

# Cosmic Conversations:

## Bridging Science and Religion with an Age of the Universe Debate

by

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### Introduction

*Four students are studying together for the final exam in their general education, introductory astronomy course. One of the outcomes for the course is “Students will defend, with evidence, the scientifically accepted age of the Universe of 13.8 billion years.” This starts a heated conversation.*

“Can you believe this course outcome? ‘Students will defend the scientifically accepted age of the Universe of 13.8 billion years.’ First, I take issue with the term ‘scientifically accepted.’ Not all scientists think this. Just the ones the authors chose to listen to. Second, the evidence is weak. I mean, how can we know with confidence something that happened 13.8 billion years ago?” said Chris, an undecided major. “There are many eyewitness accounts in the Bible. These accounts are, at most, a few thousand years old. This makes them much more believable.”

Indi responded, “It’s true that not all scientists think this. But the vast majority of astronomers do. And they’re the ones who study this stuff the most. Besides, there are several types of supporting evidence: the background temperature of outer space, galaxies moving away from us, and the relative amount of hydrogen in the Universe. There’s no way these can all be wrong yet still give the same wrong answer of 13.8 billion years. Also, you talked about eyewitnesses. In my law and justice classes, we learned that eyewitnesses can be biased.”

Max added, “Wait. There’s uncertainty on the numbers with all these ages. There are plus/minus values all over the place. It’s like if I say the beach is about 10–15 miles away and you say it is 15–20 miles away. We overlap at 15 miles, and we can both be right. That’s probably what is happening here. There are a bunch of ages that overlap on the right answer.”

“I don’t know,” said Dallas. “In my management class, we’re learning and practicing the importance of compromise. Maybe Chris is right in some cases and Indi is right in others. Even more important, maybe the experts that study this have different models that can be strengthened with an open dialog. This compromise model would give ages that are closer to reality than either side alone.

### Question

1. Who do you agree with most and why?

## Four Views of the Science-Religion Relationship

“Chris, I’d like to revisit what you said about the Bible,” said Indi. “Do you really think the Bible is more correct about the age of the Universe than our astronomy text?”

“Absolutely,” replied Chris. “Science is fine when it comes to making observations about the world; or even the Universe. But it can’t be trusted with speculations about things that are supposedly 13 billion years old. After all, people have only been around for a few thousand years and ....”

“Actually, modern humans have been around a few hundred thousand years. And other forms of life, hundreds of millions of years. This is evidence from a field outside astronomy,” replied Indi. “In addition, geologists have evidence that the Earth itself is about 4.5 billion years old.”

“Says a few scientists,” replied Chris. “Anyway, science can’t answer the question about the age of the Universe because scientists weren’t there. Scientists can only answer questions about things they observe. Remember that observations are one of the first steps in the scientific method. But God was there at the beginning of the Universe because God created it. And God told his story in the Bible, which says his creation is a few thousand years old. So, God is the perfect eyewitness.”

“Are you saying that you’re going to believe the Christian Bible on the age of the Universe?” asked Max. “Over expert scientists?”

“Yes,” said Chris. “Scientists are speculating on things they didn’t observe. The result of this speculation leads to a conflict between science and religion. They can’t both be right, like you said, Max. Since God was there at the beginning and God’s word is in the Bible, I must believe God’s word. Don’t get me wrong. Science is great, making all those medicines and computers. But the beginning of the Universe is way outside science.”

“I need to clarify one thing you said,” corrected Indi. “You said that the results of science conflict with religion. That’s not right. Maybe they conflict with what you think about your religion. But in general, science and religion can’t conflict because they address completely different areas and ask distinct types of questions. Science and religion are independent of each other.”

“Are you saying my religion isn’t valid?” questioned Chris.

“Not at all,” replied Indi. “The purpose of science is to explain the physical Universe. And while humans were not around 13.8 billion years ago, we can witness clues to the age of the Universe today, the things I mentioned earlier like the background temperature of space and galaxies moving apart. The purpose of religion is to help humans connect to God or the gods.”

“Does that mean that religion and science don’t relate at all?” wondered Dallas. “I don’t believe that.”

“They can ponder similar things because there is just one Universe,” replied Indi. “For example, nearly all religions have a creation story. The Bible has two related creation story in the book of Genesis. The purpose of these creation stories is to help people find their place in nature. We are a story telling species. But these stories are not scientific facts. Similarly, scientific facts such as 13.8 billion years and the amount of hydrogen in the Universe don’t reach people at a spiritual level like stories can. They are independent in that science deals with the factual side of nature and religion deals with the story side.”

“How can science and religion be independent of each other?” asked Dallas. “Smart people from different jobs read journals and go to conferences to answer the puzzling questions about life, nature, and the Universe. Like I said before, those puzzling questions are more easily answered when people talk to each other. Scientists and religious scholars have knowledge that can help the other fields.”

“What can a scientist say that can benefit religion or what can a religious scholar say that will benefit science?” questioned Chris.

“The thing that started this conversation is a great example,” said Dallas. “Scientists can determine the age of the Universe, using all the clues that Indi listed. But scientists can’t say why there is a Universe and not no Universe. Religion can help answer that question. Scientists can discover and infer the laws of the Universe. But they can’t say why those laws are rational and seem to work together and everywhere in the Universe. That is where religious scholars come in. Western religions would say that an all-knowing God created everything and that the laws of nature are the ‘instruction manual’ that God ‘wrote.’ I think that science and religion benefit most when they are in dialog with each other.”

“Dallas, I hear what you’re saying but I don’t think you’re going far enough,” said Max. “In your idea, science and religion are still separate fields that just talk to each other. I think science and religion are integrated in one unified field of study.”

“What’s your evidence of this?” asked Indi.

“Have you heard of the anthropic principle?” asked Max.

“I think Sheldon mentioned it in an episode of *The Big Bang Theory*,” said Dallas.

Chris rolled their eyes. “Not that show. Sheldon is always making fun of religion.”

“I never really watched the show either,” replied Max. “The anthropic principle is the idea that the Universe must be the way it is because if it weren’t, we wouldn’t be here to observe it. The prefix ‘anthro’ refers to human.”

“What do you mean by ‘has to be the way it is’?” wondered Indi.

Max explained, “There are a lot of examples. If the rate of expansion one second after the Big Bang had been a tiny bit smaller, the Universe would have collapsed. If the expansion rate had been a tiny bit greater, stars and planets would have never formed. If the nuclear force had been a little weaker, only hydrogen would form. If the nuclear force were a little stronger, all hydrogen would have turned into helium. In either case, no life would form.

“How does that explain anything?” asked Dallas.

“The Universe seems designed because all the pieces fit together so well. This is too much to be explained by an occasional dialog. Science and religion need to be integrated into a single field of study to learn about stuff like this,” replied Max. “And there are a bunch more of these examples. The fine structure constant. The proton/antiproton ratio. The odds of all these distinct characteristics having just the right value for humans to exist is crazy improbable. A miracle, you might say.”

### Questions

2. Summarize each student’s view about the relationship between science and religion.

3. Which student has provided the strongest case? The weakest case? Defend your answer for each.

## Conclusion

After this study break, the four students go back to quizzing each other about the content for the final exam. The outcome of the discussion won't affect their score on the final. But each of their beliefs about the relationship between science and religion has an impact on their worldview and how they will think of both in the future.

## Question

4. Based on what you read, which student's position do you agree with the most? Defend your answer with information from the discussion you have read and at least one fact or idea from outside their discussion. The information from outside does not have to be related to astronomy, but it can be.