotle, then created a new philosophical system that left room for both reason and revelation. This system of thought hung around until the 14th century, when natural philosophers and physicists began to rely heavily on mathematics, observation and experiment.

It wasn't until high-school education grew common in the rural south that Darwin ignited a culture war.

The first major shot across the bow occurred in 1600, when Giordano Bruno was burned at the stake for suggesting that earth may not be the only place in the universe that harbors life. The next skirmish involved Galileo Galilei, whom the Pope placed under house arrest for arguing that Scripture had to be interpreted in light of scientific knowledge. It probably didn't help Galileo's case that he had just published a book that put the Pope's arguments into the mouth of a fool.

In the 17th century, after Europe had been scoured by religious wars, intellectuals overturned the belief that mysticism and revelation are the source of all knowledge and wisdom and launched the Age of Reason. The Age of Reason, which included the Enlightenment, sought to establish a self-evident philosophy and absolute principles (as seen in Jefferson's declaration of inalienable rights) that would create a stable society. The Enlightenment, like the Scientific Revolution, emphasized reason and rationality, but the Enlightenment also tried to apply

reason to comprehend divine or natural law. Many of the U.S. Founding Fathers were heavily influenced by Enlightenment ideas that included capitalism, the scientific method, religious tolerance, and the organization of states into self-governing republics.

The longest-running modern conflict between religion and science started in 1859 with the publication of Darwin's *Origin of Species*. Darwin wrote that living things evolve over time rather than appearing in their final form and that natural selection means that organisms that are better adapted to their environments are more likely to survive to pass those genes along.

At first, American religious institutions were supportive, including the Christian fundamentalist movement that began at the start of the 20th century. It set forth its credo in a popular series of pamphlets called *The Fundamentals*, which a *Wired* article called the 1910s version of the *Left Behind* series of evangelical novels. According to *The Fundamentals*, evolution illustrated the subtle beauty of God's creative power.

It wasn't until the 1920s, when high-school education became common in the rural south, that *Origin of Species* ignited a culture war. William Jennings Bryan was the star prosecutor in the Scopes trial, named after the 24-year-old science teacher in Dayton, Tennessee, while the defense was led by Clarence Darrow. Darrow stressed individual rights and academic freedom, while Bryan stressed the community's right to control the curriculum of public schools.

32 percent of people polled in 2007 said the Bible was to be taken literally, word for word.

By the time of the Scopes trial, evolution had had an impact far beyond pure science. Social Darwinism argued that those who had succeeded in human society were simply the most "fit" to survive. A related idea, eugenics, suggested that modern science could improve the inherited physical and mental characteristics of the human race. Eugenics "was embraced by many reform-minded scientists as a way to manage and improve human society by encouraging the reproduction of well-educated elites and discouraging or preventing the reproduction of those seen as inferior," according to an article in *American Scientist*.

Williams Jennings Bryan had led the effort in Tennessee to ban the teaching of evolution, but had previously endorsed many progressive causes. According to the late Stephen Jay Gould, Harvard professor of zoology and geology, Bryan's opposition was consistent with those progressive views. Bryan was afraid that the teaching of evolution would lead to the exploitation of workers and the death of democracy.

Since the 1920s, the ideas of social Darwinism and eugenics have largely disappeared and are not considered a factor in the current debate about teaching evolution.

"Of the revolutionary thinkers who have shaped the intellectual history of the past century, two – Sigmund Freud and Karl Marx – are in eclipse today, and one – Albert Einstein – has been accepted into the canon of modern thought, even if most people still don't understand what he was thinking," Jerry Adler writes in *Newsweek*. "Darwin alone remains unassimilated, provocative, even threatening to some – like Pat Robertson, who recently warned the citizenry of Dover, Pennsylvania, that they risked divine wrath for siding with Darwin in a dispute over high-school biology textbooks."

When we think about what the rules of engagement might be, our thinking will be deepened by knowing how science and religion currently interact. The rules of engagement would be quite different depending on which model the public prefers.

Five distinct ways for religion and science to interact

According to physical anthropologist Eugenie Scott, there are four ways that science and religion have interacted over time. Scott is executive director of the Center for Science Education, Inc. The four modes of interaction she identified include warfare, separate realms, accommodation and engagement. In addition, the intelligent design movement offers a fifth way – theistic science – for the two to relate.

Warfare Model

The warfare model says that religion and science are incompatible. As Scott notes, "Depending on which side of the issue one is on, one concludes either that religion trumps science, or that science trumps religion." From their writing, it seems that those who view this as war see the other side as the aggressor and themselves as merely taking defensive action.

If there is any agreement about the warfare model, it is that this, like other wars, has done its share of damage.

Among scientists, Richard Dawkins is the best-known supporter of the warfare model. Dawkins is Charles Simonyi Chair in the Public Understanding of Science at the University of Oxford and author of *The God Delusion*. Dawkins writes, "The enlightenment is under threat. So is reason. So is truth. So is science, especially in the schools of America. I am one of those scientists who feel that it is no longer enough just to get on and do science. We have to devote a significant proportion of our time and resources to defending it from deliberate attack from organized ignorance. We even have to go out on the attack ourselves, for the sake of reason and sanity. But it must be a positive attack, for science and reason have so much to give."

On the religious side of the war, Henry Morris is founder and president

emeritus of the Institute for Creation Research. He writes that evolution is an atheist philosophy of life and "there is *no scientific evidence* for past evolution, present evolution, or possible evolution." (Italics in the original.) In "Evolutionary Paranoia," Morris writes, "Most of the leaders in the bureaucracies that control the scientific and educational establishments are becoming increasingly paranoid concerning the creation model. Perhaps they are feeling a bit guilty about their long censorship of the scientific evidence supporting creation. Or maybe they are sensing an imminent breakup of the humanistic monopoly over our education system."

If there is any agreement about the warfare model, it is that this, like other wars, has done its share of damage. In the *Washington Post*, Alan Cutler writes, "The warfare thesis suits the polemical purposes of partisans in certain social and political debates. But it harms religion by portraying it as overly dogmatic and reactionary. It also harms science by portraying it as hostile or at least indifferent to the average person's spiritual needs."

"The Bible tells you how to go to heaven, not how the heavens go."
Galileo

Randy Isaac is executive director of the American Scientific Affiliation, a group of nearly 2,000 scientists who affirm the orthodox Christian creeds and who are committed to integrity in science. Isaac sees the conflict as mainly between the far ends of the religion and science continuum. Scientists who claim that science has shown religion to be false often derive these conclusions from their own presuppositions rather than scientific analysis, he writes. Defenders of the Christian faith counter with claims that science is biased towards atheism and attempt to substitute ideas that don't conflict with religion. "Often they make the same mistake as the vocal atheists, seeing the divine hand only where the laws of nature provide no explanation." The result is an escalation of warfare.

Those who support the next model would say that we would all be better off if science and religion didn't interact quite so much.

Separate Realms Model

The separate realms model understands science and religion to focus on different areas, with science explaining the natural world and religion dealing with spiritual matters. There is little conflict in this model because the two don't speak. Like the National Academy of Sciences declared in 1981, "Religion and science are separate and mutually exclusive realms of human thought."

This model has been around awhile. At his trial, Galileo is credited with saying, "The Bible tells you how to go to heaven, not how the heavens go." He expanded on his views in a letter he wrote in 1615: "In my mind God wrote two books. The first book is the Bible, where humans can find the answers to their questions on values and morals. The second book of God is the book of nature,

which allows humans to use observation and experiment to answer our own questions about the universe."

Stephen Jay Gould was a modern proponent of separate realms. In *Rocks of Ages*, Gould wrote: "I do not see how science and religion could be unified, or even synthesized, under any common scheme of explanation or analysis; but I also do not understand why the two enterprises should experience conflict. 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 never resolve."

"If you have faith, then you're never going to be afraid of what science is going to come up with."
Vatican astronomer

Gould called the two domains of science and religion "nonoverlapping magisteria," or NOMA. He noted that while the two don't overlap, they do bump up against one another "interdigitating in wondrously complex ways along their joint border." He said that NOMA required "mutual humility" from religion and science. "If religion can no longer dictate the nature of factual conclusions residing properly within the magisterium of science, then scientists cannot claim higher insight into moral truth from any superior knowledge of the world's empirical constitution."

In the next model, science and religion give a little to get a little.

Accommodation Model

Science and religion engage more directly in the accommodation model, which says that theological understanding is deepened through the understanding of science. According to Eugenie Scott, "The accommodation seems to be largely a one-way street, with science acting as a source for theological reinterpretation rather than the reverse."

Some examples of accommodation include:

- In the early 20th century, some Christians were willing to reinterpret basic concepts of the Fall, Atonement, and Original Sin in light of evolutionary theory.
- In 1669, Nicolaus Steno, a Danish geologist, published a proposal that the fossils and rock layers of the earth provided a chronicle of Earth's history as valid as Genesis. Instead of condemning Steno, the Catholic Church put him on a fast track to priesthood and then a bishopric, and in 1988 he was beatified by Pope John Paul II.
- The early Roman Catholic Church adapted cathedrals across Europe to serve as solar observatories.

In addition, the Roman Catholic Church has funded the Vatican Observa-

tory for generations. Its full-time staff of 13 scientists, most of them Jesuit priests, cooperates with many universities worldwide. When asked why the Vatican would fund astronomical research, one of the scientists said, "This is our way of seeing how God created the universe and they want to make as strong a statement as possible that truth doesn't contradict truth; that if you have faith, then you're never going to be afraid of what science is going to come up with."

"We are entering the greatest era of science-religion fusion since the Enlightenment…"
***Wired* magazine**

Sometimes accommodation takes the form of scientists taking pains to stay off theological turf. Lawrence Krauss, a physicist at Case Western Reserve University, is against teaching creationism but for showing respect. "Science does not make it impossible to believe in God. We should recognize that fact and live with it and stop being so pompous about it," he said. "I think we need to respect people's philosophical notions unless those notions are wrong. The Earth isn't 6,000 years old. The Kennewick man was not a Umatilla Indian." But whether there really is a supernatural being is a question that cannot be answered by theology, philosophy or science, he said.

The engagement model moves beyond tolerance to a partnership between science and religion.

Engagement Model

In the engagement model, "science and religion interact as equal partners, stimulating each other to ask different questions than they otherwise might, with the idea that the interaction of both epistemologies will contribute to a fuller understanding of both the natural and nonmaterial realms," Scott writes. "This is reflected in the quotation often attributed to Einstein that 'Religion without science is crippled, while science without religion is lame.'"

According to a 2002 *Wired* cover story, "We are entering the greatest era of science-religion fusion since the Enlightenment last attempted to reconcile the two, three centuries ago." The author says that that's because science has been moving towards religion. "Ever so gingerly, science has been backing away from its case-closed attitude toward the transcendent unknown…Why the renewed scientific interest in spiritual thinking? One reason is the cyclical nature of intellectual fashions. In philosophy, metaphysics is making a comeback after decades ruled by positivism and analytical theory of language….Similarly in science, the pure materialistic view that reigned through the 20th century, holding that everything has a natural explanation, couldn't keep other viewpoints at bay forever. The age-old notion there is more to existence than meets the eye suddenly looks like fresh thinking again."

A leading proponent of the engagement model is the Templeton Founda-

tion, established in 1987 by investor and philanthropist Sir John Templeton. The foundation gives away about $60 million a year in research grants and programs, typically through scientific peer review and international competitions. The foundation funds work in the natural and human sciences, and in philosophy and theology, among other areas. The foundation has provided funding for intelligent design proponents, although it has stated that it does not support the intelligent design movement and, in fact, also funds critics of the movement.

"Almost half the support for public schools comes from taxpayers who don't believe in evolution."
Institute for Creation Research

Theistic Science Model

Christians who promote the intelligent design movement suggest another way for science and religion to interact. They propose "theistic science," an effort to move science away from methodological materialism and allow in the occasional supernatural explanation – especially for topics such as evolution that have theological implications.

Polls show that almost half of Americans deny that evolution occurred. About 40 percent think that evolution occurred and was guided by God, and an additional 10 percent or so agree that evolution occurred and deny any role for God. According to an article published by the Institute for Creation Research, "After all, almost half the support for public schools comes from taxpayers who don't believe in evolution, so don't their opinions count for something?" A poll cited in the *Skeptical Inquirer* shows that some 75 percent of school board members believe that creationism should be taught along with evolution, and as much as 45 percent of biology teachers agree.

The U.S. is not the only place where there is conflict around the role of God in the origins of the universe. Turkey, the most Westernized among the Muslim countries, has a very active and well-funded creationist movement. While it borrows heavily from Western creationists, it is considered more politically successful than the U.S. movement.

What should be the role of science and religion in public policy?

How can we resolve the tension between science and religion, or is resolution even possible? Does the attempt to resolve the tension provide something of value, or might we just as well sound our trumpets, mount our steeds, and joust away?

Let's keep in mind that plenty of high-conflict public policy issues have nothing to do with science and religion, yet they can provoke heated arguments and a plethora of bumper stickers and yard signs. What's different about issues where science and religion are involved? And do the two have roles to play in public policy?

In any public policy issue, the technical experts usually think in terms of what we *can* do, while the public thinks in terms of what we *should* do. If the public is actively engaged in resolving the issue, citizens will need to work through wishful thinking and denial, recognizing that some actions really won't work and that we can't afford to do everything. Eventually the public can usually identify an area of common ground that combines public values with technical realities. In the meantime, the process can be very frustrating to technical experts like engineers and scientists, who must try to communicate technical ideas in layperson language and who may have to answer a lot of "why" questions.

Given that it can be challenging to mesh the public with the technical viewpoint on *any* issue, what changes when religion is involved? What makes the issues of stem-cell research or evolution different from those of affordable housing or public transit? How does the involvement of organized religion change the process of resolving the issue, or should it change the process at all? Conversely, what, if any, role should organized religion play in making value judgments about scientific advances?

So long as they don't have to make their science less "scientific," some scientists are willing to take counsel from theologians. For example, George Ellis is professor of applied mathematics at the University of Cape Town. He won a $1.4 million Templeton Foundation award for his writings on science and religion. In an interview with *Newsweek*, Ellis talked about the ethical consequences of various technologies and the idea of forming a panel to provide analysis. "The best one can do is an interfaith panel – Christians, Jews, Muslims, Hindus and some atheists – and have them come up with values to guide the projects," Ellis said. "My view is that at a deep level there's a convergence of ethical views among the different faiths as long as you are dealing with their nonfundamentalist wings."

Paul Kurtz, the philosopher, notes that values questions intervene in science continuously as scientific analysts challenge public policies on global warming, population growth, and other issues. "Should the free market and/or the democratic ballot decide these issues, or should decision making on the national or

global level take scientific recommendations into account? If so, what values should be controlling? Can a theological framework rule certain issues out-of-bounds?"

Discussion Questions

- Which of the five ways that religion and science interact produce the best results for society as a whole? What values would be consistent with the preferred way that religion and science interact?
- Why might our society need the involvement of science in public policy questions? Why might our society need the involvement of religion in public policy questions?
- What, if anything, is different about public policy conflicts that involve religion?
- There are many religions and, within each religion, a continuum of belief. How should religions manage their involvement in public policy, given the great differences within and among them?
- What do you like or dislike about how conflicts between religion and science have played out recently? What can we do to improve the way that public policy is developed, in situations that involve both religion and science?
- Ground rules can be helpful during a group discussion because they encourage individuals to manage how they participate. Ground rules are things like, "listen respectfully," and "watch your air time." What do we want to be the ground rules when a public policy issue involves both religion and science?

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