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Guillermo Gonzalez: Earth is Designed for Discovery

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Knight & Rose Show - Wintery Knight and Desert Rose

Wintery Knight and Desert Rose welcome Dr. Guillermo Gonzalez to discuss the new 20th anniversary edition of "The Privileged Planet". Guillermo explains the book's thesis, and gives examples of the link between habitability and measurability from our planet, solar system, and galaxy. Guillermo responds to arguments against design, and talks about getting into trouble with opponents of design on campus.

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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. And I'm Desert Rose.

Welcome, Rose. Yeah, thank you. It's good to be here.

I really probably should be in bed. I have a cold. You can probably tell.

I don't sound like myself, but I really wanted to be a part of our special guest here today and hear what he has to say. So I'm really excited about the show. Yes.

So today we are welcoming a special guest onto the show, Dr. Guillermo Gonzalez. Guillermo Gonzalez is a senior fellow at Discovery Institute's Center for Science and Culture. He received his PhD in astronomy in 1993 from the University of Washington.

He has done postdoctoral work at the University of Texas, Austin, and at the University of Washington. He has taught astronomy and physics courses at the University of Washington, Iowa State University, Grove City College, and Ball State University. He is a world-class expert on the astrophysical requirements for habitability and on habitable zones and a co-founder of the Galactic Habitable Zone concept, which captured the October 2001 cover story of Scientific American.

Gonzalez has also published over 90 articles in refereed astronomy and astrophysical journals. He also is the co-author of the second edition of Observational Astronomy, an advanced college astronomy textbook. And today we're welcoming him to discuss the new 20th anniversary edition of The Privileged Planet, which many of you will already know about, co-authored with Dr. Jay Richards.

So welcome, Guillermo. Hello, and thank you for having me here today. Fantastic.

So you have a new 20th anniversary edition of The Privileged Planet out. Why don't you start by telling us what's the thesis of the book? So the basic idea is that there's this empirical relationship that we discovered that just says that there's a correlation between the conditions for habitability and the conditions for scientific discovery. And that Earth is an exceptional compromise among sometimes competing factors for discovery.

So we live on a planet that is privileged, not just for advanced life, but also for scientific discovery. Very good. And the book is filled with examples of how our planet or our planet and moon ensemble, our solar system, and our galaxy are exhibiting these kinds of features.

So the book starts with local habitability, measurability factors. So can you talk to us about one of those that you think really makes the case and provides evidence for your thesis? Sure. And this is one that, since it is local, people will be able to relate to better.

And I'll pick an example from our chapter on geology. So one of the special characteristics of the Earth is that it exhibits what's called plate tectonics. So that the crust is broken up into a number of plates and they slide and move around and sometimes subduct one under the other.

And this process is important for life because it's thought to be part of the long-term temperature stabilization through the carbon cycle. It's a way of drawing down carbon

out of the atmosphere and then volcanoes will release it back into the atmosphere. It also helps build continents so you can have dry land.

And so plate tectonics, of course, produces things that could be dangerous like earthquakes and volcanoes. But the earthquakes themselves allow us to map the Earth's interior. But one of the really important aspects as far as technology is concerned, the feasibility of technology is our ability to mine ores.

And mining is made more feasible if the ores are concentrated rather than having the elements all diluted in the Earth. And plate tectonics is one of the main processes for concentrating ores, also along with the hydrological cycle, which is very important for life. And these together have concentrated a number of ores that are very important for technology, various metals.

The salt deposits on the continents have been concentrated through evaporation processes of what used to be inland seas. And the fossil fuels that we use and have led to the current high-tech civilization we enjoy was due to things that lived and died in the past, giving us coal, natural gas and petroleum today, which are absolutely essential for the modern technological revolution. So all these things, the geology of the Earth and past life have led to high-tech being very feasible and being able to mine all sorts of metals that we use in computers and making rockets, all kinds of high-tech devices.

Yeah, neat. So basically, I'm coming from an IT background, so I don't really deal in hardware as much. But I'm just thinking about all the different elements that would be involved in things like smartphones and computers, and then how often machines are involved in doing scientific research, like you mentioned, rockets and telescopes and so on.

So we have to build these instruments in order to measure our local surroundings and even further out. And how can we build these machines if we don't have access to all of these minerals and so on? Absolutely. Well, let's go on to another one.

The second section of the book has to do with habitability, measurability links in our solar system. So that would be the Sun and all the planets, including Earth. So what's a good factor that is demonstrating that the very conditions that make our planet, our solar system, habitable are also the ones that allow us to make scientific discoveries? Well, we can start with a very nearby neighbor, the Moon.

It's important for life. This has been discovered starting about a little over 30 years ago that the Moon helps stabilize the Earth's rotation axis. So if it wasn't for the Moon, the Earth's rotation axis would wobble over a larger range and lead to larger climate fluctuations over thousands of years.

And of course, people have known for a long time that the Moon is important for the

tides. It contributes most of the tides. Some of it is contributed by the Sun.

But the tides, of course, help wash nutrients from the continents into the oceans and minerals. And so it makes for a more habitable environment. In addition to the Moon, we have the other planets.

We have a pretty rich solar system in terms of the number of planets, eight planets. And in ancient times, people knew about five planets. And not counting the Earth, because the Earth was not considered a planet yet in ancient times.

Because planet means wandering star. So when somebody saw this wandering star that moves from night to night across the background stars, they call that a planet. And so there are five planets, historically.

And so the planets, it turns out, we've learned help maintain Earth's habitability. Some of them help Venus keep the Earth's orbit more stable over long periods of time. Jupiter is thought delivered water from the asteroid belt to the Earth early on through its gravitational influences on the asteroid belt.

And they have nice, well-behaved circular orbits that keeps them from perturbing the Earth's orbit too much and make it more eccentric. So that's the habitability side. Now, on the discoverability side, the Moon has been important in the understanding of gravity.

So let me backtrack a little bit and start with Kepler. Kepler developed his three laws of planetary motion. And he don't, especially the third one is kind of a complex one.

It says the square of the period of a planet is proportional to the cube of the mean distance from the Sun, or sometimes stated p squared is proportional to a cubed. And he discovered that because he had all these planets to work with, observations of planets and plotted them on a graph, a paper, and found that, hey, there's this interesting empirical relationship, p squared is proportional to a cubed. It was Newton, a few decades later, who would determine that that's because gravity follows an inverse square law.

We assume gravity is universal, and it applies to the planets, not just following apples on the Earth's surface. Then he can recover that equation from his inverse square law for the force of gravity. But what really inspired him to apply the law of gravity from observations on the Earth's surface, for example, of projectiles and falling apples to the rest of the universe was the Moon, the Moon's orbit.

Just as apples accelerate towards the Earth, towards the center of the Earth, so too does the Moon accelerate towards the center of the Earth. And that's what inspired him to actually first propose this inverse square law, which he then confirmed with Kepler's third law from the planet. So the solar system I like to say is like a planetary playpen for mathematicians and scientists to discover the most important physical law, I think, in the

universe is the law of gravity to figure out.

From that, we can extrapolate to the whole universe, figure out how galaxies move and so on. Yeah, most of our listeners are going to be already familiar with the kinds of arguments that you find in popular level textbooks or books on Christian apologetics. So everybody talks about the origin of the universe and the fine tuning in those books.

And as soon as you're talking about things like the law of gravity, it's immediately occurring to me, how do we know that these constants and quantities and ratios are fine-tuned? How can we measure the things that allow us to make those kinds of discoveries that help us to process whether there's a design, whether there's a designer? And I always took these things for granted. But when I read The Privileged Planet, suddenly I realize, oh my goodness, it's not the case that you can make these discoveries from just anywhere in the universe. So yeah, the Moon is really important.

Now listen, let me pick up on one thing that you said, because I think this is interesting. See, I mentioned maintaining the axial tilt of the Earth. And I know that that's an important factor in a planet permitting life, because I think in the book you talked about other planets that didn't have that.

And what do we lose if we don't have this massive Moon stabilizing our axial tilt? Yeah, so we lose climate stability so that the climate will vary more over long periods of time, thousands of years. And so it would put more stress on life. It will be specifically harmful for advanced life.

Simple, single-celled life, quote simple, single-celled life wouldn't be affected as much, but it'll certainly be a major problem for complex life, advanced life. I forgot to mention one thing about the Moon also, where it helped develop theories of gravity, was by providing us with beautiful eclipses. And so total eclipse when the Moon covers the Sun.

And in 1919, Arthur Ennington, a British astronomer, led an expedition to observe the total eclipse to confirm Einstein's or test Einstein's theory of relativity had just been proposed a few years before in 1915. And he ended up confirming it. And that eclipse and those observations were a big step in Einstein's general theory of relativity being widely accepted by other scientists.

Yeah, so this is critical. So typically, when I talk about the origin of the universe, I want to talk about the data that's led us to believe that there has been an origin of the universe. And so I talk about things like general relativity and redshift and cosmic microwave background radiation and light element abundance predictions.

We did an episode on on the origin of the universe and one on fine tuning, where we talked about the discoveries that led us to this. So I'm just reading about this and going, Oh, great, someone discovered relativity. But actually, the eclipses are the things that

that help us to do that.

And eclipses aren't possible, you write you have a whole chapter about this in the book, eclipses aren't they don't teach us anything scientifically, unless the sun and the moon have very specific properties. So I don't know if you want to say something about that. So I mean, there is remarkable our view from the earth and that the moon has an angular size on the sky that just matches the sun's angular size almost exactly.

And so we get what I call perfect solar eclipses. And that's not all of them, there's more we can go into, but you'd have to read the first chapter to find out the other ways that our eclipses are special and allow us to make scientific discoveries. All right, well, let's, let's move on to the galaxy, the Milky Way, which is our galaxy.

And you have chapters in the book where you talk about factors that enable us to have a life permitting area, as well as make scientific discoveries. So maybe just pick one of those and tell us about it. So yeah, so as you mentioned at the introduction, I developed this idea with my two co authors at the time, Donald Brownlee and Peter Ward, who wrote the book rare earth, we adult this idea called the galactic habitable zone.

And, you know, we live in a very large assemblage of stars and gas and dust that's flattened like a pancake. And it's called the spiral galaxy and it has about a couple hundred billion stars, it's about 100,000 light years in diameter. And it varies and its properties from place to place.

There's a supermassive black hole at the center that occasionally rips up a star and spews lots of radiation. There's supernovae that go off different places in the galaxy, mostly along the spiral arms and mostly towards the inner region of the galaxy. So for various reasons, the inner region of the galaxy tends to be more dangerous from all these various threats.

And then there's also the building blocks you need for for building a habitable planetary system. So I'm trying to think of a good analogy for what a spiral galaxy is for the listeners. And it just came to me.

Do you think that it's a little bit like a ninja throwing star or sure? Sure. Yeah, yeah. Yeah, a little bit like that.

Yeah. So we don't want to be in the middle of the shuriken, like the center, because that's got a nasty it was hilarious in the book, you talked about it being like the lair of a very large dragon who you don't want to go too close to him because he'll eat you. And I just love that because I love the hobbit.

And so, yeah, so the center is really bad. And then being too close to the arms is really bad because we want the heavy elements that are kicked out of supernovae to use them to make our supermassive are mass more massive than average star and are more

massive than average moon. And maybe have all these minerals, perhaps, I don't know, you know, we have a pretty massive planet as well that enables that magnetic core.

So we need those heavy elements, but we don't want to be too close to the process that's making them or it will kill us. Right. So with radiation.

So we want to be between the little prongs of the shuriken. And for people who don't know, I mean, Rose is Taekwondo, black belt now almost, and she uses weapons in her pattern. So I'm learning about all these, these weapons.

Yeah, that's okay. So we got the part about how we have to be in between the arms of the shuriken. But what discoveries have we made from from being here? Why is it better to be here from a measureability point of view? So not only is the inner region of the galaxy more dangerous, it's also dustier and so that's one part that inhibits partially a view of the distant universe.

Also a much higher density of stars creating foreground. And if you want to measure something like the cosmic microwave background radiation, first of all, you want to be detected, discover it for the first time. And then secondly, you want to measure it accurately.

It'll be much, much harder if you're living closer to the center of the galaxy. So where we are in the outskirts of the galaxy, about two thirds of the way out from the center to the edge of the disc, we look out in the night sky and we see the Milky Way band. That's us looking edge on into the Milky Way.

And when we look at Sagittarius during the summer, the constellation Sagittarius, that's the direction of the galactic center. And that's where the Milky Way band is brightest. As you get closer to the center, the distribution of stars around you and gas and dust looks more spherical because the center is a bulge.

It's called the bulge and it's more nearly spherical distribution of stars and gas and dust. Whereas the disc is very, very, very flat. And so the farther you are from the center, the more flattened the foreground contaminants are.

And so if there's anything that's out in the rest of the universe, a cosmological source of radiation, like the microwave background radiation, it's much easier to separate it out to distinguish it from the foreground contaminating sources. If you're where we are between spiral arms, far from that bright, busy central region where the local sources are far away and is highly flattened. So that's a key point.

The distribution of foreground contaminants that are kind of blocking your view of this faint microwave background radiation are not distributed on the sky in the same way. So it allows you to separate them out. And I put a lot of emphasis on that, discovering the microwave background because it was the clincher for, yeah, discovering that the

universe had a beginning.

That really was the deciding point in cosmology or in the 1960s when it was discovered. Yeah. I'm going to just stop you there and provide a quick refresher.

Oh, I should probably say it's, there's not a real dragon. It's an enormous black hole. Just in case some atheists are listening and they're saying, oh, I knew it.

I knew this was nonsense. But yeah, so for the cosmic microwave background radiation, basically, to explain this to people who made me didn't listen to our episode on the origin of the universe, this is like if you put a cake in an oven and you bake it for a long time and then you take it out and you let it cool, the temperature of your house is going to go up a certain amount of degrees. And there's more to it than this, but it raises the temperature of your house a couple of degrees.

And that's a prediction of the current model of how the universe originated, space, time, matter, and energy. And so what happened is we were able, a couple of scientists were able to measure to see, well, they didn't mean to, but they accidentally discovered that there's a slight background temperature in the universe that is consistent with what we would have predicted if the universe began in this, you know, hot fireball. And so I don't need to, I'm sure I don't need to tell people how critical it is to your worldview that the universe has a beginning, space, time, matter, and energy.

And here, this is how we were able to, just one of the ways that we were able to provide evidence for this. So Guillermo, just correct me if I said anything wrong there. That's fine.

That's right. We're discovering the rock relic radiation leftover from a time when the universe was much denser and hotter. And it was, although it was discovered by accident by the two Bell Labs engineers, Penzias and Wilson in 1964, it had been predicted and Princeton group was actually gearing up to look for it.

Yeah. But there's a good science. Yes.

Yeah, this is good science is the way it's supposed to work. We got a model, we make predictions and then we measure. And by the way, if you like the light element abundance predictions about fusion, that's another one that's in the book.

So you got to be in the right place to make that discovery. And these are the things that just make my heart race, because I love having conversations where I'm showing evidence. I don't want to share about my worldview unless I've got the data.

That's what makes me happy. And it's really nice that we've been provided with a place to live where we can make these discoveries. So this is the 20th anniversary of the book, The Privileged Planet, which I think should be in every single thinkers library, every certainly every Christian, but everybody who reflects on the big questions in life, you

should own this book.

But now we have this new 20th anniversary edition. And I have to ask you this, because you're dealing, we're dealing in testable claims, you've got a hypothesis and you have evidence to support it. Has anything come out in the last 20 years that has strengthened your case in any area or weakened your case in any area? Yeah, good question.

And one area where there's been a lot of development over the last 20 years is a field of exoplanet research. Back when you wrote the first edition in 2004, there's about 100 exoplanets known. And now there are nearly 6000.

So that's quite a dramatic increase. So now we have much better statistics of the properties of planets going around other stars in the solar neighborhood. And what we're finding is that the solar system is looking very odd and anomalous compared to those.

We have these planets that orbit in nearly circular orbits. The solar system is pretty spread out. Whereas other planetary systems tend to be highly compact.

A lot of them have very elongated orbits, very oblong shape orbits. And so the composition of the sun is looking very anomalous compared to other sun-like stars also. So just to pick one property, the sun, I think you mentioned earlier, is a pretty massive star.

It's actually more massive than about 92% of the stars in the galaxy. So it's among the 8% most massive stars in the galaxy. So just on that one property, it's already anomalous.

But it's much more anomalous in other ways. And then we did make a prediction in the first edition. We said if the universe really is set up for discovery, for its inhabitants to make discoveries about the universe, then you shouldn't be surprised about the existence of such things as standard candles, like cepheid variables, type 1a supernovae.

And so at the time, it was some controversy about gamma-ray bursts and whether or not they would be standard candles. And so we made the prediction that they would be found to be standard candles. And that has borne out.

Gamma-ray bursts have been found to be cosmological standard candles, allowing us to go even farther into the universe than we can with type 1a supernovae and classical cepheid. And not only that, but quasars have also been found to be standard candles. And so we didn't make that prediction, but it's a nice throw in there.

So two new standard candles. Yeah. So these things are important for learning about the universe and having accurate views about the history of the universe and how it works.

So let me embarrass myself by trying to remember what a standard candle is. So at least you confirmed for me that my pronunciation, cepheid variable is correct. Okay, good.

Because I never hear about these things. I'm an IT, you know? So I just read them in books and rarely does this come up. Sometimes it comes up in conversations.

But so these cepheid variables and these standard candles, they're useful because we're able to deduce properties about them no matter how far away. So I think what these things do is they're like blinky and I guess they pulse or they blink or whatever. With a certain known period.

And so we're able to say, well, if it's this kind of standard candle, then we can compare, I think what it's supposed to be is we identify it and then we know how bright it's supposed to be. And then we can make conclusions about them given that they're at different distances. Like we could discover the red shifting of light maybe from this or something.

I don't know. So yeah, this is historically, it's been a very important sticking with the cepheid variables. They've been important.

Hubble discovered the first one in another galaxy in 1923. And it was allowed, it was the deciding point, debate at the time, whether these spiral nebulae, as they were called, were other galaxies or just small objects within our galaxy. And we discovered a cepheid variable in Andromeda galaxy.

He discovered that in fact they are other galaxies like our Milky Way. And so with the cepheid, the thing is you can just use pure observations to deduce how far away it is. And they're calibratable.

In other words, you can see them some nearby close enough so you can measure them with some standard distance measuring tool like trigonometric parallax. And then as long as you can detect it as far as you can go, the bigger and bigger telescopes you're making and see them farther away, farther and farther away, as long as you can detect them, then you can apply this so-called period luminosity relationship. You can measure the period of pulsation, then you can calculate its luminosity and compare that to the measured brightness and calculate the distance.

And so in this way, we have this called cosmological distance ladder where we start near the Earth and work our way out with ever farther and farther standard candles. Cepheids and type 1a supernovae, then gamma ray bursts and quasars as we go farther and farther into the universe. So if we know that it's the same kind of star and one's further away and one's closer, does that help us at all to learn about redshifting of light from further away places? Well, what we do when we measure redshifts of other galaxies is that we usually get the redshift to the host galaxy.

Because then we can use the light from the whole galaxy rather than the faint light from just one Cepheid to get the redshift. And so what they usually astronomers do is they'll measure the redshift of the host galaxy of the supernova or the Cepheid or the gamma ray bursts and so on. But yeah, it's still looking at the spectrum of light, a distant light source to get the redshift.

All right. Well, let's go on to the next question. So I want to say you have the chapter in the book, The New Edition, where you respond to 15 objections.

And I asked a bunch of my friends, what are some objections that you hear that are related to these arguments about habitability and measurability? And this is the kind of question that they told me. They said, ask him how he would respond to the assertion that there are so many planets in the universe, so that it's possible that our life permitting planet could just have happened by chance because we have millions and millions and billions and however many we have. And well, maybe our life permitting planet happened by chance.

And a related one was, what about the assertion that the universe is so big and so vast, we haven't seen it all. So maybe we haven't discovered the other life permitting planets. So how would you respond to that? Yeah.

Well, our argument isn't that the earth is unique in its life friendliness, but that the habitable planets are rare so that they serve as a, you can see them against the backdrop against the most more, much more common non habitable planets. So they really, you know, they stick out. But the key point is that those same rare places that are most habitable also will offer the best opportunity for scientific discovery.

That's the basic thesis. So our thesis isn't just that our thesis is not that the earth is unique, therefore design. So there's a possibility there might be other planets just as habitable as the earth, you know, and kind of a joke.

But I was being interviewed by the BBC in 1999 about the solar eclipse that was going to be seen just before it happened. In that year was the last solar eclipse in Europe of the 20th century. And I said that, or they asked me a question about extraterrestrials.

And I said, well, if there are other extraterrestrials, if there are extraterrestrials out there, I would say the first thing I would do is send them pictures of our total solar eclipses. And they expect them to show me their pictures of total solar eclipses, because if a planet is going to be as habitable as the earth is probably going to also offer its inhabitants opportunities to see total solar eclipses like we enjoy. And so we're going to exchange solar eclipse pictures is what I said.

And so there are many ways or many things that can go wrong for life, right? But there are going to be very few other planets where everything goes right. And so I'm not

discounting the possibility that, you know, there are other habitable planets out there. I don't think there are very many.

I think there are extremely few. I think in fact, given the probabilities, we're probably alone, as far as habitable planets go in the Milky Way galaxy. And then this doesn't even consider the origin of life probability.

We're just talking right now about the habitability of a planet, not whether or not it's an inhabited. And if you're going to throw in the origin of life, then the probabilities become far, far, far smaller. That's that's a whole nother thing.

Yeah, we had Dr. Fuzz Rana on to do an episode with us on the origin of life. So he was able to explain to us how the challenges that that, you know, you try to eat face without an engineer to do the work. Yeah.

All right, let me say one quick thing before asking the next question. So rare earth, the book by Donald Brownlee and Peter Ward. So before your book came out, I bought that book, and I stuck it on my desk at work, because I often give people advice about how to get into interesting conversations in a secular workplace.

And in order to people, my regular listeners know I'm not from around here, I had to get my green card through employer sponsor. So I had to work in big companies in order to get that sponsorship. And so there's a whole diversity of worldviews, you know, when you work for an FT 50 or 100 company.

And so putting out that book rare earth on my desk, it's the subtitle is rare earth, why complex life is uncommon in the universe. And I got into so many good conversations with people, because that book is written by two secular authors, one of them even debated against Stephen Meyer, I think it was Ward, yeah, Peter Ward. So I think we're having fun having the podcast, but people should say, like, as we're as you're listening, just keep in mind that this topic is awesome for getting into good conversations with people about the big questions in life.

When you back it up with science, even from a secular science book, you know, you're going to have fun and really get people to think and, and so on. We have a question about that later. So let me go on to one more objection question.

So how would you respond to the assertion that the universe cannot possibly be designed, since the vast majority of the universe is hostile to intelligent life? Right. And that in that case, I would say, well, the universe is obviously habitable, because there's one at least one inhabited planet. And that's all it takes to conclude that it's, you know, designed for life.

That's what we're talking about. But you know, I don't know the designer's intentions well enough to answer why a designer would intentionally create a universe which is

overwhelmingly hostile to life, even maybe only having one planet with life. It could be that there are many other planets with life.

But I don't know the designer's intentions. All I could conclude is that, you know, the universe is designed for life and for that life to discover the universe around it is the way I would answer that. How would you respond to this answer? Somebody asked me this question, I would say, all right, so think about the things that Guillermo is telling us about.

We need a massive star, we need a massive moon, we need a massive earth in order to have the magnetic core that pushes away solar wind. So we need heavy elements to make these things. And you can't have a second generation of stars, you need to let the supernovas do their work.

And then you get these heavy elements. And so what is the universe doing? Well, it's going through these successive iterations of star development, you know, star 3.0, you know, so we get star 3.0. And now we can support a life permitting planet. Well, the universe has been expanding all that time.

So the way the universe is set up with a particular physical laws and constants, life really has to arise late. Yeah, late enough in its history. That's right.

So the threats are reduced, the supernova rate is down and the heavy elements have built up high enough. That's right to make earth like planets. And so yeah, it has to be big enough for that.

No, kind of tying into that topic of the size of the universe a little bit, you know, the region of the universe that has to be ordered and not chaotic is can be much smaller than it actually we observe it to be. So the universe has a much lower entropy, it's much more ordered on a much, much larger volume than it needs to be for us to be here. You know, we can just have one galaxy is really all we need.

Why all those? Why the vastness of ordered universe? So that's an argument against that we're just a random draw of universes from a multiverse because the universe is far, far more ordered in the mud, for example, had a much has a much lower entropy than needs to be just to explain our existence. Yeah, I see what you're saying. If this is going to be, it's much more likely for us to get a simple small universe that supports randomly than to get this massive thing.

So yeah, that argues against the multiverse for sure. All right, so let me ask you this question then I'm moving on. And and then I want Rose to kind of tell a story of about an astronomer that she knows in her neighborhood after we asked this, but let me go ahead and ask it.

And why do you think that the creator designer, creator slash designer of the universe

put us in a position to make these discoveries? And what do you think that the responsibility is for us humans to take this kind of gift? Seriously, what would you expect us to do given that we've been placed here? Well, you've already touched partly on this prior discussions, there are two far reaching discoveries that are science friendly platform here on earth, have made possible. And they are to discover that the universe had a beginning, and that the physical constants, initial conditions and laws are fine tuned for life and for discovery. So the very discovery that the universe has set up for discovery is itself a profound discovery.

And I don't know if you've heard of Robin Collins, a philosopher at Messiah College, he calls that a signal, that kind of thing. The discovery that the universe has designed for discovery is a signal. And a signal is something you get from one place to another, right? Yeah, from something outside the universe, because I had to, whatever it is, I made the universe had to set up the universe beyond the universe to us.

And so I'd say it's a signal from the designer or creator of the universe. And at least it conveys that there's a transcendent designer creator who wants to be known, at the very minimum. And so to take it seriously, we can take seriously the charge or mandate to engage in scientific discovery that in other words, science is mandated, it's built into to do science built into the fabric of the universe.

And also, I would say to be more motivated to carefully examine other evidences that the creator has commuted with us more directly. So for example, evidences for the resurrection of Jesus and his miracles. Yeah, I have a friend who works in a planetarium, and he studies cosmology and astronomy, probably, you know, most of the day every day.

And when I first met him, he asked what I you know, what I do. And, and so of course, you know, I shared that I'm a Christian, and I share evidence for the existence of God and, and for the resurrection and things like that. And he said, he said, Oh, well, I could never be a Christian, because I believe in science.

And, you know, I love when people say that, because, because I actually became interested in science when, after I became a Christian, before that, I thought it was just, oh, that's, you know, it's one of my least favorite subjects don't care, it doesn't seem relevant to my life. And so anyway, I so we became friends and talked many times when we were both out for walks and about the different evidences that have led scientists to believe that the universe had a beginning. And he would share, you know, he loves the story about Penzias and Wilson discovering the cosmic background radiation.

And so we would get into conversations about this and, and, you know, some several of the different discoveries from the 20th century, especially. So, you know, I asked him one day, after probably a year or so of conversations about evidence for the universe having a beginning. And so I, I said, So, so would you, you know, as a scientist, I'm

curious, would you subscribe to, you know, kind of the law of cause and effect that whatever, you know, every effect has a cause that anything began to exist, needs to have a cause.

And he said, Oh, yeah, of course, you know, we couldn't really do science without, without that. And so I said, Yeah, so interesting. So we've been talking a lot about how the, the universe had a beginning.

So what do you think the cause was? And he said, What do you mean? And I, and I just, well, you know, we agree, I'm totally on the same page with you. Universe had a, you know, everything that that begins to exist as a cause universe began to exist. And so what do you think caused it? He's like, Well, I guess we'll never know.

And I said, Well, there, you know, there are a few things we could know, we could know that, you know, whatever created or caused the beginning of time, space and matter cannot be confined by time, space and matter can't be, you know, made of matter, because then, you know, that wouldn't be the cause for matter and all of that. And anyway, so I, you know, we talked about that a little bit. And he goes, and, you know, he kind of ended with, well, I, well, I guess, I guess we'll just never know.

But that's really interesting. I've never thought about that. We came back to me about a few months later.

And he said, you know, I've been thinking about what you said. And keep in mind, this is a guy who works at a planetarium. He's been sharing with children for decades that Christianity is, is this myth like the flying spaghetti monster for people who don't know anything about science.

And so I'm going to teach you real, I'm going to teach you science, which is something that's useful, maybe different than the Santa Claus beliefs, your parents taught you, this is science. Well, this guy comes back to me, and he says, you know, I've been thinking a lot about what you said and continuing to study and think through that lens. And I've realized that actually Christianity has a really strong explanation for the scientific evidence.

And, and then he came back to me a few months later and said that he really believes that, that Christianity is the best explanation that theism certainly is the best explanation for the scientific evidence. And I just think that's amazing and a huge win. He, he, he does not want to submit his life to Christ right now.

But I still think that's a big win because this is somebody who is influencing children and teaching them and had been teaching them for a very long time that science and faith are incompatible and that you can either be a reasonable person and study science, or you could be, you know, a myth believing Santa Claus believing a child for the rest of

your life. So, yeah, so we continue to have great conversations every time I see him, you know, and he sends me messages when big events are supposed to happen. Like when we were expecting to see the auroras in the sky as far south as we are not too long ago and things like that.

And he's often got his telescope out in the neighborhood looking and we'll send me an email. Hey, I'm out tonight. Want to come see what's going on in the universe and we have great conversations.

So I just, I love that. I would really encourage people to read, get the book, The Privileged Planet, read it, learn the evidence, learn something about it. Even if science is not your thing, we can learn something.

I think we can all at a minimum kind of understand and memorize like the cosmological argument or the argument from design as well, you know, from at least kind of a middle school level. And I have all sorts of fun conversations as a result of that not being a scientist by any stretch. So it's a lot of fun.

Oh, thanks, Matt. It's good to hear about somebody changing their mind who had been set in their ways for so long. Yeah, my next question kind of flows into that.

Guillermo, I have been following your career a little bit. And I know that you have sometimes run into people who have not always been super enthusiastic about the research that you've been doing. I was wondering if you would be comfortable telling us a little bit about some of your experiences being in the university system and trying to get tenure at some of these big universities while still, you know, doing research in design.

Yeah, going back to a couple of people you brought up a little while ago, the authors of Rare Earth, Donald Brownlee and Peter Ward, and how, you know, they're two secular scientists and yet, you know, concluded that like planets are rare that can support complex life. And, you know, we had very, we, I overlapped for a time with them at the University of Washington as a postdoc also had Donald Brownlee as a teacher when I was a grad student there, but then I came back as a postdoc and had many hallway conversations with them, especially Don Brownlee while they were writing the book Rare Earth. And so some of my ideas made it into the book.

In fact, they thanked me in the acknowledgments. And then we worked together and we published the Scientific American article on the galactic habitable zone and also a technical paper and the journal Icarus on the galactic habitable zone in 2001. And I was part of a big grant, big astrobiology grant that Peter Ward led.

When my postdoc was over and I left, I, the University of Washington, I went on to Iowa State for a tenure track position. Donald Brownlee kicked me off after a year or so off the

grant, because before I left University of Washington, he found out that I was an ID proponent, intelligent design proponent. And he was very militantly against that.

So he was very distressed to find out that somebody he had worked with was favorable, had favorable views to intelligent design. Donald Brownlee was much more open on the other hand. He didn't have any problems.

You know, I was surprised. Did you mean Peter Ward when you said that? Because I think of Ward. I think you said Brownlee, but Peter Ward is the more militant.

Sorry. Yeah. Brownlee was much more friendly to me.

And no, no, he was much more accepting. I mean, he didn't, I didn't, I don't think he accepted intelligent design, but he is much more open to working with me, even though we, you know, just may have disagreed on that point. I'm not sure where he landed.

You know, exactly. Actually, I heard him say in an interview, he was an agnostic. Okay.

But Peter Ward was definitely not, not at all, he stopped talking to me. And when I went to Iowa State for the tenure to track position, you know, I started writing The Privilege Planet when I was at the University of Washington. I actually got a Templeton grant.

I was, I was one of 12 recipients in the competitive grant. And, and so I, I got the grant money to help me write the book. I started at the University of Washington when I was a postdoc.

And then I finished it when I went over to Iowa State University. And I had, you know, both are large research universities, and both universities had to approve the grant, you know, to distribute the funds to me. So I had two major universities officially approve of my work, writing The Privilege Planet book.

But when the time came time for tenure at Iowa State, the professor didn't like the fact in my department, that I was an ID proponent. And so they voted against me having tenure. I appealed it all the way up to the Iowa Board of Regents, but to no avail.

And the same thing happened to me when I was some years later at Ball State University. Again, I was denied tenure, and it came out because of my pro ID views. And so I lost two tenure track positions.

Because of that, I should say that, yeah, the rancor was pretty bad, especially at Iowa State, became a very public thing, it was covered nationally. It's actually even discussed on one night on Fox News. But, you know, I didn't expect that level of rancor, because, you know, as you just, as you noted, you know, fine tuning is something that's been discussed among physicists for some time now.

Yeah. And so, and so my arguments related to that. And I thought, well, you know, this is

something that a number of physicists do talk about, and some pretty famous ones.

It wasn't the rancor in the physics community that there is in the biology community, for example, talking about Darwinism. And, but there was an atheist professor at Iowa State who basically took me on as his project, religious study, atheist religious studies professor who basically targeted me and he kind of fanned the flames. And so that made it a very public thing, very uncomfortable.

So, but you know, I was concerned about being scooped. I thought this correlation that I discovered seemed to me so obvious, somebody else is going to discover it. And I just had to publish it.

And I should say that there was an ID conference in Yale, Yale University around 2000. And I presented their very early version of this argument. This is like four years before the book was published.

And Robin Collins also presented, I think he came right, right. One was right after the other speaking. And I didn't know what he was going to talk about ahead of time.

I didn't know him very well at the time. And he talked about a very similar kind of thing, how it seems that the physical laws are set up to be discovered, but very, very much along the same lines of the privileged planet thesis, but from a more theoretical perspective, mine is more empirical perspective. And it's amazing that, you know, kind of reach similar conclusions.

And since then, he's published a chapter in a book arguing how the universe is fine tuned for discoverability. So it's nice to have him kind of confirm, but from a different direction. Right.

Our thesis. Maybe I'm asking a bit of more deeper question here. But did your worldview help you to kind of work through this kind of cost benefit calculation that you had to have done? Because I have an alias, right? And I've made intentional steps to you can't find my photo online.

It's really hard to discover anything about me. And, and that's because I didn't want to get deported. If I lost my job, because I was working in a company that wouldn't have liked the stuff that I said, so I wanted to get my citizenship first, right? Did you did you have anything to say about, you know, because I feel like to me, you're a hero.

To me, you're about as good as it gets in terms of living an authentic Christian life. And, you know, many people don't know about you, but I know and, and, and you're in the top tier, you know, so is there anything you want to say about that? Maybe my advice to Christians or my, my faith is certainly an important part of having the strength of will to continue. I was also, you know, when this really blew up, I had just gotten married in 2005.

And I had, unfortunately, subjecting my wife to this trauma. And, but she was also somebody I could lean on. But my faith, knowing that, you know, it was a higher good.

And that ultimately, I'm, I, in my opinion, this was a gift to me, this discovery. And I felt privileged to make this discovery that while I'm the one who made this first discovered this, I feel very privileged. So that's what I had in mind.

Yeah. Yeah. Awesome.

I could say a lot more about what it means to me that you went through with that. And, and that that experience that seemed difficult at the time, to me is the real thing. And it shows that there's still people out there who are willing to go all the way in terms of committing to making these discoveries.

And just think about the scientists that you're in the ranks with, you know, who have been, you know, faced some disagreement and persecution for their views. Anyway, it's a special thing. All right, last question.

I just wanted to give you an opportunity to talk about your new book for young adults, and tell us where we can find your work online, and whether there's any recommendations you have for listeners, about podcasts that you've done that you liked, or lectures that you've given that we can find online. Thank you. Yeah.

Discover Institute set up a web page. And I know there's a privilege planet.com. And I'm pretty sure that's what it is. I haven't looked it up for a while.

I think there might be a link to the young adult book there too. The young adult book is called the farm at the center of the universe. And no, it's not promoting geocentrism.

But it's for 13 to roughly 18 year olds or 12 to 18, roughly that age range. And it's just brings ID concepts and evidences to young adults to an age group that I think has been kind of missing for from our books, our books from the intelligent design community, have mostly been aimed at adults. A lot of it's fairly technical.

So I thought, you know, a lot of the privileged planet ideas are also in there, or some of them are in this young adult book. And so they can check ID the future podcasts at the Discovery Institute for interviews that I have done and Jay Richards have done about the new edition. I've also posted blogs the last several months related to new discoveries on evolutionnews.org, their blog site at the Discovery Institute.

So they can keep up with the latest goings on there. That's what I would recommend. Excellent.

I love that you guys did a book for teens. As soon as I read about it coming out, I went and ordered several copies because I mentor a lot of young people and great. Yeah, I'm

excited to, to give copies to various kids over winter break and next year over summer break.

So yeah, thank you for doing that. Sure. Yes.

And thank you for coming on the show. We really appreciate it. And I think that's a good place for us to stop for today.

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