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Brian Miller: Fine-Tuning and the Multiverse Theory

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Knight & Rose Show - Wintery Knight and Desert Rose

Wintery Knight and guest host Terrell Clemmons welcome Dr. Brian Miller to discuss the the evidence for fine-tuning in physics and cosmology and the multiverse theory. They discuss how the laws and constants of nature suggest intentional design. Miller explains specific examples of fine-tuning and critiques the main naturalistic explanation for this data: the multiverse theory. He recounts his shift from skepticism to accepting design via evidence.

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Transcript

Welcome to the Knight & Rose Show, where we discuss practical ways of living out an authentic Christian worldview. I'm Wintery Knight. Desert Rose is away on vacation, but we do have a guest host, Terrell Clemmons.

Let me tell you a little bit about her. Terrell Clemmons earned a B.S. in computer science from

Clemson University and worked in software development until she hopped off the career track to be a full-time mom. She is currently the executive editor of Salvo magazine.

Welcome, Terrell. Thank you. And we also have a guest for today, an expert in the subject that we're going to be tackling, Dr. Brian Miller.

Let me tell you a little bit about him. Dr. Miller obtained a B.S. in physics with a minor in engineering from MIT and a Ph.D. in complex system physics from Duke University. His research focuses on thermodynamics, information theory, protein rarity, and the origin of life.

Dr. Miller is a senior fellow and research coordinator for the Center for Science and Culture at the Discovery Institute. He helps manage the I.D. 3.0 research program and helped launch the Biannual Conference on Engineering in Living Systems, CELS. He has contributed to multiple books and technical journals covering the debate over intelligent design, including the mystery of life's origin, the continuing controversy, and the comprehensive guide to science and faith, which I love, and you can get an audiobook version of that.

So very good for audio listeners. So welcome to the Night in Rush, O'Brien. Thank you.

It's a pleasure to be here. So to start us off, how did you become interested in the topic of design in the natural world? Well, for me, it really was very personal because when I was raised as a Christian, but when I went to college, I was really confronted with a lot of challenges to my faith. And one of the challenges was when I read the book The Blind Watchmaker by Richard Dawkins.

And I strongly suspect you know who Richard Dawkins is. And I became pretty convinced for a while that he was right, that there really is no evidence of design in nature, that really belief in God was a psychological crutch. And that was really discouraging.

So I remember just thinking that if, well, I'm just an act of nature, there's really no point to living. Life is kind of purposeless. And I prayed at that time.

I said, God, I don't know if you exist. But you have to prove it to me if you do exist because I'm a scientist. I just can't do this blindly.

And I really believe that God answered that prayer. And I could kind of see how God orchestrated my life where I met leading figures in the world on issues of faith and science, people that dealt with philosophy of science, not to mention a lot of other topics like the evidence for the resurrection. And what happened is through my studies, I became very convinced that, and this is a very famous saying, that a little science can take people away from God, but a lot of science brings them back.

And I came to realize that the evidence of design and the laws of nature, our planet, and even life points to a creator very, very clearly, and that and many other issues helped bring me back to faith. And that inspired me to keep studying this topic for the last 30 years. And what I realize is

that the evidence of design and nature doesn't just simply point to God, it's not simply an encouragement to faith.

But it really represents the future of science, because the more that scientists recognize design and nature, the better they're able to predict what they'll find in nature, and the better they'll be able to explain it. So that's really what inspired me. Excellent.

I really like that. I like that idea of just researching for yourself and coming to your own conclusions, because design is evident when we do that. I really like that.

So we're going to talk today, we're going to talk about the multiverse. But before we do that, what do physicists mean when they say that the universe is fine-tuned for life? Well, what they mean is that when you look at the laws of nature, they don't seem to be an accident, that the laws themselves seem to have been designed with the purpose of supporting life in our universe. And a famous analogy is that if you imagine someone gave you a machine that could create universes, and on that machine you have lots of dials.

And those dials control details about the constants of nature, details about the initial conditions of our universe. So you imagine one dial controls the force of gravity. You turn the dial up and gravity gets stronger, you feel heavier, you turn the dial down, gravity feels lighter.

Another dial might control the mass of an electron, another dial might control the initial expansion rate of our universe. And as it turns out, you have to carefully set those dials. You have to fine-tune the settings in order for your universe to support life.

Because if you were to randomly change many of the dials, even by a small amount, all you would see in the universe would be perhaps lots of black holes, perhaps a very thin soup of hydrogen atoms. But to have a universe that can support planets with life, you have to set things very, very carefully. That's what it's meant.

Yeah, sometimes when I raise this argument with a naturalist, what they say is they'll say, well, you know, we wouldn't get life as we know it, but we would get life of some other interesting kind. But from what you said, it sounds like it would be pretty hard to make life out of only hydrogen or maybe with no stars. So is that correct that if you change the fine-tuning to be not fine-tuned, that we're going to lose all complex embodied life? That's exactly right.

So let me use a couple specific examples. Gravity is typically, people say it's fine-tuned to about one part in 10 to the 35. That's like a one with 35 zeros.

And just to give you some context, imagine that you're a sharpshooter and you aim a gun at a target that's one inch in diameter or one centimeter, if you prefer. The precision necessary to set gravity is like the precision needed to hit that target if that target was a billion light years away. So that's an enormous precision.

And if that wasn't set properly, you wouldn't have stable stars that could support planets with stable environments. You wouldn't get the abundance of elements that you see in our universe. So, for instance, if you want to have life, you're going to have to have carbon.

There's just no way around it. Carbon is the only element that produces bonds stable enough and complex enough to have very complex structures that could support information. So it's not just that you wouldn't have life like our own.

You wouldn't have any life whatsoever. In addition, if you want to have a planet that supports life, you got to have water because water has multiple very, very specific properties that are essential for any type of life because it allows you to have an atmosphere, an environment with a stable temperature. It's a very low viscosity, so it can flow through complex organs.

So again, if you want to have complex life, you're going to have to have water, particularly the way it is. And again, that goes back to this extreme fine tuning. In fact, for many of these fine tuning constants, even if you didn't have it right, you wouldn't even have complex atoms at all.

You just have very simple subatomic particles. So you're absolutely right that for any type of life, you have to have fine tuning. That's excellent.

Excellent. OK, my turn to ask a question. So what I try to do with this podcast, what we try to do is we're trying to equip our listeners to have conversations.

I got an example of how this is working with my hygienist Tiffany, who listens to the podcast and she was telling me during my last cleaning all about the conversation she was having. So when we're taking on a topic like fine tuning in the multiverse, my goal is for us to bring out some examples that will be usable by just regular rank and file workers like me. So with that in mind, can you just before we move on to the multiverse, tell us a couple of the examples of fine tuning that you think that just ordinary Christians would be able to bring up.

Certainly. And one thing I really enjoy talking to your dentist about these topics because you have to be really polite because they're holding your life in their hands. So that's a really good practice for being courteous.

And you also have to listen because when they have the device in your mouth, you have to just, you know, that's good practice for apologetics. But I mentioned gravity, which is a very simple example, because if gravity isn't properly set, and I use this with even like junior high students, you can imagine if gravity was too low, you just float off the planet. So if you have a planet and gravity is really low, you just kind of float in space, you couldn't walk, your atmosphere go away.

So that's really simple. Or if gravity was really, really strong, you'd be pressed against the earth, you couldn't move. So that's a nice one because it's very visual, it's very intuitive.

And it's also very well verified, like even people that are not religious in particularly will acknowledge that gravity has to be set very carefully. Another great example would be the early order of our universe. And this is the idea of entropy.

And that's a pretty simple concept, because if you imagine you come to your house and you find your children's room is a mess, that's sort of a natural state of a room. Very few parents find that they want their children to keep their room messy. But no matter how hard their children try it, it's need and organize.

It doesn't really make any sense. So nature tends to be in the sort of disordered state. But for the universe to support life, the early stages of our universe have to be set very, very carefully, like a very neat and tidy room.

And there was a famous physicist named, he's actually still alive, Penrose, Roger Penrose. And he estimated how fine-tuned the order of the universe had to be at the beginning. And he said it had to be fine-tuned or carefully set to like one part in 10 to the power of 10 to the power of like 120 or something like that on that order, 123 or so.

And that's incredible. And just to write that number, you'd have to say it's one divided by a one. And if you drew a zero on every single atom in the visible universe, you couldn't even write the number.

So you're dealing with just phenomenal fine-tuning. And then another couple that I think are very simple to understand is deals with what's called the electromagnetic force or people might call it the electrostatic force. But it's simply the force that will attract oppositely charged charges.

So you have a plus charge, a minus charge, they attract each other. Everyone's seen that experiment in physics class where you like rub a cat or something and your hair goes crazy. And what happens is that's the force that'll hold electrons to the nucleus, the electrostatic or the electromagnetic force.

And what happens if you were to change that force by just a few percent higher or a few percent lower, you wouldn't have a universe that could support life. You wouldn't have stars that could produce carbon and oxygen in sufficient abundance. So those are some very, very simple examples.

One other example I think is a very nice example is what's called the cosmological constant. And what happens is there's this energy that permeates space. And that is what contributes to what's called the cosmological constant.

And what happens is you have space that's constantly being pushed apart by this background or dark energy. Most people have heard dark energy in the news or some Discovery Channel special. And what happens is that has to be set to one part in 10 to the 90.

That's the one with 90 zeros. And again, if that particular constant was not set properly, either a universe would fly apart and there just would be no planets, no life, perhaps not even atoms, or it would immediately compress into a black hole. So there's a few examples of constants that have to be carefully set for life to exist or initial conditions.

Before I go on to the next question, I was just going to ask you this since I have you to talk. One of my favorites is the strong force. And this is how I usually explain it like the strong force is the force of attraction between protons and protons and the pro and protons and neutrons.

Is that good so far? That's great. You're doing great. OK, so to me, immediately, like everybody learned this in chemistry class in high school.

So if you think of a proton and meets another proton and they really like each other like too much, then you would probably never see any hydrogen, which is like a single, a single proton, right? And I think you need that in order to make water. But if the if they didn't like each other at all, then you would never see any more complex elements. Is that a good way of explaining it or is that wrong? No, that's really that's really well done.

Yeah. So again, you have to in the strong force is not one people are as familiar with. But when you explain it, that's simply people get it that what's amazing about our universe and pardon me for going on a tangent.

This is so you're good. This is I can't I can't resist that even the structure of the laws of nature, like if you write out the laws of nature that define reality, even the form of the laws is really important. So what happens is electromagnetism is much, much stronger than gravity, but plus and minus charges cancel each other out.

And both of those have to be true for our universe to support life. Gravity has to be cumulative, meaning the more mass you have, the stronger the gravitational force, you need that for planets. But you also need the force that holds atoms together to be much, much, much weaker than gravity.

But also it needs to cancel each other out so you don't have electromagnetism dominating gravity at a universal scale. But also you mentioned the strong nuclear force. And what happens, just to give more details, is protons and neutrons are composed of what are called quarks.

Quarks are some atomic particles that make up protons and neutrons. And the strong nuclear force is what holds these quarks together to create protons and neutrons. And as you mentioned accurately, the strong nuclear force also will keep your nucleus together, the protons together in the nucleus.

And that's really remarkable because, again, because protons all have positive charges and neutrons are neutral, they want to push each other away. But because a strong nuclear force is

much, much stronger than an electromagnetic force, it keeps the nucleus together. But what's amazing is a strong nuclear force also is very short-ranged.

So it only works in the nucleus because if the strong nuclear force were long-ranged, like electromagnetism, everything would just become a giant nucleus. So again, even the very structural laws have to be right for life. But as you mentioned, also if you look at one of those dials is the strength of the strong nuclear force.

And then a much like the electromagnetic force holding protons and electrons together in the nucleus. What happens if the strong nuclear force was a few percent larger or a few percent smaller? Again, you wouldn't have stars that could support carbon and oxygen, so there wouldn't be life. So yes, that's a beautiful example.

All right, very good. So I think one of the examples you gave has actually been raised by a non-Christian, the entropy example. I'm trying to remember which of the non-Christian scientists brought that up.

But I guess in general, does the fine-tuning evidence enjoy acceptance from prominent scientists who don't accept a creator and designer? Yeah, it's very widely accepted. There's a few exceptions of people that try to rationalize it away, typically atheists. But what you find is that whether they're religious or not religious, atheist, agnostic, Jewish, Christian, Muslim, it really makes no difference.

People recognize that the laws of nature are very, very, very special, that just a random set of laws wouldn't support life. In fact, one of the best books on this is Luke Barnes is an author. So Luke Barnes wrote this book called A Fortunate Universe, and the co-author, I believe, is an atheist.

So Luke Barnes is a Christian, the co-author is an atheist, and they came together in this book and even had some dialogue, which was really nice to read. And they list multiple professors, experts in the field that acknowledge that fine-tuning is real. So it's very mainstream, it's very well accepted.

And if you look at attempts to rationalize it away, and there's been a few rationalizations like saying, well, if this was slightly different or if this was slightly different, maybe you could shave off a few of the exponents. So instead of one chance in 10 to, let's say, 120, it's one chance in 10 to the 100. But that really is inconsequential that the evidence is very clear that fine-tuning is real.

I'm listening to all this, and it's just some of it's just like mind boggling. But it's also fascinating. So now let's go into the multiverse theory.

What is the multiverse theory? Well, what happens is when you see this evidence of fine-tuning, how you respond to the evidence depends on your view of reality. I'm sure you've used terms like

worldview or metanarratives in your podcast. And what happens is if you believe in a creator or you even believe in the possibility of a creator, you'd say, oh, yeah, that looks like there's some mind behind the universe, some creator outside of time and space that created everything for purpose.

But if you assume that there is no creator, there is no mind behind the universe, all there is is matter and motion, which is an idea that goes back to the ancient Greeks, the Adamus. Then you have to explain this fine-tuning in some other way. And the way people go about it is they argue that there isn't just one universe.

There's lots and lots of universes. There's universes where perhaps Dr. Strange speaks Spanish. There's universes where he doesn't.

There's all these different universes out there. And what happens is we just won the cosmic lottery that these various universes have slightly different constants. In some universes, gravity is slightly larger.

In some, it's slightly smaller. In some, the laws may have different mathematical structures. So it's not that our universe was designed for life.

But what you find is that there's so many different universes. There's so much variation that we, in a sense, artificially select the universe for supporting life because we can only live in a universe that's supporting life. So the universe won the cosmic lottery that we're in, and that's why it has the right laws, not because of a designer.

So that's generally the way people go. In fact, you find that there's evidence of design in everything, in the way our planet's designed, in life, in the origin of life. But people rationalize the way that evidence, in the same way, they simply say there's lots of variation, there's lots of possibilities, and somehow the right result was selected.

So that's how people deal with it. Do they say that there's, or maybe there's variations of it, a whole lot of universes or infinite universes? It depends who you talk to. Like, some might say there's a whole lot of universes.

Like, one of the models of the multiverse, you don't need to worry about the details, but it's called a string landscape model. And what people do is they apply string theory to cosmology. I believe Susskind is one of the examples of that, if I recall correctly.

And what happens is there's, if you look at string theory, it has like 10 to maybe 500 or 10 to 1,000 solutions to the equations. So they would say maybe there's 10 to 1,000 different possibilities for constants. Others, like someone like Max Tegmark, he argues that every mathematically consistent possibility for a universe actually exists.

So if the math works, then that math corresponds to a universe. So different people will have

different answers to that question you have. So how is the development of this multiverse theory related to cosmic fine tuning? Well, really, a lot of what motivated, actually, I'd say primarily what motivated a multiverse is the way to explain this fine tuning.

In fact, if you look at the early multiverse theories, like one is called inflationary cosmology. People like Alan Guth came up with that, and I believe Lincoln likes that also. And others, they came up with this idea of inflationary cosmology.

And the idea is that you have in your early universe this phase of expansion, which is really fast. And the reason they came up with it is because they found some really interesting properties of our universe. One property is that if you look at the cosmic background radiation, it sort of measures the order in our universe.

It's very uniform. It's shockingly uniform. The temperature is like one part in 100,000.

And that shouldn't be the case based on standard big bang models of the universe, because most models argue that the universe expanded very quickly in the beginning. And what happened is you might have different parts of the universe that had different temperatures. And when they expanded, those temperatures couldn't equal thermalize.

In other words, they couldn't come together. So then what happens is our background radiation should be much, much more patchy, much more different. Another issue was our universe is very flat, because if you go into general relativity, what happens is spacetime can either curve in or curve out, have positive curvature or negative curvature.

And what that means, it's really hard to understand. But if you shine two lasers in parallel, what happens if it's a positive curvature, the laser beams will come together. Negative curvature, they go apart.

And if it's flat, there's no curvature. They would go in a straight line. And what happens is a universe with positive curvature would expand and contract.

Negative curvature would just keep expanding, and then flat is right in between. And our universe is shockingly flat. And for it to be that flat, the mass density of the early universe would have to be fine-tuned to like one part in 10 to the 60.

So that's really surprising. So in order to explain a way that's fine-tuning, they said, well, if you have this early inflationary state where space expands very quickly, that could explain that observation. So we wouldn't have to believe that it was just fine-tuned by some designer or something.

So and also you find that other multiverse theories like string landscape or quantum cosmology or whatever version you want to go to, a strong motivation for all of them is a way to explain the fine-

tuning without invoking something like God. That's what you find. Excellent.

Excellent. OK, so now I wanted to move to maybe what will turn into a bit of a longer answer from you. But before we recorded, Terrell and I were talking about objections that we had heard to the multiverse theory.

So these would be responses that the design proponent would have to give in order to defeat this objection to the design argument. And we sent you a list. So we were wondering if you could pick a few of those and talk about the ones that you thought maybe an order of simplicity or at least get some simple ones in there so that our audience would be equipped to be able to give a response to the multiverse theory.

Sure. You picked a very nice list, by the way. It was a very thoughtful points you brought up.

These are ones I've heard on like William Lane Craig or Robin Collins lectures or, you know, Luke Barnes book or whatever. So I just wrote some and then Terrell had some as well. Yeah, my favorite one is the very simple one.

There's no evidence for it. Yeah, that's a good one. Let's kind of go into the issue because scientists don't like to say something is the way it is is just a brute fact.

It just that's the way it is and deal with it. They want to come up with some scientific explanation. So if you want to argue for lots of multiverses and you're just not a writer for Marvel Comics, then you've got to come up with some physical mechanism for that to take place.

So there's various models. One model, as I mentioned, is inflationary cosmology. And what happened is people eventually proposed what's called eternal inflation.

And there's this idea that space is constantly expanding and spitting out all these bubble universes with slightly different initial conditions. Another, as I mentioned before, it was string landscape where you've got this idea that string theory is what defines the multiverse where you have what are called these brains like membranes. And when one version is that they bounce against each other and every time they bounce, some new universe is generated.

And you have these multi dimensions which modify themselves that produce different laws. So what happens, though, is it doesn't matter what model you prefer. Every single model faces this challenge.

That for the models to work, for the models to actually generate lots of universes with slightly different laws, they also have to be fine-tuned. So they also have these parameters that have to be carefully set. So in the case of cosmic inflation, one of the founders of this model is Steinhard.

He was one of the founders of it with people like Gouth. And interestingly enough, I had Gouth as a professor at MIT. He was a very nice man.

And what Steinhard did is he realized that what he helped to develop probably isn't true. And the reason for it is that for this inflationary cosmology to work, you have to set the parameters very, very carefully. In fact, you have to set them so carefully that you lose all the benefit that you gain from explaining the fine-tuning of what it's supposed to explain.

So, again, the inflationary cosmology, you have to set various conditions like how long the expansion lasts. You have to explain how it stops. You have to explain how the energy in what's called the inflatan field can couple to mass and energy in just the right way, in just the right amount.

So, again, that's a great example where you have to fine-tune it to an incredible degree for it to work. The same thing with string landscapes. If you have, let's say, these brains that are bouncing in the version I mentioned to you, that the distance between these brains has to be set to one part in 10 to the 60 over an enormous distance.

You have to set the initial energies properly. You have to set the laws properly. So, again, in every model that anyone has come up with or will come up with, you have the same problem.

That you have to fine-tune the details of the model to explain away the fine-tuning they're supposed to explain. The analogy I like to give is if you have a carpet, and that carpet's too big for your room, you get a bulge in the carpet. And what you want to do is you want to knock down that bulge.

But if the carpet's too big, you push down the bulge, it appears someplace else. In the same way, every model they use to try to explain away fine-tuning, the fine-tuning just moves to what we see in the universe to that model. So it's inescapable.

A second issue, as you mentioned, is there's no real evidence for it. What happens is in these various models, they'll claim they make certain predictions, like the background energy, that the background radiation may be a little bit more blue-shifted or a little bit more red-shifted. But there's incredibly generic predictions that 100 other models also make.

There's no clear evidence that's specific enough to suggest that any of the models are true. Now, another problem is if you look at a model like Max Tegmark, where he says that any universe is possible that's mathematically feasible, the problem is that really threatens the very foundations of science. Because if you're just going to argue that you've got infinite probabilities, that means that you could observe anything.

So there might be in our universe a voice out of heaven saying, I am God, worship me, stop ignoring the evidence of the design of the universe. And you could just argue that we're in the universe where thermal fluctuations or quantum fluctuations generated that sound. It's not real.

It's just because we live in an infinite universe and anything is possible. You might do some

experiment, and you might multiple times see the same result. But in an infinitely large universe, you can always say that while we're just in the universe where random fluctuations produce, those results are not actually real.

So this multiverse theory threatens the very foundation of science. And I think even Max Tegmark wrote an article raising these concerns. Now, another problem, it's a brilliant problem.

It's called the measure problem. And there's a couple rabbis, actually, there's these rabbis who have this podcast called Physics to God. And they actually talk about this, the measure problem, Ellie and Aaron, really wonderful fellows.

And what they talk about is, and other physicists have talked about it, but they really clarify it, is that if this is going to be scientific, you have to make some prediction. So let's imagine it is actually the case that there's an infinite number of universes with an infinite number of details. Well, to make a prediction, you have to say, well, given all these universes, we predict that certain universes are more likely than others.

And we'd predict that even if there's a million infinite numbers of universes, we should be a universe that's more likely than a universe that's less likely. The problem is, that's not the case. So, for instance, if you look at inflationary cosmology and other models like that, what you find is that universes that are very young are much, much more common than universes that are very, very old.

So what happens, it's more likely that our universe isn't really old, but because of quantum fluctuations, our brains came into existence perhaps two minutes ago, with all our memories intact, but it's all an illusion, because that's much more likely than if our universe was really, really old. So even if you assume there's an infinite number of universes, according to these models, our universe is still incredibly special and unexpected, even if you're only considering universes to support life. That's another major problem.

And also, the other problem is even if you could in some way explain the evidence of design in our universe, it doesn't explain all the other evidence of design beyond the laws of nature, like the design in our planet, the design in life. So, again, there's really no plausible way to get around this challenge. We had Guillermo Gonzalez come on and talk about that link between habitability and discoverability.

So the multiverse doesn't touch that kind of local fine-tuning of the solar system, or the planet, or the moon, or anything like that, right? That is absolutely the case. Okay, very good. So yeah, you were talking about... So I noticed you didn't raise the Boltzmann Brain one, which is the one that I hear raised in William Lane Craig debates.

And that's different from the one you were talking about with the brain's B-R-A-N-E, which is like kind of Mickey Mouse ears, I guess, sprouting off of universes in order to make new ones. So this

is a different one, and I felt it might be worth raising, because it is kind of neat, because it's actually a prediction that we can falsify. Go ahead and tell us about that and explain whether you think it's a good one to raise or should we just stick with the other ones? Yeah, it is so important.

I want to just get this again, is that, again, even if you assume that... Grant cosmologists their wildest fantasies and just say there's all these universes, and this gets to the measure problem, you would still predict that we would be in a universe that's more common. Like, you'd expect us to be in a universe that would be much more common than a universe that's much less common by definition. And the universes that are most common would be universes that have very young ages, that are very early in their expansion.

Yeah, like, you're really young. Yeah, very young, very young. And that gets in the Boltzmann brain problem, because it's more probabilistic.

It's more likely that a universe would be young, and our brains would just emerge out of a quantum fluctuation. That's what's called the Boltzmann brain, and have memories intact of our history, which are completely fictitious. That's more probable than if our universe actually is old, and we came about in a much later time.

That's kind of the problem that people typically talk about. Is there anything related to the multiverse that you think I left out of my questions that you want to talk about before we get to the next one? Yeah, I think what's really, really key, and you touched upon this, is there's a few extra things. One, it's not just that our universe is fine-tuned, but it looks like our universe had a beginning.

There's a start to our universe. And because everything began, and the Big Bang, people use that language. It's not that you've got an explosion in space, but you have space, time, matter, and energy itself all began.

And that's important, because what that tells you is that the materialist version of reality has to be false, that there has to be a mind outside of time and space that created everything, which points to a creator. And if you look at attempts to rationalize that away, like Penrose did a video recently critiquing Stephen Meyer. You've got people that try to get rid of the beginning, like Steinhardt.

But what you find is every attempt they make to get rid of the beginning, they have to use models that are so implausible, that have so many crazy assumptions, that they really are abandoning rationality to get rid of the beginning. So that's a huge problem. Another issue, as we talked about, is that there is design everywhere.

And I really like to think of it as a composite argument. I like to talk about the design of the laws of nature, with the design of our planet, with the design of life, because they all interrelate in very complex ways. And particularly with technology, because for us to have technology on our planet, you have to have humans with the right anatomy.

We have to have high resolution vision, high intelligence. Hands would have high dexterity. So the biology has to be designed to do technology, but you also have to have the laws of physics that allow for things like fire, things like radiation.

But our planet has to be designed properly to sustain complex creatures. So again, for things like technology, what you find is the design is like a symphony, where design and physics and chemistry in our planet, and human anatomy and physiology is like different instruments in an orchestra that are playing harmoniously together to achieve technology. So that's just an interesting point to make.

It's like there's so much. And I'm thinking, while any number of things could be kind of like a slam dunk in a conversation, when you put them all together and you have a cumulative case, it's just overwhelming. Yeah, I completely agree.

And that's really what helped to bring me back to faith. All right, let me ask you this. So I remember reading about Brandon Carter and that he was the first person, I think, to invent one of these fine-tuned, or invent, discover one of these fine-tuned concepts.

So we've discovered more of them since that first one. So is it fair to say that the progress of science is pointing more towards design, or are the naturalist explanations and rebuttals to this getting stronger? Who is kind of winning as science progresses? Well, what you find is, on multiple fronts, the evidence of design is getting stronger, and materialistic views of science are getting less and less plausible. Mm-hmm.

Because the more we study, in fact, I often call this the materialism of the gaps fallacy, because what happens is you see design in everything, and the more we study physics, the more we recognize that there appears to be purpose, design, intentionality. And also, as science advances, every attempt to rationalize away the evidence, whether it be a multiverse, like the RNA world or whatever, what we find is each of the ways to rationalize away the evidence is getting weaker and weaker and more implausible. So you're finding that the evidence of design is pushing forward dramatically, particularly in biology, particularly if you look at things like origin of life.

What you find is the more we study, what will be required for life to begin, the more you see the need for information, the need for guidance, the need for purpose. And also, we're finding that you're finding the same design patterns in life that you find in human engineering. So you're finding the specificity that we recognize.

So again, at every front, you're seeing design winning. And that's why you've got people that started out as atheists that eventually believed in God because of the fine tree and the laws of nature, or people that would be philosophers that would question design, like in Anthony Flew, that when they would see the design in biology, they're like, yeah, I have to believe in theism. So

again, this is what you're seeing high-level defections from the materialist camp into a belief in a creator.

Yeah, I remember watching that Anthony Flew debate at University of Wisconsin-Madison against William Lane Craig, and this guy was defending the non-theistic view, raising all kinds of arguments against Christianity and theism in general. And I remember during the Q&A, one guy stood up at the very end, and he said, why do you have to concede to Dr. Craig that the universe had a beginning? Why don't you just say that we don't know, or the universe, you know, we may make a discovery that will reverse all of the reasons for a beginning. Why do you have to accept that this is the consensus and that we have to care about it? And Dr. Flew replied and said, well, we have to bound our beliefs according to what the science says.

This is the science we have today, and we can't play games with this. And I was watching that debate, and I was just thinking to myself, this guy is going to become a theist at least someday. Because if you are willing to concede that, I think for, you know, independent reasons that theism is true, and I think that the more science we do, the more we're going to find confirmation for that.

And of course, that's what ended up happening, and he wrote that book, There Is a God, you know, 20 years later. But if you have honesty about it, I think the progress of science is going to give you more than enough reason for just switching sides, if you're a naturalist. I agree, and I think there is one interesting psychological principle that's helpful to remember.

It's called the Dunning-Kruger effect. And the Dunning-Kruger effect is that when you have a little bit of knowledge on a topic, your confidence goes way, way up. But then the more you learn on the topic, your confidence drops as you know, you learn how much you don't actually know.

And then it slowly goes back up as you start to learn more and more and more until you develop real expertise. The challenges, as I mentioned, a little science takes people away from God because people will hear some podcast by Richard Dawkins or Jerry Coyne or something like that and think, oh, I've got this knowledge of science now. I'm so sophisticated that I can deny a creator.

But they don't realize that their confidence reflects the fact that they don't know what they don't know. And the challenge is there's enormous social pressure in the academy not to believe in design. So what happens as you get on that peak is they start to learn more and more and they start to recognize that there may be truths out there they didn't realize.

They start to feel the pressure from their colleagues and instead of going down what some people call the value of despair, they go back up the peak and just sort of ignore it and end the conversation. And then what you find though is there are people that have high integrity and courage, people like an Anthony Flew that keeps going down and learning and realize, oh my gosh, what I was told isn't accurate. And you see this really a lot in biology now, people like Michael Levin, people like Jim Shapiro, people like Dennis Noble who are realizing that this

materialistic view of our world isn't accurate.

There's something that seems a little bit off and now they're starting to go in very different directions because of the science. So that's a very important concept for people to realize. So any of you listeners out there, whether you're Christians or skeptics, I encourage you to keep studying the evidence.

Listen to people that are let's say Christian, people that are atheists go back and forth and what you'll find as you go back and forth in arguments is that eventually one side of the debate is not responding to the other side. And then you have a good sense of where the evidence lies. That's what Anthony Flew found is the evidence is with design and that's what many other people are finding.

All right. So I wanted to pick up on something that you said at the very beginning of the podcast where you said that you encounter difficulties in university. This is MIT, you know, it's a very challenging place and you're getting taught by Alan Guth, who is, you know, a proponent of, you know, he's absolutely famous for his inflationary model.

So these are intimidating people. And then you talked about how you prayed about this and then God responded with an orchestration, which as a middle knowledge person, maybe that's too controversial. I just love the idea of God as orchestrator and, you know, a ranger of paths, putting people in our path and arranging for books to be given to us to read and all this stuff.

So, you know, without getting too personal, maybe you could, and I mean, you can if you want, but would you be able to tell us what you would think that an orchestration like that would look like? Because sometimes in church, I talk to the pastors and the pastors say like the data that causes a conversion, a change of mind is your feelings. Maybe you feel really guilty about something or you feel that you're in rebellion and then, you know, you reach out for something and you have a religious experience. And that's not my preferred way of talking about this when I am in the workplace and perhaps with non-Christians.

What I want to do is emphasize the fact that it is a situation where the person who's not reconciled with God has false beliefs about God. Maybe he thinks the universe is eternal or she thinks, you know, that the origin of life is a solved problem, you know, from a naturalistic point of view. So I like to hear people tell their stories or to give pointers about how God reaches out to people and orchestrates these changes of minds with reasons and evidence, relationships and books.

So do you think that's a good question? Would you like to say something about that? That's a great question. And I've talked to many, many, many people around the world. I would do lectures and just people would throw questions at me afterwards and I would dialogue online with people.

So yeah, I have a lot of experience with this. And I think a mistake people make is they assume

everyone's the same. And what you find is that God will engage different people in different ways and he'll orchestrate, I like that word, our lives to put us, when we prepare ourselves in a certain way, God will put us with those people that need what we've prepared to say.

I think that's a really good point. And I've actually had experiences where I would learn something. I have this conviction, I need to learn something one week.

And then I'd meet a person who asked me a question about it the next week. So I think we all have to pray about what is it God is calling us to do to prepare ourselves for, to help other people. And I am tailored for people that come from atheist, agnostic backgrounds, people that are scientific.

And yes, so the emotions is really, really valuable and important. And I think when you deal with different people, if they're really rational, then it's really good to just start with scientific evidence. If they're not, let's say they're more of a poet, they're more of a literary person, they're historian, images are incredibly powerful.

Like there's so many great videos, and this is good for everybody, that we have a website called intelligentdesign.org and we've got lots of videos that we've done. There's many other people that have beautiful videos. And if you show people the videos of what's actually happy in life, like about what happens with metamorphosis, what's happening with the beautiful design of the human body.

In fact, just now, remember, Discovery Institute has put out these videos called Secrets of the Human Body. We've got Secrets of the Cell. We now have Secrets of the Human Body.

It just shows the incredible beauty and optimality and the genius of design. And that's a beautiful way to help people see the truth, who may not be as on the scientific side. If they're on the scientific side, I find there's usually a pretty clear path that people usually start with the fine-tuning the laws of nature.

There's lots of great books out there, like Blue Barns is a great book. Obviously, people like Hugh Ross have written books. Stephen Meyer has Return of the God hypothesis.

So find... Oh, actually, one of the people who have a really nice book is J. Warner Wallace. Like J. Warner Wallace has God's crime scene. And that is a magnificent introduction to these concepts in very simple language.

So books like that are very, very helpful to get you going. And then as you start to get the basic idea, you watch videos, you watch an introductory book on the fine-tuning, reading a book on the origin of life could be really helpful. Oh, there's a lot of videos we have called Long Story Short, and they deal with the origin of life in very simple ways.

That's a great way to start that. So usually the way it goes is people look at fine-tuning the laws of nature, the beginning of our universe. Then they'll go to origin of life.

That's really a very straightforward case. There's no serious response to it. And then they go into things like the design of a human body.

They'll go into the fossil record with sudden appearances. And then as you get into the more sophisticated conversations, you might go to something like Darwin's Doubt or Michael Denton's book, Evolutional Theory and Crisis, or Darwin's Black Box. And then if you really want to become advanced, what you need to do is read technical articles.

You want to again go back and forth between both sides of the debate and look at what point does one side stop responding to the other side. And we have a lot of articles on places like science and culture today. Again, intelligentdesign.org has a tiered system with simple articles, intermediate and advanced.

That's really helpful. So again, that's the general process and path that people can go to. And again, if you don't mind me going outside of science, I think if you want to talk about the reliability of the Bible, Lydia McGrew has amazing works on that topic.

And she has books like Testimony to the Truth, The Mirror and the Mask, Hidden in Plain Sight, different books like that for New Testament. And then there's lots of other books, things like a Philosophy, like a William Lane Craig. There's a book like Eternity in Their Hearts, which is more anthropological.

How if you look at cultures way back in time, they all seem to have this understanding of a deity and they lost that connection. So again, those are kind of ways to get started in this journey. You just really covered a whole lot.

All I can think of to say is, is there anything else you want to tell listeners just to have them be informed on this subject or obviously where they can find your work and anything else you want to say? I think what's really important is that, and again, I'm very much specialized in the intellectual arguments, but it's very much not just an intellectual issue. I really like the picture of doubting Thomas, where Thomas said, I will not believe unless I touch the wounds in his wrist and the wounds in his side, because Thomas is the empiricist. He's a skeptic.

Thomas had a twin, so he probably thought Jesus might have been mistaken for like a brother or something. And Jesus met him where he was. He said, stopped doubting and believed, but he allowed him to touch the wounds in his side.

So again, this is a very personal encounter, and God will engage you in the way that you need to. So for those of you out there who are exploring faith, I encourage you to recognize the separation between you and God is not intellectual, it's through the will, it's morality, it's our sin, it's our

alienation from God. So recognize that the intellectual arguments will be very helpful, but the challenge is the will.

Because I remember I said, God, I don't know if you exist, but if you do exist, I will give you my life, I will repent of my sin, I will serve you all of my life. And God responded to that. Jesus said, whoever seeks will find, but the problem again is the will.

So my encouragement to you is to humble yourself before God, and then say, God, if you show me the truth, I will follow you. And that's the part. Also recognize the barriers to believing in God are often emotional.

Often people that have had bad relationships with their father will kind of impart their ideas of their father onto God. So a lot of the way you come to God is to forgive people in your past. It's to start following Jesus' commands and saying, help show me the truth.

And you'll see as you follow his will, things get better. There's healing that takes place. So again, it's a very multifaceted process.

So that's all very, very important. So that's fantastic. Thank you so much for that answer.

All right. So I think that's a good place for us to stop for today. Thank you so much for coming on the show, Brian.

Thank you. It's been a pleasure. And thank you for being our guest host today, Terrell.

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