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Spiderwebs, Symmetry, and Spirituality | Satyan Devadoss & Greta Binford

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The Veritas Forum

A Christian Mathematician, Satyan Devadoss, and an Agnostic Biologist, Greta Binford, discuss science, its boundaries in understanding the complexities of our world, and God.

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Transcript

Welcome to the Veritas Forum. This is the Veritas Forum Podcast. A place where ideas and beliefs converge.

What I'm really going to be watching is, which one has the resources in their worldview to be tolerant, respectful, and humble toward the people they disagree with? How do we know whether the lives that we're living are meaningful? If energy, light, gravity, and consciousness are a mystery, don't be surprised if you're going to get an element of this involved. Today we're here from Lewis & Clark Professor of Biology, Dr. Greta Binford, as well as University of San Diego Professor of Applied Mathematics, Dr. Satyan Devados, in a talk titled Spiderwebs, Symmetry, and Spirituality. An Agnostic and a Christian discuss science and God.

So when thinking about how to frame this discussion, the only idea I could come up with was to tell my story about my relationship with Christianity and the emotional intellectual path that's led me to my status of being agnostic this time. But one major constant in my life is a deep wonder and reverence for our natural world. I start this narrative with a picture of the creek and the forest on the farm where I grew up.

I was the definition of a feral child with just substantial freedom to explore and roam the farm. And from my earliest days I remember feeling a heartfelt wonder of the beauty of the details of the place and the various forms of life that I interacted with. So literally at this young my parents let me roam around and pick up bones from dead animals and things like that.

So and yes these forms of life I interacted with included spiders but it was really much broader than that. This place in Indiana is still the place on earth where my soul feels the most at peace. This farm was and is just outside of Darlington, Indiana.

A town of about 800 where both sides of my family have lived now for over seven generations. And a centerpiece of social life there was the church. I grew up going to the Methodist church that my ancestors have ascended for generations.

When I go home I still visit and love to just bask in the warmth and the givingness and the comfort of that community. And some of the same people are still sitting in the same pews as they were when I was a kid and it's been many many decades. But this context meant that when I walked through the farm I attributed my sense of wonder at the natural beauty to God.

I would sing how great thou art at the top of my lungs with tears in my eyes. Along with that wonder the church instilled in me a healthy fear that my pile of sins was sufficiently big that I was clearly going to go to hell. And in my early double digits I remember having some confusion and some doubts that started to make their way in my mind.

The first came when I wasn't allowed to go to church camp with my friends who went to a different church in town. Now a town of 800 there were five Protestant churches in this town and my friends went to the congregational Christian church. It turns out I wasn't able to go to their church camp because I was a Methodist.

This confused me. I didn't understand why given that I believed in the same trinity, the same father, the same son, the same holy ghost as they did that I the line was drawn in the sand that meant I couldn't go to their church camp. The second doubt came from questioning how a loving merciful God could condemn entire societies to hell simply because they were born in the wrong place at the wrong time and didn't have the opportunity to learn about Jesus.

This was incongruous of my image of God. But despite these doubts I remained a Christian even embracing fundamentalism into my late teens and my early 20s. And for this period I of time I didn't listen to secular music and I certainly didn't drink.

And in this context I actually dropped out of college. I went to Purdue University for two years. I dropped out and moved to Cincinnati and was a Christian housewife for a while.

Then I went back to college to manifest my love for animals and biology in the one way I could imagine being employed. And that was to train the T. T.I. School of Biology which would have been a wonderful career for me. But it was there in a genetics class when I met Professor Anne Ripsdrough.

And she invited me to work with her in Peru studying social spiders. This was my first introduction to social spiders. So I went to Peru.

Got to spend time in this forest studying these really awesome animals. So these are spiders that work together to capture their prey. So my job was to sit for hours in the forest and watch these animals do their thing and write down what it was.

But I accepted this invitation and it changed my life. I walked through some of the most biologically diverse forests in the world and was filled with the same sense of wonder and reverence that I have on my family farm. While I was there I had the privilege of working alongside elite scholars and learned how little we know about the diversity of life on earth.

Literally we know so little. We still do know so little. And we're also losing it.

So I realized how little we know and that it was going extinct before we knew it was there. This really resonated with me in a passionate way. I also realized for the first time I was actually skilled at framing questions that were answerable with data and that being a scientist was a potential career option for me.

It never had never considered it before. So I returned from Peru and shifted my focus to doing research on animal behavior. I also returned to a failed marriage.

In the combination of these two things shook my faith in God. I took an evolution class at Miami University with a wonderful mentor who invited me to write him any question on my mind. And he patiently answered question after question about how to reconcile evolution with Christianity and God.

And I thought carefully about that process. But in that process a transition happened to me that I wasn't aware of at the time. But the wonder I had felt for the hand of God in creation easily and peacefully transitioned to a wonder about the processes of evolution.

It seems that the wonder and reverence I had as a child influenced by my Christian origins made me kind of a sponge for wonder. And now my wonder and reverence centers on contributing to our understanding of the physical mechanisms and processes that over immense amount of time produce the mind-blowing diversity of life on earth. So now I know quite a lot about the irrefutable and unambiguous evidence that all of life has descended from a common ancestor across 3.6 billion years of time.

Today is my birthday and I added this to my notes but I would need to have many more birthdays to answer all the questions that I have about this process. However, the implications are totally profound. A quote that I love is from my PhD mentor.

"An unbroken chain of molecular copying separates me from every other living thing on earth." So this tree of life has seriously profound implications. So here we are on the tree. The consequences of this are seriously profound.

They're profound with respect to the similarities we share with other organisms on earth,

all of them, including the bacteria we have similarities with them. And that's profound with respect to the explanatory power for why we are the way we are in a lot of ways. Ironically, some of this evidence that helps us solve the puzzle of the history of life comes right off the family farm.

This is a picture of me and my father walking along our creek and it's a fossil bed. So this is the being fossil bed from 330 million years old. This is a crinoid found near my farm.

So given all the evidence at some point in this process I started asking myself, "We got to put material evidence on earth that contradicted his word." I couldn't imagine a scenario in which that was true. And if I were going to remain a Christian, I would need to be open about the interpretation of the literal messages of the Bible. And for me, that was a difficult thing to do.

The word of God that I'd grown up with was inaccurate. I had a hard time using that to explain anything broader beyond the evidence that I could see in the natural world. So I'm an agnostic.

And why agnostic instead of atheistic? It's because of humility. I firmly believe that if there is a God or higher power, I recently evolved human brain and is unlikely to be able to comprehend it beyond doubt. The humility that comes with the realization that we are biological in the product of this evolutionary process makes me aware that there are plenty of things out there that we probably are to wear of.

So within the realm of possibilities is a higher power. But I think that I probably cannot know that. Certainly not without doubt.

I'm not the first person to have this perspective. So this is a quote from Darwin, a letter that he wrote. And it's an awesome quote, but I'll just read the bottom part that's highlighted.

"I feel most deeply that the whole subject is too profound for the human intellect. A dog might as well speculate on the mind that you need. Let each man hope and believe what he can." So I remain respectful of Christianity and Christian perspectives.

However, I have to add the caveat that it will be concerns about the societal impacts of Christianity and our modern society. So there are few that I'll point out. First, the kind of botherism that's promoted by divisiveness in religious communities, I think, has right for healing racism.

So this experience I have when I was in my early double digits of being excluded from the Christian Church Bible study because I was other as a Methodist has a bigger divisive consequences across my society. Second, I think religion can be used as a powerful tool of political manipulation. So for example, there's a Christian Zionist movement that I think has gained a lot of momentum in politics these days.

The third and the one that's most relevant for this discussion is I think there's a real erosion of what people take as good evidence in society with literal fundamentalist perspectives of the Bible. So there's an erosion of the concept of what constitutes good evidence. There's also an erosion of scholars as authorities.

And the law that comes from really intentional efforts by like the creation museum, which is also near my home town in Kentucky, where there's an attempt to take the evidence that the earth has given us and squish it into a Christian perspective. That goes to the point of teaching high school labs that are bounded by the biblical truth. So again, modifying evidence or converting it, making it fit into a presupposition that's completely defined.

And so I feel like this sets the stage for political manipulation and resistance and dismisses the concerns of scientists claiming the impacts of climate change and the tail spin we're seeing towards lots of the earth's precious and irreplaceable resources. And I feel like this is something we need to be vigilant against as in the public. So I'll close by simply saying that I remain very grateful that my agnostic heart is still filled with wonder and reverence for the natural world.

And so growing up with spirituality in my life has carried on this energy that I really value and how I live my life. How are you my friends? You know, Greta shared the story of her life from a very personal perspective. And I'm going to share mine through the lens of math.

There's a little glimpses of little things here and there and I'd love for you guys to ask questions if you want later on in our Q&A time. But have you ever, you know, I was just flying today early this morning from San Diego to here at Portland. And have you ever flown on a trip like a couple hours even across country and you get that window seat because you want to take a nap.

But the person in the middle seat won't stop talking. I am the person in the middle seat. So I like to talk to a lot of people.

So I says they're hanging out and in the morning talking. It's great. A couple of things happen when people find out that I'm a mathematician.

The first thing always is there's a deep ask for forgiveness of their sins. Father forgive me because I stopped in algebra. You know, if I talk to people regardless of what age and I ask them, hey, do you remember the last history class you took? I don't know, maybe medieval? I don't remember.

Do you remember the last English class? I think of Shakespeare. It was available. So do you remember the last math class? Oh dude, totally.

I remember the last math class. It was pre-calc and I never took the one out to that

again. Thank God.

I remember that last final exam. So everybody has this like, you know, and there's a sense of failure. Nobody ever is like, I did good or math.

No matter even if you're good at grad school, you feel like you suck. So there's a sense of like, will you please forgive my sins? There's a first thing that comes in. And the second thing that comes in, all they know is that I'm a math teacher and immediately, regardless of nothing in my background that they know of, they can come smart.

They can be sitting next to the world's greatest philosopher on the other side. You know, Monet, Degas, right? Da Vinci and I like, oh, what do you do? I'm an autism, whatever. Hey, you're a mathematician.

That's legit, right? It's like amazing. Some of the math people are smart. Like, where did this come from? And I'm going to tell you where it came from.

There's this funny thing like this that I grew up in South India. And in India, this is how we do things, right? On the right side, if you want to be in a smart spectrum, there's the math kids. And those who don't cut it do physics, right? And then those who don't cut that do chemistry.

This is not even a made-up thing. It's literally what the GPA of the kid in India gets in high school determines their major. So the kids who major in math are like, you're 3.98. Good, right? And then the parents are bragging, what's your kid doing? Oh, he's a bio kid.

Oh, my gosh, 3.73. Good job. You know, they just know this stuff. It goes down to econ, goes down to history.

What's your kid studying? Oh, she's a lit major. Oh, my gosh, right, 2.7 got it. Right, it keeps going.

Oh, my son's an artist. Oh, I'm so sorry about that. We'll pray for him tonight, right? There's this notion about smartest.

And I used to think that this was an Indian thing. It isn't. It's totally here.

This is exactly what happens here. Somehow, the fact that my math professor is immediately somehow I'm smarter than a professor who's in English or literature, history, econ or bio. You know, there's this funny duality that happens in the western world today.

In fact, it's happening all over the world. And here's his duality. On one side, or the math and the sciences, and the other side of the humanities and the arts.

And the reason I see this is because this talk has a title of science behind the scenes, of how we think about it as scientists, both mathematicians and scientists. So on one side, you have people who study the measurable things. We can quantify, right? On the other side, it's like, how do you feel about them? This is kind of emotional thing.

On this side, we have like the smart people. What's up? And the nuts are smart, right? And you can even tell your friends are hanging out. Oh my gosh, you're taking a Cal class, right? I'm in drawing 101, right? The why is, why isn't drawing 101 as legit and as awesome as Cal? It should be pretty hard.

And unfortunately, this last one kills me, right? That if you're in the sciences, you can get a job. What do you think your parents are pushing you to get them that degree? It's really simple. This is what they think it is.

And I actually am a big fan against everything on here. I don't believe the statistics at all. But this is the poison we're drinking today.

A lot of it comes from Bert and Russell, philosopher, genius, mathematician, in the turn of the century. He writes this, "Whatever knowledge is attainable must be attained by the scientific method. And what science cannot discover, mankind cannot know." In other words, the scientist is the only person who can write the words truth with the capital T. And everybody else is playing a silly game.

I can't, I refuse to believe that story. You see, what I think really is happening here, my friends, is there's a hidden dimension. And that hidden dimension is this.

What's going on behind the scenes is that there's a sense of complexity that we don't get. You see, the reason we can do a lot of cool things in math is because we're doing simple things. Let me explain to you what? Have you heard of the Pythagorean Theorem, the quadratic formula? The things you have formulas for means you can box it and tell it in a quick answer.

Is there a formula to help me with my marriage? Not at all. Like, when I go home tomorrow night, my wife's like, "What's up? How's that going?" And he's like, "Baby, square root that." There's no way. There's no way I can figure that out in a simple formula.

Have we studied and understood the issues of race? Do we understand gender equality? No way, because that stuff is so hard. It is so complicated. In fact, by the time you get to issues of art, you're dealing with things that can't even be expressed with words.

You can't even quantify it. Think of it like a fish. The mathematician has given a fish that has cleaned, dead, completely washed, and in front of her, she has this fish with just the bones.

And somebody says, "Can you come to the number of bones?" She comes to the number of bones, 34. Dude, you're so measurable. You're so precise.

Can you do it again? Yeah, 34. Repeated data. Oh my gosh, it's amazing.

The biologist is dealing with the same kind of question, but the fish is still alive. The historian is dealing with the same kind of question, but asking what the fish was doing three days ago. And the artist is dealing with what the fish saw and how the fish felt.

Oh my god, crazy things. So the world is tilted. Somehow thinking science is amazing, but science is dealing with the easy things.

The reason we can put somebody on Mars or on the moon is because that's easy. The reason we have a hard time forgiving one another and loving one another and showing kindness to one another is that's hard. That's the hard stuff.

Scientists have an advantage. Let me tell you what I'm thinking about. There's this complexity of the world about beauty and justice and love and friendship and freedom.

Here's an example that I want to show you here. On the left side, we have quantum mechanics. Here's a page from quantum mechanics.

On the right side, here's a page from Beowulf. And you ask somebody on the street, which is harder. They'll say, "No way." There's like eight exponential.

There's an "I" in there. All right, your stomach starts turning. Yes, it's true.

I get it. But you sit down and you figure out and you get, "Oh, it's a bunch of formulas. I'll talk about the world.

The world works in a very simple way." And you could spend a lifetime reading available for my favorite books ever written in the world. And you'll even begin to scratch the surface of its beauty for what it's trying to get at. It's amazing.

That is the harder stuff to me. Let me tell you what I mean by complexity. These are my kids.

So the oldest one, graduated college, he's working in Boston. The youngest one, the little one is in third grade. The little one right now, she is my favorite.

Belon hair, blue, white, we adopted her. And just the fact I even said that, she's my favorite kid. I say that all the time.

It's not like a hidden thing, right? Some of you are like, "Well, doesn't that cost tension to your family?" Yeah, well, it sucks to be my other kids. But that's what I mean by complexity. That's the hard stuff.

It's easy to talk about a formula. I can teach in class when I'm teaching multiple liberal calculus. It's hard to figure out how to take care of my kids in a good way.

That's really hard. You see my friends, we all have to answer some hard questions. And those questions turns out are the same questions that the security guard asks you Saturday night and losing Clark.

The questions that you guys need to answer are, "Who are you?" What are you doing here? Where are you going? You see, just the fact that you're alive means that you've decided to answer these questions somewhat. Nobody gets to get out of jail free card for answering these questions. You're answering the questions right now.

You're choosing to be here not to do this. You're choosing to take this class, not that class. You're choosing to stay in school, not stay in school.

You're choosing to be faithful to your parents, not to them. You're choosing to be kind to this person and not to that person. You have to answer those questions somehow.

Let me give you an example of what I'm talking about. Some of you might be answering the questions through the lens of an atheist, secular humanist. Some of you might be thinking as a Buddhist.

Some of you might be thinking as a Hindu. So, what I mean by that is, you've got to get on a plane and you've got to commit all in to choose that to take that plane. You can't be sort of into something.

You say, "I'm going to make the decision this way as a humanist." That's what I'm going to do in a little bit of my life. Like, great. You've got to get in, commit.

Just like the way I did to get on a plane and risk your life by playing that game. You can be a Muslim and you can say, "I like that plane. That plane makes more sense to me." You can be a Buddhist.

Great. You can be a Christian. Great.

You can be a, "I don't care plane. I don't even care what this is." But still, you're on a plane. You're choosing to say, "Whatever life comes with me, I don't want to be on that plane with you." But you could do that.

That's a choice that you have. What are you going to do tomorrow? That's a plane. You've chosen to fly on that crazy plane.

Good luck with that life. You could also say, "I sort of like the humanist perspective. I'm going to take 20% of that.

I like what the Muslims, the Islamic, I like 10% of that. I'm going to mix that in with 40%

Bozum, 5% Christians. I like that plane.

So you can make your own plane. That's called the American buffet plane. Now, that plane, I don't know who's tested it.

Nobody's ever tested that plane. You just made that up. Good luck again.

So you've got to pick some plane to live your life. You've got to kind of commit to it. So the question is, "Which plane do you get?" Now, for me to me, let me just say that the Christian story, that Christian plane makes the most sense.

I'm sort of 75% convinced that that's the right way. But you know what? I'm 100% all in. Even though 75%, like there's a 25% of the Christian faith that's like weird to me.

I just don't get it. I'm an idiot who grew up in India and I'm a 21st century America. Do you think I'm supposed to understand this magnificent sort of guy? I'm talking about Darwin's quote like, "Who am I to figure this stuff out?" But to me, he's saying to the person about what I got.

But the Islamic plane, the Buddhist plane, they're about 40% that makes sense to me. And the Kimah's plane is like 47%. And then, so out of the best shot I got, I choose the Christian plane.

And I'm 100% all in for that plane. That's the right I'm taking right now. Now, let me be really clear.

I'm not picking the Christian faith because it is emotionally satisfying. I'm a math professor. I have no emotions to satisfy.

The reason I choose it is the same reason I sort of am believing in quantum mechanics. You know, like if somebody's like, "Trust me, there's the quark." It's like, "What do you mean there's a quark?" "Yes, there's a gluon and there's a strong and a weak force." Like, "What are you talking about?" I don't see it. I don't know how, there's a particle accelerator size of a city and you can feel what? And yet I believe in that.

I don't believe in quantum mechanics because it makes me happy. I don't dream about quarks at night. I believe in quantum mechanics because it makes the most sense of the physical world.

It answers all these questions the best way we got. And the reason I believe in the Christian faith is because it makes the most sense of the world we got. Not just the physical world, all the world, the hard questions about this world.

Including things like gaming, injustice, and friendship and love. And also, like, the fact that the Christian story isn't presented like a formula. Like, God doesn't send us these like amazing tablets of stillness.

That's it. That's all you got. It's not some abstract theoretical truth.

It's, um, God's sort of in the world. It's just the world is beautiful. The world is amazing and awesome.

But at the same time it's broken. Something needs to be done. The God of the universe decides to play the game with us and come down and hang out with us in this broken world.

And one day, the world is going to be fixed. That's the game that I'm trying to play. And to me, that's amazing in terms of God playing the game with us.

So let me just close by saying the thing that I find actually unique about the Christian story. One of the main story I've discovered is that it deeply values the physical world. It's one of the rarest things if you think about Buddhism and Hinduism.

Most of these things that it actually values things that are physical. It dwells in the matters of flesh and blood. It says that actually matter matters.

It says that God will not destroy this world. He will renew it. He will give us a different, more amazing physical world the way it was meant to be.

It tells us, salt and strong matters. Ice cream matters. This is what Heaven is going to taste like.

If you don't know what Heaven is, this is it dude. Check it out. It tells us like beer matters.

Here's the work that I did in San Diego with a brewing company. I studied the genetics of beer. How beer is related to one another and the 32 beers that they made.

Beer matters. Drinks matter. It tells us that mathematics and physical things matter.

My team had built a sculpture and we took it to Burning Man. This is two toned sculpture. We raised 50 grand and we displayed it last year.

It's an amazing thing. You can get in it. It's interactive.

It's amazing. But what does it mean to touch mathematics? That matters. I am still looking forward to hanging out, listening to your questions and listening to describe it and I talk more about this thing.

Thank you for your time. If you like this and you want to hear more, like, share, review and subscribe to this podcast. And from all of us here at the Veritas Forum, thank you.

(gentle music)