

## Science and Religion: A Dialogue Sermon

University Public Worship  
Stanford Memorial Church  
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**Scotty McLennan:** Well Bill, thank you very much for joining us here on Science and Religion Sunday, especially given that you've just returned from a field trip to El Salvador, arriving back here in the Bay area after midnight last night. We're extremely appreciative of your being here.

You and I have had a wonderful opportunity from my perspective, over these last dozen years that I've been at Stanford, to talk both formally in a faculty group, and then informally about the relationship of science and religion.

Maybe we can begin by letting everyone here know a little bit about our own personal background, how we got to where we are today, and, in particular, in relation to this science and religion connection, or perhaps lack thereof.

**William Durham:** Thank you. It's delightful to be with all of you this morning. I always enjoy working with Scotty. I always feel like I learn a lot in our dialogues and discussion, so in that spirit, let us move forward.

I grew up in rural Ohio, not too far from Cleveland, but a very rural area. Johnny Appleseed country, they called it. They actually believe the trees in my back yard were planted by Johnny. [laughs] Among the outstanding features of northern Ohio were these wonderful fossils and as a young man by coincidence, I happened to find some really interesting fossils.

What intrigued me the most is no one could explain to me what these were about. They obviously represented an organic form. They were crinoid stems of plants, brachiopods, a little mollusk animal, and trilobites, actually an aquatic insect, an ocean-going insect, related to an insect.

No one could tell me, and I started to read and try to fill in the blanks that my northern Ohio education wasn't giving me, and I discovered this connectedness of life, this idea that there's a continuity of life going back to a simple origin, and that these fossils represented an earlier phase. Wow, I just was so intrigued by all of that, that I became sort of a young evolutionist.

Everybody thought I was a little strange. Well, meanwhile, I was going to church and this is why my history is relevant. I grew up attending the

Homestead Falls Community Church. Everything was fine, I enjoyed it. My mother of course, insisted that I go. Then it slowly dawned on me that what I was hearing and reading, especially unfortunately in hymns, was grating against this image of life that I was filling in by my fossils and my reading.

One day, it became clear that there was a conflict. I asked my mom what that was about, and she said, "Oh, my dear." [laughs] "This is a long and interesting subject, but let me take you to a bookstore," because paperback books were brand new. "There's a new paperback bookstore in Berea," where there was a local college. She said, "There's a book that I want you to have."

Well, I think I was age 11. She took me and bought me a copy of "The Origin of Species." She said, "Young man, there's a lot in here you will not understand but believe me, some day this book will help you make sense out of all your questions."

I'm with you this morning as a reflection of that childhood in Ohio, and my mom's gentle pressure to go to church, and then gentle pressure to say, "Look, you have a lot to learn. Start with the work of your precedents."

Scotty: Terrific. I also grew up in the Midwest, and also grew up in a fairly conservative...although your family sounds more interesting than mine.

William: [laughs]

Scotty: I did not get Origin of the Species as a gift. But a conservative Presbyterian family and fairly early on, I began to ask some basic questions, too, about life and evolution, and how it all worked with the Genesis account of creation. By the time I was in high school, was defining myself as an atheist, because I couldn't understand how there could be a God, not only in relation to nature, but in relation to human beings.

How could all the horrible things that go on in the world, mainly from human beings but also from nature -- earthquakes and tsunamis, and so on, which kill and maim innocent children. How could there be a just and loving God under those circumstances?

It took me well into college and actually in a course that helped me, in human evolution that I took in my freshman year, with Dobzhansky, who was a fruit fly geneticist, but taught this wonderful course on human evolution, that I began to start to move back towards some feeling that maybe not a personal God acting in the universe, but some force and power and spirit in nature that inter-relates everything.

It ties everything together. I was very struck in one of our recent conversations, by your saying that, "All of life are my kin." What did you mean by that?

**William:** I have to begin by saying, I too am a great admirer of Dobzhansky. He is famous for saying two things really. He said first, "Nothing in biology makes sense, except in light of evolution." That always makes me stop and pause for a minute. Can such a statement really be true? I'm persuaded there's a lot to it.

Secondly, he also said, "A lot of this tension between science and religion over the topic of evolution is unnecessary if we think of evolution as God's process of creation."

Now, I'm not saying that I personally espouse that or could go very far with that, but boy does that take the pressure off young students today who come in saying, "Well, I've never been exposed to evolution. I've only learned about Biblical creation. How will I reconcile my studies with my faith? Dobzhansky, well it seems to me he just opened a door. He opened a door to saying, evolution is necessary to understand life.

Then he opened another door saying, there's no necessary tension between the Bible Scripture religious philosophy, and our scientific understanding of the history of life." What I meant simply by that connectedness, Scotty, is that the more I work in evolution and think about evolution, ranging from my fossils to human evolution and to the interesting genetic properties of human populations today, you come away with this profound sense that we're all related to a common origin.

That all of life is related by descent, by historic derivation from simple forms. What that means, is that plant or animal, we're connected. Every organism is an experiment in this great tree of life. Before I get all trapped up in who I am and being the specialness of homo sapiens, of humanity, I have to remember that every species is special and unique.

All of them are as fragile as I am. "Oh, I hurt my back." Well, just think of what all the organisms go through because of their real history of descent, their imperfections, the challenges of survival and adaptation. I'd just say, "Wow. My respect for this world, it makes me shiver."

Students will say to me, "Bill, I don't understand all of this." I'll say, "Part of it is, you have to feel it." They say, "Now, wait a minute. I'm in a human biology course, and you're telling me I have to feel this?" I say, if we could feel our connectedness to life, not just understand that we're connected to plants, to the trees, to the sequoia redwood, we're connected.

But if we can feel that connectedness, for me, that's a very spiritual thing. That feeling, that connectedness with life.

Scotty mentioned that I was in El Salvador recently. My friends took me to a remote beach -- this is true -- where four species of turtles come ashore to lay their eggs. Not in synchrony, not at the same time. The very day that I was there, some leatherback hatchlings emerged from the sand. The leatherback hatchlings would normally emerge from the sand in a cooler hour in the evening or at night, and these had emerged at the beginning of the day.

The local people collected them and kept them in a bucket, and I said, "Why didn't you let them go back to the sea?" They said, "But don't you see? For some reason that we don't understand, they were out of sync. And had we let them go back, one might have made it out of many, maybe none." They were keeping them for a cooler time, in the shade, and in some salt water.

They were going to release them later at a time, that on their experience and observation was more appropriate. That was just one of those moments where not only did I feel seeing those little leatherback hatchlings -- they don't crawl like this, they flip out onto the land and they flip along. Seeing that on the one hand, the beauty of that experience, and then seeing on the other hand, these people caring about them...For me, that whole moment was very spiritual.

They were connected to life, they were connected to the turtles. I felt the connection to them, and to the turtle. For me, that's a very spiritual thing, and I hope it doesn't sound syrupy or like over the top, but you feel these connections if you approach life with this view, that we're all related in a big tree.

Scotty: Wow, that is unusual, I think, for us to hear from a scientist, this emotional and feeling dimension of your work, and not only expressed to us intellectually, but with the feeling that you did here as you showed us the turtles as they're trying to make their way down to the water.

One of my favorite poets, William Wordsworth, once spoke about "Not having... no longer looking on nature, as he did in the hour of thoughtless youth." But, saying he, "Felt a presence that disturbs him, with the joy of elevated thoughts. A sense sublime, of something far more deeply inter-fused. Whose dwelling is the light of setting suns, the round oceans, and the living air and the blue sky, and in the mind of man?"

A motion and a spirit that impels all thinking things, all objects of all thought, and rolls through all things." For me, that's a theological statement, but it sounds like for you also, it's a biological statement. Let's talk a little bit about,

what's going on in society at large, where there seems to be so much difficulty, in relating evolution and religion.

Obviously, there are people who take the Bible literally, and who say, "We can't make the Genesis story, relate to our understanding of evolution?"

Now, a recent Gallup poll found that 45 percent of Americans feel that humans, and all of creations has come in to being in the last 10,000 years, and 40 percent of Americans feel that we should be teaching, only creationism, biblical Genesis and not evolution in our public schools. What do you think is going on that makes it so difficult for us to understand modern science, and what it's done for us in our understanding of the universe?

But even, in the simple things as in the flu season, being able to take a flu shot, and change that recipe each year, so that we can look at strains as they genetically evolve and so on. We do that obviously, all of us, and understand that medically, but somehow want to eliminate understanding evolution from our science curriculum. What do you think is going on?

**William:** Isn't that fascinating, that we're so willing to take advantage, of the use and application of evolutionary principles, and yet, we're so slow to readily accept in our own society. In Latin America, where I spend a lot of time, sometimes people laugh at us, because we have this problem of endorsing, evolutionary science, even as we take advantage of it in influenza vaccine, or malaria medication.

Which many of us, who have traveled to Latin America, and I can't even list for you the different, malaria medications that I have taken over my career, because every eight years or so, the malaria parasite adapts to the last wave of medication. It's a process of being selected by the chemicals we throw at it. Why is it that on the one hand, we welcome and accept the advances that modern medicines, offer us as a result of selected process?

On the other hand, we're not willing to engage, embrace and accept the connectedness of life, the understanding of our place in a big tree, or a web of life. It's a difficult question. I'm not a sociologist of science. I'm not a person who's gone out and really looked in the Bible Belt, at why people reject this. I suspect there are many motives and many reasons, but one thing really does stands out, and that is school board after school board.

The school board has to be persuaded, has to be involved in designing the curriculum, and setting the standard. In school board after school board, the debate can come up again, and if the issue has not been settled, because maybe,

it has never been taught well to being with. Maybe because, there are local religious authorities, who do not have an enlightened view of the story.

But in school district after school district, this battle gets played out, and it has different outcomes in different places. If you look at the Legislation and the States that have struggled with school board decisions, that just keeps popping up. There are books written on how many times this issue has come up.

It's interesting the way we structure our education system, and it's not like we have a national understanding of, what should be taught in the name of creation and evolution.

It's that every school board takes a shot at it and there's a lot of difference. I honestly think that if we could, lay down our weapons, have a disarmament agreement, and get some good education on what evolution is, and on why it matters. My hope and my wishful thinking is that we might see more acceptance, more integration of evolution of religion in science, and less tension between using the products of evolution, and accepting an evolutionary view of life, and that all of life is related by descent.

That doesn't seem heretical to me, it doesn't seem that challenging to notions to me. It seems like a very useful guideline for life.

Scotty: One person that I find of great interest, who has been here at Stanford not too long ago, Francis Collins, who directed the The National Human Genome Research Institute for years. And mapped the human genome, but also, is now director of the National Institutes of Health. He's an evangelical Christian on the one hand, but on the other hand, believes and accepts entirely evolution, of course.

He said, some things like this, he says, "First of all, that science and religion tend to address different questions, how versus why. Science discovers natural laws that tell us how the universe operates, and religion asks big existential questions like, 'Why is there something, instead of nothing?'" But, he was clear about the fact that, his faith has to rest upon his understanding of logic, science, reason and so on.

He says, "Evolution is a scientific theory like gravity, which have been proven beyond a shadow of a doubt, and the problem is Biblical literalism when it leads to results such as seeing the universe as we now know it as having been created in six days, or human beings having been created just as we are out of the blue."

He's been known as a theistic evolutionist. One who, as you were saying earlier, imagines that God spoke life into being, if you will, and evolution then becomes the mechanism through which God's plan has been carried out. He even references Darwin here, because in "The Origin of the Species," Darwin says, near the end, that to my mind it accords better with what we know of the laws impressed on matter by the Creator that we view all beings not as special creations but as the lineal descendants of some few beings which lived long before the first bed of the Silurian System was deposited.

There is a grandeur in this view of life having been originally breathed into a few forms, or just one, that while this planet has gone on cycling according to fixed laws of gravity, from so simple a beginning, endless forms, most beautiful and most wonderful, have been and are being evolved.

This notion that there could be a Creator, behind all of it, or that it could be an ongoing creative process, that is divine in some sense, but that we, as you say, are all connected because we all literally come from the same origins, not as Genesis describes it, but we're all biologically interconnected.

Why wouldn't that be a way of resolving this, for us all? Putting aside of course, the fact that there are Biblical literalists who can't let go of that approach, but otherwise it would seem that we might be able, from what you say, you use the word spiritual. You've made it clear that you're not religious, in a traditional sense, but you use the word spiritual, and you talk about this interconnection. Why wouldn't that be a way for us to move beyond this whole debate?

**William:** I have trouble with guided notions of the evolutionary process simply because there is no evidence to my reading of the record going all the way back to my fossils -- there is no evidence of supernatural intervention in the history of life. I know there are people perhaps in this congregation that would want to discuss that at length, and would want to talk about how bacteria moves, and isn't there so much inherent in the design of a simple bacterium that it couldn't be the result of natural process.

But every single exception that I've looked at, all the time that I've taken in my career to look at these exceptions and challenges, I see no evidence for supernatural intervention in the history of life. So, what role then is there for a guiding hand? Well, students often ask me this question, and I say, "Look, my understanding of evolution is that it's guided entirely by natural process."

But if you back up and ask, "Where did the universe come from dominated by natural process? Where do we get the atoms and molecules and the forces involved in the universe?" I once had a conversation with the Dalai Lama. Just

Bill and the Dalai Lama, can you imagine? How wonderful. 20 minutes and he wanted to know what does a Western evolutionist think, and where would we find our differences.

I said, "Well, first we think that all of life is connected historically and by descent." He said, "Oh, Professor, that's old hat."

And I said, "Well, maybe this isn't so old hat. Maybe we think there is no evidence for supernatural intervention in the history of that descent."

"Professor, I have no problem with that."

We think that in the natural process guiding the descent with modification the adaptation and diversification of organisms, we think that kind of a competitive process was very formative. What Darwin called natural selection, we call it natural selection today in many different forms.

He said, "There, Professor, I may detect a little bit of your cultural prejudice, the competition. Couldn't we just as soon find cooperation?"

I said, "Your Holiness, you're absolutely right. There's two sides to that. Sometimes, the best way to compete is to cooperate, and so on."

He said, "Now, professor, I have a question for you."

He said, "Where does consciousness come from?"

I said, "Your Holiness, I am not an expert in the study of consciousness."

He said, "That's OK. Just tell me what you understand about consciousness and evolution. If you are an evolutionist, obviously this is an interesting phenomenon. How do you understand it?"

I said, "Your Holiness, the way I understand consciousness, is that it evolved in higher animals, not in plants. Plants don't have consciousness. Bacteria don't. Socially interacting animals have an advantage to having a model of self in a nervous system that has a model of the world, and that model of self in a world inside of a nervous system, I would call consciousness."

I worked pretty hard to explain it to him, you know.

He looks at me and says, "Professor, is that the best you can do?"

[laughter]



What a wonderful moment. Here I am with one of the great thinkers in the history of religion and science.

He said, "Professor, I think you've got it wrong. That if you really stop to think about it, you would realize that consciousness adheres in all matter.

I said, "Your Holiness, I'm totally prepared to believe that properties of matter are given, that perhaps a supernatural was involved in creating and setting up those properties."

He said, "Yes, but Professor, you have to allow consciousness to be present in matter from the beginning."

Then he said, "Then you're right. That consciousness in matter would recombine and would reform and plants would have a consciousness that you, as an animal, might not recognize, but plants would have their own consciousness because it's inherent in matter that's been reshaped by evolution and animals."

"Well, of course, you're probably right."

He said, "They probably would have that consciousness of matter reworked so that they had a model of themselves. And maybe you're right, Professor. Maybe that's not such a bad idea for the zoology of consciousness. Well, can't you open yourself up to this idea that there's consciousness in all matter?"

I said, "Your Holiness, with all due respect, how would you test your hypothesis, that consciousness adheres in all matter?"

He said, "Professor Durham, our conversation has ended."

[laughter]

**William:** He took his shawl, and he draped it over my shoulder. It was really one of the highlights of my career. Because what we had done, is we had agreed on evolution. We had agreed that this wonderful history to life, that all life is connected. And then where we had disagreed is on what is the state of play when the universe is created, what are the properties of those molecules and how much is built in.

I'm very comfortable with that. I'm really relaxed about that. That's not my area. I know almost nothing about it, and so actually I think he could have won the day by just telling me what he would do, just giving me an argument back. He won the day anyway. He's such a wonderful person.

**Scotty:** We're about out of time here, in this conversation, but I wanted to go back to the two scripture lessons of the day. One of which says that no prophet is accepted in his hometown. How has it been for you? Do you feel like you've been accepted in your hometown at Stanford, or in your profession with the views that you hold?

**William:** At Stanford, I feel very accepted. In fact, I get so excited when students see what evolution says and means and how it can really help you in your life. How it could even help us with our conservation challenges today. In my earlier life, I actually left my high school, my public high school and went to private school. They regarded me as very weird. I was this guy that did fossils and talked about evolution and read Darwin.

And that was, in rural Ohio, I was a little too out there. And so, that plus the mathematics training we didn't receive, my parents said, "Nah, we probably should take this oddball young man and give him a chance at a private school," Believe it or not, I applied from that private school and was given early admission to Stanford.

I was a Stanford undergraduate, building on that, being a prophet who wasn't accepted. I'm not a prophet. Being a young scientist who was trying to make sense of the world, I was not accepted really in my own high school and found my way instead to Stanford where I've always been accepted. Then I went to Michigan for graduate work. It's not like I've been here straight through.

**Scotty:** Then the second reading that we had was from the Psalms with God as refuge, as rock, as fortress and tying back to this notion of all life is your kin. Can you say just a bit about the new book that you...Well, it's not a new book yet. You are on sabbatical, this is another thing, not only does he come back from El Salvador, but he's on sabbatical, and he's willing to come and speak this morning. So, we're even more appreciative.

The book that you're working on, that has a working title, "Why Evolution Matters Today."

**William:** Well, you can tell I'm very passionate about this, this topic of why evolution matters. When I see a child interacting with the sea turtles of El Salvador or with the deer in Foothill Park, whatever it might be, you see this wonder, this fascination. I think there's a feeling of connectedness that we come with, in a way, and that maybe we lose as we mature and as schools and institutions throw different beliefs and values at us.

What I'm persuaded is that at least it's a good working argument, that the world would be better off today. Look how hard we have to work on conservation, recycling, driving hybrids, getting out of our consumptive patterns of the past. Think how much easier it would be if you said, "Holy cow, to help take care of my kinfolk, the forest, the animals of the forest, the animals of the sea." If we could feel that.

Not just understand it, but feel it. My view is that we'd be more proactive about constraining the economic forces. The great economic forces, I'm not belittling them, that are bringing down the forests, that are contaminating the waters, that are mining all the minerals. But my thought is, if we could feel that kinship, that might be a very effective constraint on some of the economics.

Instead of having to convince people, look for this reason and this reason, because of the human use value, because of the existence value of these species, their important. We would say, "Of course, they're important. They're my close relatives. They're as vulnerable as I am or more." Just think of how that might change our view of conservation. That life is something we should care about, because it's related to us.

Just like I care about my family, I care about my greater family, the plants and animals of planet Earth. So, just in the hopes that that view could help contribute, I've decided the time has come. I'm not a young man any more, now the time has come to say this might be helpful in curbing some of the destructive pressure on our planet. Hopefully, a number of these different arguments can work together.

Hopefully, we can find way to build a safer planet, but what I'm exploring is the possibility that this deficit in our education, that only 35, 40 percent of us accept an evolutionary history of life could be part of what allows the destruction of our planet. Because we don't think of ourselves connected to the species of the Amazon, to the turtles of El Salvador, and yet we are.

How wonderful it would be if we could feel that and think that, and use that, to help appreciate our place on planet earth.

Scotty: Thank you so much for being with us today, and we really wish you the very best in this new project, and let's stand in acclaim and sing together the next hymn.

[music]

Transcription by CastingWords