

A Conversation Between a Scientist and God

Scientist: God, can we talk?

God: Of course, my child. I am always listening.

Scientist: There is something that has been bothering me, and I hope you can help me with it. It's been weighing on my mind for a long time, and I just don't know where the answers are. I hope you can help me.

God: I hope so, too. What's been bothering you?

Scientist: I'm having a tough time with Genesis—you know, the story of creation in the first chapter of the bible.

God: I'm familiar with it.

Scientist: Of course you are. It says that you created the heavens and the earth. It says that you created Adam and Eve. It says that you did all of that in a week. And, the next several chapters of the Bible imply that all of this happened about five thousand years ago.

God: So what's the problem?

Scientist: Well, the problem is this: Everything we observe suggests that the Universe is much, much older than 5,000 years. In fact, it seems like the Universe is closer to 14 billion years old, and started with an immense explosion, which dispersed matter across an unimaginable distance, and the matter condensed into stars and planets that ultimately became galaxies and solar systems, and Earth is just one little planet in one little solar system in the Milky Way galaxy.

God: Sounds like a terrific fireworks show. I'd be proud of that.

Scientist: So did you do all of that?

God: Of course I did.

Scientist: In just a few days? Doesn't that take a long, long time?

God: Yes, it does.

Scientist: So why does Genesis describe your creation as happening in a week?

God: What is a day? It's the time it takes for your planet to rotate once. What is a week? It is seven rotations of your planet. What is a year? It's the time it takes for your planet to make the trip around your sun. Those words are your creations. Do you think that I am

bound by your arbitrary, though reasonable, increments of time? Time means nothing to me, because I am everywhere, at every time. Time is a limit that you have imposed on yourselves, because that was necessary for you to function efficiently. But don't impose it on me. I'm not concerned with time. I'm concerned with my children.

Scientist: So did the Universe really start with a Big Bang?

God: A colorful term, the "Big Bang." Tell me why you think that the Universe must have started that way.

Scientist: I guess it is because an explosion imparts kinetic energy on every particle it disperses, and Sir Isaac Newton proved that energy is conserved, and an object in motion will remain in motion until it is acted upon by another force. So the remnants of the explosion would continue to move outward and away from each other with the same momentum they originally got from the explosion. And every distant object we have observed in the Universe is moving away from us. I don't know any other way to explain that observation, other than by everything originating from a single source, and now moving away from it.

God: This is getting interesting. How do you know that all of my Heavenly Bodies are moving away from you?

Scientist: It's because of the wavelengths of light we measure from those distant suns. The wavelengths are all longer than they would be if the distance was constant. We call it the "Doppler Effect."

God: Well done. It makes me proud when my children figure out things like that. I was just testing you.

Scientist: So the Universe is really expanding, like we thought?

God: Of course it is. Why would I try to deceive you about something so obvious?

Scientist: And the whole notion of a Universe that was created in seven days is wrong?

God: There you go again with imposing time on everything. Time is important to you, but not to me. Does it really make any difference how long it took? Why is that important to you?

Scientist: I guess it's really not important. It's comforting to know that our observations are not in conflict with the Genesis story, at least as far as time is concerned.

God: They are only in conflict if you expect me to observe the same time increments as you do. I don't. Believe me, I don't. Does that give you the answer you were seeking?

Scientist: Well, partly. There's still the part about how Man came to be. In fact, there still is the question of how all of life came to be. In Genesis, we're told that you created all life.

God: I did. I've already told you that I created everything.

Scientist: Yes, you did say that. But so far all we've talked about are the Heavenly Bodies, the stars, planets, galaxies, moons, asteroids, comets—all of that. What about Life?

God: What *about* Life?

Scientist: Well, we've discovered that all life forms have complex biochemicals we call nucleic acids, that form long chains called DNA with the unique abilities to duplicate themselves, and to serve as a template on which proteins can be synthesized. The ability to duplicate gives the organisms the capability to grow and reproduce themselves, and the proteins that are synthesized by these nucleic acid chains have all sorts of useful properties that regulate cellular metabolism, form structural components, and communicate with adjacent and distant cells. It is an astonishingly complex and amazingly efficient biochemical system that seems to serve each form of life exquisitely.

God: Well put. Thank you for the compliment.

Scientist: Did you design all of that?

God: You wouldn't be asking if you were certain that I did.

Scientist: Well, I guess it's just this: All life forms we've observed are based on this same molecular code. Some are more complex than others—in other words, some life forms have much more DNA than others. We've just finished mapping the entire DNA sequence in humans, and we know the entire DNA sequence of a lot of other life forms too, from both animals and plants. We see a lot of similarities. For example, about 95% of the DNA in a chimpanzee is identical to human DNA.

God: Is that a problem?

Scientist: In a way, yes. If every creature was designed individually, then it's hard to understand why their DNA suggests so many similarities. I suppose you might have thought that was the best way to design life on this planet, but there sure are some confusing things about it. Viruses come to mind; some contain DNA that can evade the immune system of humans and other animals, causing diseases and death. Some animals have appendages that are useless to them, but essential to other animals that appear to be related. Something as insignificant as body hair, which is essential for warmth to animals living out of doors, but mostly useless for humans with the intelligence to build shelters, seems contradictory. Large portions of DNA that do not appear to serve any useful

function make us wonder about the reason they exist, except that they must be a vestige of some time, long ago, when they were needed. The list goes on and on.

God: It sure does. How do you explain those mysteries?

Scientist: Well, we know that mutations occur every time DNA replicates itself, so every time that an organism reproduces, there is an opportunity for some change to the code.

God: That's a very interesting observation. Please go on.

Scientist: Long ago, Charles Darwin suggested that the similarities between species could be explained by a process of evolution, where subtle changes that are beneficial give particular advantages to certain offspring, and those beneficial mutations get passed on to their offspring, and so on. He came to the startling conclusion that life forms adapt to their environment by a process of natural selection. Many years later, when DNA was finally discovered, it provided the mechanism by which those mutations could occur. Everything fit together so nicely.

God: That was good work, don't you think?

Scientist: Brilliant, I'd say. But most people don't believe it.

God: Why?

Scientist: I can't say for sure, but I think it's mostly because people want to believe that they are unique and not just some accident of DNA mutation.

God: What makes them think they were an accident of DNA mutation?

Scientist: I think the notion that humans evolved from apes is particularly distasteful. It was the subject of a notorious trial in 1925, dubbed the "Monkey Trial." Nobody wants to think that their ancestors were monkeys.

God: Who said they were? Darwin never said that.

Scientist: But aren't we related to apes? What about the 95% similarity in our DNA?

God: Of course you are related to apes. You are related to monkeys. You are related to elephants. You are related to dolphins. You are related to mice. You are related to camels. You are related to life forms you haven't even discovered yet. You are related to every living thing on your planet. What is so hard to accept about that? Look at your little finger. It's smaller than every other finger on your hand. It's weaker than your other fingers. But it has a nail, a couple of joints, and looks just like the rest of your fingers. You might conclude that it is an underdeveloped finger. But do you expect it to grow into a middle finger someday, just because it looks like the larger fingers on your hand? No. Your little finger is just what it is—the smallest finger on your hand. Every living thing

came from the same stuff. But you are human. Apes are apes. Monkeys are monkeys. Dolphins are dolphins. Just because you are related doesn't mean one came from the other. Who made up that story? What is so hard to understand about that? Every creature evolved to suit its purpose, and did so by the most efficient mechanism possible. Do you have a better way of designing life?

Scientist: No, I don't. I think I see your point. Everything is what it was intended to be. That makes sense.

God: So you're satisfied, then?

Scientist: Well, not quite.

God: What else could possibly still trouble you?

Scientist: If all this happened by chance—the Big Bang, evolution, survival of the fittest, creatures achieving their destiny—then please pardon my asking, but what, exactly, was your role. What did you create?

God: I created everything, like I've told you. Aren't you forgetting something—something very fundamental to your Universe? Where do you think it came from?

Scientist: Okay, I must be forgetting something. What is it? No, don't tell me. Let me think about this: something fundamental to everything. I'm drawing a blank here. Can you give me a hint?

God: I could, but I'd rather you figure it out on your own. You are, after all, a scientist.

Scientist: Somehow, I don't feel so smart now. All I can think of is that everything in the Universe has energy, but energy takes so many forms. There is kinetic energy, potential energy, electromagnetic energy, gravitational forces, strong and weak nuclear forces. We're still not sure how all of those are related. The sun gets its energy from nuclear fusion, life forms can get their energy from either the conversion of oxygen to carbon dioxide, or vice versa, depending on whether it is an animal or a plant. So, I guess, energy drives every process we know about, from the origin of the Universe to the viability of a single-cell organism. Am I on the right track?

God: You sure are. Well done.

Scientist: Thank You. But to expand on that thought, we know that matter cannot be created or destroyed. We can't create something from nothing, and everything we know about required a precursor—in other words, everything in our world had to come from something else. Life just uses whatever resources are available, converting them into something that is beneficial. And the conversion has to produce energy, otherwise the organism would run out of energy and cease to be viable.

God: You just said that you can't create something from nothing. Tell me, my dear Scientist, is energy created from nothing?

Scientist: No, the laws of thermodynamics tell us that energy output is equal to or less than energy input. In fact, it's almost impossible for us to get the same amount of energy out that we put in. It's almost always a losing proposition. No one has ever created a perpetual motion machine, because everything consumes some energy. But, it seems there is plenty of energy to go around. We find sources. I'm not sure what the point is, here.

God: You didn't really answer my question. Can you create energy from nothing?

Scientist: No, I don't know any way to do that. I wish I did, though. I'd be rich.

God: You *are* rich, my child. Do you remember a fellow named Albert Einstein?

Scientist: Yes. He was the most brilliant physicist who ever lived. He explained how time is not constant, but depends on your frame of reference. He demonstrated how gravity distorts our perception of the Universe. Those were just a couple of his accomplishments.

God: Smart fellow. What else did he discover?

Scientist: He is most famous for his simple equation, $e = mc^2$. He showed that matter and energy are related; they are just different manifestations of the same thing. Matter can be converted into energy and vice versa. Is that what you are talking about?

God: That's exactly what I am talking about. The Universe is made up of matter, right?

Scientist: Yes, a lot of it.

God: Precisely. Let me just ask you this: Where do you think it came from?

Scientist: I never really thought about it that way. Wasn't it just, there, compacted so densely that it got released in the Big Bang?

God: Well of course it was there. That's where everything came from. But it wasn't matter, it was energy.

Scientist: An unimaginably immense amount of energy. Oh. . .and that was you?

God: That was me.

Scientist: How could you possibly create that much energy?

God: Are you implying that because you can't do that, then I can't, either?

Scientist: Oops. Sorry, I guess that was a little impertinent.

God: That's okay. There are some things I know that even scientists can't understand. I am pleased, though, when my children try to understand their world. It brings them closer to me. The more you understand, the more you know me; the closer you get to me. I want all my children to be close to me. Let me ask you this: What do you think is the greatest force in the universe?

Scientist: I'm not sure I understand the question.

God: Then let me put another way, in a context that is more within your realm of experience. Think back to my scriptures. Is there something that "conquers all?"

Scientist: Why, yes. I believe the scriptures say that Love conquers all.

God: Actually, it was Virgil who said that, but my scriptures do say that Faith, Hope and Love endure, and the greatest of these is Love. The point is pretty clear, isn't it? Nothing is more powerful than Love.

Scientist: I guess that's true. Love is what drives just about everything we do. We have a lot of problems, but simple Love would solve any of them. I guess that's why you told us to love our neighbor.

God: Of course it's true, and yes, that's what I expect you to do—love your neighbor.

Scientist: So let me see if I understand, then: The energy that became our entire universe came from. . .Your Love?

God: Yes, it did. Nothing else could have created that energy. And my love for you still exists—it is in everything you see around you. I created you and everything around you out of my Love. And when you return that Love to me, it unleashes the power and energy you have to make my Universe the kind of place I envisioned: A paradise for my children. So go out, my Scientist, and help teach my children to love. Teach them that it was my Love that created them, and it is their Love that is necessary to sustain their world.

Scientist: I will, Father. Thank you.