Welcome

Welcome to Physics and Religion, a series of podcasts exploring the interaction between modern science and traditional religion, mostly Christianity. I am your host, Dr. A. S., professor of physics at OSU. For years I have taught a course on topics involving science and religion, and I would like to share with you some of the content of this course. There is an old joke about specialists. A specialist is one who knows so very much about so very little that he or she winds up knowing everything about nothing. I stand at the other extreme. I know a little bit about a great many things, and in this course I will be talking not only about physics but also mathematics, neuroscience, computer science and engineering, history, and philosophy. My job as a teacher is to guide you through this mass of material. I want to give you a sense of perspective, a bird's eye view if you will, a sense of what is important. There is a program on my computer called Google Earth. Depending on where you set some little slider you can see the earth as it appears from outer space or from the street in front of your house. My job is to set the slider, figuratively speaking, just high enough that you can find your way around the subject of science and religion without getting lost. Let me illustrate this with two examples, one from astrophysics and one from philosophy.

Did you know that every atom in your body, excluding hydrogen, was forged in the furnace of a dying star? This is one of many ways the universe prepared for our coming. How did this happen? There are roughly a hundred different nuclear reactions that take place in the course of the life and death of a star. Most of these reactions have been studied in terrestrial laboratories, and there are huge computer models that use this data to simulate exactly what goes on in stars. That's the ground-level view of astrophysics. All we really need to know for these podcasts is a bit about the birth of stars and the catastrophic events that take place when they run out of fuel.

Philosophic discourse tends to be almost as technical as astrophysics. For any major issue such as consciousness or free will there are numerous isms and counter-isms. Here are a few that are relevant to consciousness: substance dualism, property dualism, epiphenomenalism, materialism, physicalism, identity

theory, eliminative materialism, global workspace, multiple drafts, sensorimotor theory, panpsychism, emergentism, dual aspect theory, first-order representationalism, higher-order thought theory, self-representationalism, psychophysical identity theory, mentalism, dualistic interactionalism, connectivism, and mysterianism. I could go on but you get the picture. As a matter of fact, there are some pivotal issues that all these isms try to come to terms with. Once you know what these issues are it will be easier to organize your thinking about these various philosophies.

Finally, there has been a great deal written on science and religion ranging from highly speculative to blind rampaging nonsense. I will try to stick to mainline science and religion as much as possible.

Whenever I mention that I am interested in issues relating science and religion the first topic of conversation is inevitably evolution. This is an awkward subject to discuss. I'm sure that every biology department of every major university in the country regards evolution as an obvious fact, but roughly half of the population thinks it's baloney. There was a recent study done comparing the United States with western European countries. People were asked whether a) they believed in the truth of evolution, or b) they thought it was false, or c) they just didn't know. The countries were then ranked accordingly. The Scandinavian countries were at the top of the list – no surprises there. You will be surprised and relieved to learn that the United States didn't come in last. We did come in next to last, a few percentage points ahead of Turkey, twentieth out of twenty-one countries. A recent poll in this country showed that by a large margin, democrats believe in evolution and republicans don't. The margin has grown larger in recent years. Finally, I would like to quote Paul Broun who was a republican congressman from Georgia and a member of the House Committee on Science, Space, and Technology. "I don't believe the earth is but 9000 years old. I believe it was created in six days as we know them. That's what the Bible says," and again, "Evolution, embryology, and the big-bang theory are lies straight out of the pit of Hell." Let's think about this carefully. Evolution is a famously controversial subject; I will come back to it in a moment. The reference to embryology is a bit puzzling. I thought I knew where babies come from, but maybe it was all a big lie.

I always thought there was something fishy about it. The big bang however, is right within my sphere of competence. In fact, when you look out into space you are looking backward in time; when you see a galaxy that is a billion light years away you are seeing it as it was a billion years ago. When we look at the cosmic microwave background, we are looking back almost to the origin of the universe; (We can't see quite all the way back to the beginning for technical reasons that I won't explain just now.) and what we see is astonishing. The universe is functioning like a giant spherical pipe organ! This gives me the shivers, but to our honorable congressman it's all a lie straight from the pit of hell. The only conclusion we can draw from this is that scientists are liars. The pictures of the early universe are fabricated and the satellite-based microwave telescopes that have taken these pictures don't exist. Scientists are very well organized liars at that since they are all telling the same lie! I think that Mr. Broun is making a good point; the present controversy over evolution is not primarily a matter of science and religion, it's a result of a certain paranoia about science. The scientific evidence for evolution is overwhelming. Why then do people not believe in evolution? Precisely for that reason, the evidence is scientific.

You might respond by saying that Mr. Broun does not really believe what he says. He is a good politician; he is talking to a church group; he is just telling them what they want to hear. Maybe, but that doesn't console me in the least. He has a constituency that wants to hear it. You might also claim that Mr. Broun is just ignorant of the latest scientific developments. Maybe, but remember he is a member of the House Committee on Science, Space, and Technology. He and his colleagues are in charge of running the country. He should know more about this than I do. Finally, you might claim that I am just picking on one peculiar individual. There have always been crazy people in government. This may have become more evident recently but it's nothing new and we have learned to live with it. Maybe, but Representative Broun has always been seen as a champion of "sound conservative principles." Apparently this is one of them.

I hope that I am wrong about this. I hope that you will all write back and tell me that my own opinions are paranoid and that I am singling out a small segment of the population and imputing their beliefs to a much wider group of people.

Maybe, but the statistics mentioned above tend to bear me out. At any rate, for the time being at least, I will not be talking further about evolution. I am afraid that any scientific arguments that I might bring to bear on the subject would discredit it even further. If you would like to read a good scientific account of evolution, I recommend "Why Evolution Is True" by Jerry A. Coyne. For a profound discussion of the role of evolution in Christian theology, by all means, read "Ask the Beasts: Darwin and the God of Love" by Elizabeth A. Johnson.

So if we exclude evolution what else is there to talk about? A great deal as it turns out. I would like to concentrate on two broad topics, cosmology and consciousness. Cosmology has bloomed spectacularly in the last 25 years due to the development of satellite-based telescopes and other observational technology. For example, we can now see back in time almost to the moment of creation, and what we see there is at least formless if not void. It seems that the physical parameters of the universe were precisely adjusted to make carbon-based life possible. Did the universe know we were coming? It turns out that the medieval church was right. We are at the center of the universe. The modern church is also right, everyone else is as well. What was there before the universe came into existence? Other universes it seems. These observations raise but do not resolve all sorts of theological issues. The existence of consciousness presents us with a puzzle as least as profound as the origin of the universe. All our thoughts, memories, fears, loves, and ambitions, as well as the sense of ourselves as unique individuals existing through time – all this arises from three pounds of grey meat packed inside our skulls. How does this come about? Philosophers call this the hard problem. As you will see, that's quite an understatement.

Let's start with consciousness.