

“Science and Religion: a Student, a Scientist, and a Minister”

1. Minister: Rev. Dr. Doug Showalter

During the course of my ministry, I have sometimes encountered young adults who appreciate the Christian faith, but, they find that they cannot commit themselves to it fully. Why? Because they’ve been led to think, that our Christian faith and modern science are not compatible.

It saddens me, as a Christian minister, to think that young adults in our country have sometimes felt that they must choose between faith and science, that they cannot value both.

Like many mainline Protestant Christians, I believe that the Christian faith and science are compatible. One doesn’t have to choose one and reject the other.

But, I think there are three factors in our culture today, which contribute to the idea that such a choice must be made.

First, when science is taught in our public schools today, there usually is no discussion in the schools’ humanities class--such as in Social Studies or History--as to how the findings of science relate or not to the religious understanding of different faith traditions in our culture.

It is not, in my understanding, the role of public schools to nurture faith. But, students may come away from that one-sided school experience, assuming, mistakenly, that there is no meaningful relationship between science and religion.

Second, in the news today one often hears of Christians [particularly conservative Protestants] who are fighting against the Theory of Evolution and rejecting the value of science. Given those examples in the news, young adults may assume--again, mistakenly--that virtually all Christians and the Christian faith itself are opposed to science.

Third, for all too long mainline Protestant churches like ours have been silent about our generally-held belief in the compatibility of our faith with modern science. We haven’t been a strong voice upholding that belief in our culture.

And, the truth be known, we mainline Protestants haven’t done a lot, to help even our own young adults understand how our faith and science can be compatible. We’ve been silent for too long. Yet, it is up to our churches to teach our own young adults about such things in

our own religious tradition.

Fortunately, our church has now broken that silence, both in our church school and in our worship services.

As you know, this morning is our church's second annual Evolution Sunday. This morning, we are going to highlight once again our belief in the compatibility of our faith with science. To do that, we are very pleased to have Elisabeth Bowerman and Dr. Dennis McGillicuddy join in a discussion with me on that theme.

Elisabeth is a 9th grade student in our church and member of our present Confirmation class. Dennis is a senior scientist at the Woods Hole Oceanographic Institution. Dennis' primary research interest is the interface between the fluid dynamics and the biology of the sea.

Elisabeth, I understand that you have a question to ask Dennis and me.

2. Student: Elisabeth Bowerman

In school I have been taught that the universe began with the Big Bang, which occurred when dust and other elements and particles created an explosion that started the universe about 14 billion years ago. We learned that the earth was formed long after that, but even so the earth is about 4 billion years old.

In church I learned the story of creation found in Genesis, the very first book of the Old Testament. In the beginning, God created the heavens and the earth. He said "let there be light" and that was the first day. Accounting for the passage of time since then, the earth would be a few thousand years old.

On face value, I'm being taught different things in school and in church. How can these both be right?

3. Scientist: Dr. Dennis McGillicuddy

From my point of view, one of the keys to exploring the compatibility between what we learn in the Bible and what we learn in science books is to draw a clear distinction between what modern science can explain and what it cannot explain.

The Big Bang theory describes how the universe expanded from the moment of its creation. Elaborate subtheories depict formation of atomic and subatomic particles, followed by creation of galaxies, solar systems, and planets.

As Elisabeth noted, current thinking suggests the Big Bang happened approximately 14 billion years ago, and it provides us with a scientific explanation of many aspects of the wonderful universe surrounding us as we look up into space from our position here

on earth.

But if the question really is “how did the universe begin?,” then there is a very important gap in the big bang theory. The theory has what

mathematicians call a “singularity” at the very beginning of time, which means that the theory breaks down at time zero.

Strictly speaking, the theory applies only to times greater than 10⁻⁴³ seconds. Picture in your mind the number zero point zero zero zero zero and so on until the 42nd zero is followed by a 1.

It might sound like we’re splitting hairs a bit, but the key point is this: the Big Bang theory does not apply to the moment at which the universe was created, nor does it even provide us with a way to think about what happened before that.

In other words, science has not explained how or why the universe was actually created. Stephen Hawking, one of the greatest physicists of our time, confronted this in his book called A Brief History of Time. Referring to this conundrum, he wrote,

“If we find the answer to that, it would be the ultimate triumph of human reason—for then we would know the mind of God.”

Will this triumph of human reason ever take place? I don’t know. But at this point, the actual creation of the universe remains a mystery and as a scientist I am entirely comfortable with the notion it is a true miracle—not ultimately explainable by the principles of physics. So in that sense, God saying “let there be light” is as good an explanation of the actual creation of the universe as any theory modern science has provided.

Those four words “let there be light” give us a framework in which to ponder the origin of this extraordinary universe in which we live. Let us be joyful and be glad in it.

4. Minister: Doug

Elisabeth, you’ve asked a very good question. In your question you mentioned *Genesis*, the first book in our Holy Bible. That book was compiled by the ancient Hebrews, drawing upon religious texts which dated back 2,500 years ago, even 3,000 years ago, which was long before the time of Jesus.

What a lot of Christians don’t know--which their churches often don’t teach them--is that there are two Creation stories in *Genesis*, not just one story. Those two stories differ significantly in their details. But, the compilers of *Genesis* chose to set those two stories right beside each other, back-to-back.

The first of those two stories, beginning at Genesis 1:1, indicates that in the beginning all was water, which the wind or spirit of God blew over. Then, over the course of six days, God's issued a number of commands which created everything else in our world.

In this first story, God creates light, then sky. Then God separates the waters so the dry land God names Earth can appear. Then God creates

Earth's seas, then vegetation, then heavenly lights, then living creatures. Then finally, God creates human beings, both males and females together. Then on the seventh day, God rests. One might call this the watery Creation story.

The second creation story in Genesis starts at verse 2:4b. It is perhaps five hundred years older than Genesis' first Creation story. This second story begins with the Earth being dry. Then, waters surge up from below the earth to water it.

In this story, God first creates a man, named Adam. Then God creates everything else in the world. Last of all, God takes a rib from Adam and creates a woman, Eve, to be a companion for the man. In this story, male and female humans are not created together. One might call this the dry Creation story.

Elisabeth, as you can see, those two Creation stories do differ significantly. Taken literally, many of their details contradict each other. Thus, they both cannot be factually accurate descriptions of our world's creation.

However, those two Creation stories have been passed down to us Christians from the ancient Hebrews, as sacred texts in our Holy Bible. So, what is the value of those two stories? What are we modern Christians to make of them?

Elisabeth, I think it is important to realize, that the ancient Hebrews lived in a pre-scientific age. They knew nothing of genetics, germs, radiation, the Earth's tectonic plates, or the Big Bang which you mentioned. Such scientific findings, which we take so for granted in our modern day, were far beyond their understanding.

But here's what those ancient Hebrews did know. They were blessed with spiritual insights. Although they couldn't tell the difference between an electron and a proton, they did have special insights into the spiritual nature and value of us humans, our world, and God.

Spiritual insight was the ancient Hebrews' strong suit. And it was such insights, contained in those two Creation stories, which those ancient Hebrews carefully preserved and passed down to us.

And, what are some of those spiritual insights passed down to us? There are a number of them. But, I'll mention just two here.

First, those stories teach us that there is one true supreme being in our world, God, who is more powerful than any of us can imagine.

Second, those stories teach us that this world we live in, which God created, is inherently good. Matter, nature, and our own physical bodies are not evil. Thus, we humans should be thankful for our world and our bodies, and take good care of them.

I'll put this another way. Given, the pre-scientific period in which those Creation stories were formed, I don't look to them to tell me in a literal, factual way, HOW our world was created.

But, given their spiritual insights, I do look to those stories to help me understand WHY and by WHOM our world was created. For, those stories do contain special spiritual insights.

Elisabeth, I believe you have another question.

5. Student: Elisabeth

In school I have been taught that mankind evolved from apes in a sequence going from Homo habilis to Homo erectus to Homo sapiens. Homo habilis lived about 1.4 to 2.3 million years ago, and was relatively short and had long arms compared to humans of today.

Homo erectus stood more upright and had a larger brain than Homo habilis. Homo sapiens is thought to have evolved approximately 200,000 years ago, and is the human being as we know it today.

In church I have been taught that God created man out of clay. In the second chapter of Genesis, verse 7, it says:

"then the Lord God formed man from the dust of the ground, and breathed into his nostrils the breath of life; and the man became a living being."

So in school I have been taught that mankind evolved over time, descending from apes. The Bible tells me God created man in one day. How can I make sense of these two points of view?

6. Scientist: Dennis

Elisabeth, I can tell you are a good student because your description of the evolution of mankind from Homo habilis to Homo erectus to Homo sapiens accurately reflects the modern scientific view.

But let's take that a few steps further. There are evolutionary theories that can trace life back well beyond the apes you mentioned to microbes living in the ocean, long before there were any plants or animals living on land. In fact, I'll bet you know a lot about such forms of tiny microscopic life... can you tell us about

the inner workings of a cell?

7. Student: Elisabeth

We have learned about how each cell has things called organelles inside it that perform various functions. For example, the mitochondrion is the cell's power plant.

The cell's nucleus contains all the information the cell needs to carry out its functions, coded into a complex molecule called DNA. The DNA is organized into packets called chromosomes. When the time comes for the cell to divide, the cell makes a second copy of its DNA, and it then splits into two. Two become four, four become eight, and so life continues.

8. Scientist: Dennis

Elisabeth, your description of the cell is superb. You have described a detailed blueprint and parts list. But let me challenge you a little bit.

You and I could get on the Internet, download a blueprint for an automobile, go to an auto parts store, get all the parts, assemble them, put gasoline in the fuel tank, turn the key, and the car would spring to life. It might take us a while, but I'm sure we could do it. Do you think we could do the same kind of thing with a cell?

9. Student: Elisabeth

I don't think so...

10. Scientist; Dennis

No, we can't, nor can any of the most talented scientists in the world today. No doubt, modern science has made huge strides in mapping out the blueprint of life. Many of the intricate biochemical reactions that take place within the cell have been characterized in detail.

Great progress has been made in our understanding of how different kinds of organisms develop, driven by the absolutely stunning orchestration of various kinds of cells in advanced life forms that swim in our oceans, graze in our prairies, and walk down our streets. Entire genetic codes have been documented for a wide variety of plants and animals, including human beings.

Despite our incredibly detailed knowledge of the blueprint of life, up to and including every molecule in a strand of human DNA, the miracle of life is something that mankind cannot replicate. We cannot create life from a set of inorganic constituents. Sure, mankind has

the capability to clone certain organisms... but that is not the same—that is creating new life from existing life.

Simply stated, science has not provided a compelling explanation for how life actually began. There are elaborate theories about how the building blocks for life may have arisen in the so-called “primordial soup” of the lifeless ancient ocean. However, science has yet to explain how a set of molecular constituents were organized into the very first living organism.

I am reminded again of Hawking’s statement—and I see an analogy with what he said about the origin of the universe: for us to understand the origin of life, we would need to know the mind of God. For me the miracle of life remains just that: a miracle. Let us be joyful and be glad in it.

11. Minister: Doug

Elisabeth, I look to modern science to take me as far as it can in describing the actual physical processes by which our world and life came into being. As I noted a few moments ago, I don’t look to the Genesis Creation stories to give me an accurate, factual account of how those things came to be. I don’t read those stories literally.

So, given that understanding, I’m not troubled by the second Creation story’s account, that the creation of humans took one day, and that God took dust from the earth, molded it, then breathed God’s own breath into it, to create the first human being.

Not only am I not troubled by that Genesis account, I actually celebrate it. I celebrate it because I believe it presents us Christians with some very important spiritual insights, passed down to us by those ancient Hebrews. For example:

This account teaches us humans that our God is personal, not just some distant, abstract divine being. The story’s image of God on Earth, molding that clay figure, to create a human being, suggests that personal nature of God.

Also, this account teaches us humans that we have a special, intimate relationship with God. In this story, not only does God mold that figure, but God also breathes God’s own breath into it, to create the first human being. That image suggests, that all of us humans have something of the divine in our make-up.

Building upon those two spiritual insights, our Christian faith has gone on to teach us, that,

--We humans can communicate directly with God.

--And, we humans are deeply cared for by God.

In fact, as our Christian faith teaches, God has cared so much for us humans, that God even sent God's own beloved son, Jesus, to us, so we would not perish, but have eternal life.

[John 3:16]

That Genesis account also teaches us, that our lives are a free gift from God. In that account, the first created human, Adam, had done nothing to earn or deserve his creation. Yet, God freely breathed into those nostrils molded from clay, thus creating Adam and blessing him with life.

As Dr. McGillicuddy indicated earlier, life is ultimately a miracle.

And, that, I believe, is part of the spiritual wisdom which those ancient Hebrews passed down to us in that Genesis Creation story.

12. Scientist: Dennis

So, Elisabeth, to answer your question about how our religious faith can be reconciled with modern scientific knowledge, I see it this way. At their cores, both science and religion provide frameworks for human beings to seek truth.

The truths they seek are different: scientific inquiry is oriented toward the physics, biology, and chemistry of our natural world and universe, whereas religious inquiry is oriented toward the spiritual realm that nurtures our souls.

As such, I do not look to the Bible for scientific truth, and accordingly I am prepared to accept non-literal interpretations of scripture. In the same way, I do not look to science to provide the answer to questions of a spiritual nature, such as "why are we here"?

In that sense I find a marvelous compatibility between faith and science, insofar as they are complementary manifestations of the inner desire of the human mind to understand ourselves and how we fit into the world and the rest of the universe.

13. Minister: Doug

Elisabeth, I agree wholeheartedly with everything Dr. McGillicuddy has just said. As a mainline Protestant Minister, I too believe that religion and science are different ways of understanding our world. Each deals with a different kind of truth. But, both are very important to our lives, and both should be greatly respected.

As I said earlier, it saddens me when people, and particularly young adults, have felt that they must choose between faith and science, that they cannot value both.

It saddens me, because both religion and science ultimately lose out, when people across our country feel compelled to make that kind of

choice.

In the second Genesis Creation story, God gives Adam the job of naming all the animals of the field and birds of the air that God has created.

[Genesis 2:19-20]

The spiritual wisdom I see conveyed in that ancient account, is that we humans have a role to play as co-creators with God. For example, God created all the animals in our world. But, we humans have named them.

For example, God, created the green-colored Pencillium mold. But, in the 20th century, we humans used modern scientific techniques to turn that mold into a wonderful medicine, which has saved countless human lives from bacterial infections, ever since.

God gave us humans spirits. God also gave us minds. I believe that God wants us humans to use all our abilities, spiritual and mental, to kinds of truth in our world.

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I believe God wants that, so that we, as co-creators with God, can ease human suffering, can advance human knowledge, and can make this wonderful world and life God has blessed us with, even better.

And, to me, being such co-creators with God means, that we should highly value both our faith and science.

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Elisabeth and Dr. McGillicuddy, I thank you for joining me this morning in this special presentation. I hope some of our congregation will join us in Fellowship Hall after our coffee hour this morning, for some more discussion on this important subject.

I also wish to thank all the members of our Science and Religion group who have been involved with this morning's special, Evolution Sunday service.