

THE FAITH OF A SCIENTIST

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Whether the topic is teaching evolution in science class or making public policy on physician-assisted suicide, stem cells or space exploration, the tension between religion and science is a heated one in our twenty-first century world.

Many people see science and religion as somehow incompatible—opposites, even. This is not a new viewpoint—religions have struggled with their relationship with science for centuries, perhaps millennia.

At the beginning of the year, the National Academy of Sciences published a book entitled *Science, Evolution and Creationism* (Ayala et. al, National Academies Press 2008), in which a team of eminent scientists outlined the scientific arguments for evolution, discussed the lack of scientific evidence for creationist theories such as that of intelligent design, and attempted to make some peace in the increasingly heated debate of recent years that has so often pitted science and religion against one another, posing them as opposite and incompatible ways of thinking.

This book was made necessary by the ongoing struggles to get creationism taught in science classes—lengthy battles before Boards of Education and in courtrooms that have made the 1925 Scopes trial look quaint.

The issue of evolution and creationism is not the only place where science and religion have clashed in our country in recent years.

In November, 2006, Claire McCaskill was elected to the United States Senate, narrowly defeating the Republican incumbent, Senator Jim Talent. The vote was close—only three percentage points separated them—and many political pundits agreed that the initiatives that appeared on the Missouri ballot with this race tipped the scales in McCaskill's favor. Among them was a proposed amendment to the state constitution to protect the legality of stem cell research in the state, an amendment that passed by a narrow margin.

The debate over stem cells was largely framed as one between science, supporting research with the potential to cure human diseases, and religion, opposing the destruction of early human embryos.

Old or new, the viewpoint of science and religion at war with one another is pervasive in our society today. Pervasive enough to be noted in the midst of popular culture. At one point last year, long after I first sat down to write this sermon, I was watching one of my favorite TV shows—*Grey's Anatomy*—in which the following dialogue took place.

A young doctor whose father was gravely ill sought the advice of a mentor. The mentor's advice: "I don't have any statistics. I don't have any more medicine for you. Now it's about faith." "I'm a man of science," protested the intern, to which the older doctor replied: "In my experience, science is not enough, O'Malley." (*Grey's Anatomy*,

transcribed by MT from episode entitled "Six Days: Part One," first aired 1-11-07)

And the very next week after that 2006 election, Time Magazine boldly declared on its cover that a debate was afoot. It read, “God vs. Science.”

Time’s cover story featured a conversation between renowned atheist Richard Dawkins and scientist Francis Collins, in which Dawkins argues that belief in God is ridiculous for a scientist because it entails belief in the supernatural, and Collins that belief in God is perfectly OK for a scientist because the supernatural is beyond our understanding. The debate left out myriad other viewpoints in order to support the magazine’s contention that God and Science were somehow incontrovertibly at odds with one another.

While the National Academy of Sciences tries to take a different viewpoint, claiming that “many scientists and theologians have written about how one can accept both faith and the validity of biological evolution,” (Ayala et al, 49) it still takes the stand that religion and science operate in separate spheres, claiming that “science and religion are based on different aspects of human experience.” (Ayala et al, p.12)

I don’t believe that either of these viewpoints is quite accurate.

In our society, science and religion are seen as opposite ends of a very long line. I prefer, instead, to think of them as points on a circle that are really very close together. Most people take the long way around. I don’t.

I seek to reconcile science—which I see as the applied use of reason to answer big questions about the nature of our world—with religion—which I will argue is the applied use of faith to answer those same questions.

In order to make this reconciliation authentic, there are two big questions that are often asked:

The first is: Can faith make sense?

And the second: Can religion stand the test of reason?

Unitarian Universalists tend to answer both of these in the affirmative, which is, I admit, one of the reasons I’m here.

But there are two more questions that I don’t think are asked very often, and they are the ones that have fascinated me for quite a while. The third and fourth questions I think need to be asked are: “Can faith be found in science?” And, “Can science be an authentic part of faith?”

As someone who has spent time in both the world of science and the world of religion, I believe that faith is a larger part of science than most of us know, and a larger part of science than most scientists are willing to admit.

I am reminded of a time when I was in graduate school, studying for my doctorate in cell biology. One day, I was on the bus that circled Duke’s campus when I ran into someone I recognized from the local Unitarian Universalist fellowship I attended. David also recognized me, and came over to introduce himself. “What are you studying,” he asked. Upon my reply, he said, “Oh! I’m in the Divinity School. I guess we’re essentially in the same line of work.”

Today, we’re colleagues and friends, but I remember at the time thinking “this guy gets it—he gets that science and religion are essentially asking the same questions about life, but looking at them from different angles.” Scientists and ministers both ponder the origins of life, the mysteries of the universe, the connections and relationships between and among all things.

Science and religion: points on a circle that are really very close together.

Science, by its very nature, includes mystery and wonder. I know this—I have experienced it myself. Many times as a graduate student, I holed myself up in a small, dark room with a very large microscope for hours as I experimented on immune cells taken from lungs. My experiments centered on the movement of those cells, and on testing whether the proteins I studied stimulated those cells to move.

It was amazing and humbling to understand that the things I did on the large scale made those cells move on the microscopic one. There, in that small, dark room, looking at those very tiny cells, I could not help but be overwhelmed by my connection to a vast and unfathomable universe. I could not help but be filled with a sense of mystery, wonder and awe.

The Rev. Helen Lutton Cohen knows this connection, too. In the UUA pamphlet entitled “Science and Religion,” she writes:

“One of my favorite Sunday School curricula was Sophia Lyons Fahs’ *How Miracles Abound*, which explored everything from leaves to the solar system and celebrated our world and our ability to learn about it. My first truly spiritual experience, I think, was looking at the solar system that my Sunday School teacher had drawn on the blackboard and feeling both overwhelmed and lifted up; I was beginning to grasp the immensity of things, my own smallness, and a sense that I was held by the immensity.” (Helen Lutton Cohen, “Science and Religion,” UUA Pamphlet)

If science includes all of this, how can it not be tied to faith?

Faith is indeed part of the scientific process itself.

Let’s look for a moment at the Scientific Process—that process so revered in our society as the way to new knowledge.

Scientists use the experiments to provide evidence to support a hypothesis—an educated guess about how things in a particular system work. They use critical thinking and analysis skills to evaluate the evidence presented to them—and to decide what further testing might be necessary. Often, experimental evidence comes in that causes scientists to change their hypothesis. The goal is to develop the best hypothesis possible to fit all of the evidence at hand.

When there is so much evidence for a particular way of looking at the world that it has become generally accepted in the world of science, it becomes a theory.

Unlike what detractors of the theory of evolution want us to believe, in science “theory” and “law” are fairly equivalent terms.

But that aside...

Scientists seek to strengthen the evidence for their viewpoints, and good scientists understand that is what they are doing. Never do scientists (at least the good ones) think of themselves as setting out to *prove* something—only as participating in the process of developing stronger and stronger hypotheses.

Even the best hypotheses could be wrong. Lab conditions, researcher’s biases (whether conscious or not), or unknown agents can cause us to believe something is true when it is not.

The scientific process itself involves faith—the faith that you have enough evidence to claim something is true. The faith that someone will not come along weeks, months or years later and disprove your hypothesis.

At some point, all scientists make a leap of faith: they say that they have enough evidence to publish their findings—to make a claim.

In my scientist days, one of the activities we participated in was the peer review of scientific papers submitted for publication to journals. My advisor allowed and encouraged her students to do this with her (though she always wrote the final review herself). Early on, we were taught that when a scientist wrote in their paper a statement like “we have proven” something or another, the paper needed to be returned for revision. What was appropriate to write was “the evidence is consistent with the following hypothesis” and nothing more.

The best science asks more questions than it answers. Scientist and author Chet Raymo, in writing about this, uses the metaphor of an island of knowledge in a sea of questions. The more that science increases the island, the larger it’s coastline, and the more questions it touches. (Chet Raymo, *Skeptics and True Believers*)

So science and faith are related to one another. But I’m going to go further and say that they need one another. Religion needs science, and science needs religion. How, you might ask?

For an answer to this, I turn to the historical writings of two famous Unitarians:

Joseph Priestley—who science students know as the discoverer of Oxygen and seminarians know as an early 19th century minister forced to flee from Britain because of his Unitarian theology—once wrote this:

“Let us examine every thing with the greatest freedom, without any regard to consequences, which, though we cannot distinctly see, we may assure ourselves will be such as we shall have abundant cause to rejoice in. . . . We scruple not to plant trees for the benefit of posterity. Let us likewise sow the seeds of truth for them. Distrust all those who require you to abandon [reason], wherever religion is concerned.” (Priestley as quoted in Cohen)

Priestley rightly points out that faith needs science—while at some point we need to make a leap of faith (just like any science), the use of reason is our friend. We should not be entertaining faith notions that just cannot make sense—ideas that do not stand the test of evidence.

Now, I want to be clear that when I say “the test of evidence,” I mean this in a much broader way than just rational, experimental evidence. To me, evidence that can be used as a basis of our faith includes our feelings about things, our relationships with other beings, our sense of mystery and wonder as well. Evidence is more than just reason.

But reason is still the friend of faith, and Priestley is good to remind us of this.

In most Unitarian Universalist congregations, this is not very controversial.

But what William Ellery Channing had to say might be.

Channing, widely hailed as the father of American Unitarianism, whose sermon Unitarian Christianity sparked controversy and schism in the congregational churches of New England in the early 19th century, wrote this (and I ask that you pardon the sexist language of his time):

“In truth, nothing is more characteristic of our age than the vast range of inquiry which is opening more and more to the multitude of men. Thought frees the old bounds to which men used to confine themselves. It holds nothing too sacred for investigation. Undoubtedly this is a perilous tendency. Men forget the limits of their powers. They question the infinite, the unsearchable, with an audacious self-reliance. They shock pious and revering minds, and rush into an extravagance of doubt more unphilosophical and foolish than the weakest credulity.” (Channing as quoted in Cohen)

Channing challenges us to understand that science needs faith.

Science is ultimately neither good nor bad. It needs humans to have an understanding of our limitations. It needs us to leave some things unexplored.

Alban Institute consultant Jim Kitchens writes that, “we live in a world where nuclear weapons and environmental degradation make us all too aware that potential negative outcomes lurk in the unrestrained pursuit of knowledge.” (Jim Kitchens, *The Postmodern Parish*, Alban Institute)

Universalist minister Clarence Skinner saw this as well. Skinner was deeply affected by what he witnessed during the world wars that raged in the first half of the 20th century. In 1947, after the unthinkable inhumanity of the Holocaust, after the destruction wrought in the name of war by the atomic bomb, Skinner wrote:

“We have seen in Europe how education can be prostituted and made to serve the ends of destruction. Our culture has trusted too much in facts. It has let science go where it will, serving heathen gods. But we are suffering for our sins. We are enslaved in an age of enlightenment because our enlightenment is not total. We are one-eyed philosophers and have lost the ability to see more than one thing at a time.”

He concludes:

“Righteousness must be founded on truth. It must square with reality. It must harmonize with what we know of the universe. But truth must be righteous. It must serve the good and not the evil. It must seek the Kingdom of Ends. It must serve the moral law.” (Clarence Skinner as quoted in Cohen)

Science is ultimately amoral—neither good nor bad—and must be treated as such by society.

There are many good things that science has brought us—penicillin, vaccinations, solar and wind energy, hybrid cars. The list is almost endless.

But there are many things that have been done, created, or discovered in the name of science whose effects are not so good.

Nuclear weapons—created by scientists seeking to explore the power inherent in the atom—are one example—cited by King and Skinner and Kitchens, but there are many more examples of times when the pursuit of scientific knowledge needed to be tempered by careful moral and ethical forces.

The Tuskegee Syphilis Experiment—in which the US government used 399 black men in Alabama, without their knowledge, as laboratory animals for 40 years, from 1932 to 1972, to see what would happen if syphilis went untreated is yet another example of science that needed to be checked by a moral force.

A third took place in my former home state of North Carolina, which ordered the forced sterilization of 7600 people—some mentally ill and retarded, some single unwed mothers, almost all poor and black. The program was overseen by a “eugenics board” that existed until 1974. 7600 women were sterilized without consent by the state, all in the pursuit of ends dreamed up by scientists and approved by humans eager to embrace science.

There are many more examples from our history. I won't make the list any longer. I'll stop here because I understand that while we must know our history, we must act in the present.

As people of faith who believe in the use of reason, we are in a unique position to help bring science and faith together.

As religious people for whom the pursuit of scientific knowledge is not an enemy to our belief system, we must help answer the questions currently on the scientific horizon. We must help science work for the good of humanity, and not its destruction.

What are those questions that will soon need to be answered?

One regards the use of embryonic stem cells, in which the potential to cure diseases needs to be balanced with very real concerns about human cloning.

Another concerns the genetic testing of fetuses. Here, avoiding human pain and suffering needs to be balanced with concerns about eugenics, and the whole discussion needs to be given accountability to communities of differently-abled people who ask us to understand that their experience in this world can be just as good as the experiences of the temporarily able-bodied.

Finally, the issue of climate change is yet another in our contemporary society that needs a moral force advocating for the ethical use of science. The development of energy sources that do not release carbon dioxide into the atmosphere is something science is capable of—if we create the moral, political and economic demand for it.

And so, as we proudly claim to be the religion of Joseph Priestley, a religion where scientists can become ministers and feel authentic in doing so, we can also be a religion that doesn't deify science.

That realizes that scientists are human, and just as imperfect as anyone else.

That realizes that science involves faith—leaps of faith as well as touching mystery and wonder—and that science cannot answer every question we have.

That realizes that science needs faith as much as faith needs science.