

Science

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Preacher: Philip Wells

[0:00] I'm trying to think a little bit about this matter of Christianity and science. I've got quite a lot of things in my head and I'd just try and like them to come out in sort of meaningful order.

! And I'd like to just try and tease out, I would like to say that Western science was given birth through Christian faith.

And the Christian worldview is the one that gives birth to the sort of science which is so prevalent and actually so successful.

We can put a man on the moon. We can calculate. Our phones are so technologically advanced. They are how many times more powerful than the computer on the first moon landing?

We've got those things in our hands. Medical science means that diseases and problems that used to be fatal, lethal, terrible have been solved or we have treatments for them.

[1:34] And so on and so on. And so Western science and its application have been hugely successful. And I'd like to try and demonstrate somehow that this is not something which is an enemy of Christian faith.

But the Christian faith has given birth to this. So can we read in Genesis? So I'm going to particularly think about the universe and its contents, stars and planets.

So let's approach it through that way because the Bible has quite a bit to say about that. And we're in Genesis chapter 1 and we've read this on a number of occasions.

But let's pick up in verse 14 to verse 19. I'd love to read the first few verses because it says, In the beginning God created the heavens and the earth.

Now the earth was formless and empty and darkness was over the face of the deep and the Spirit of God was hovering over the waters.

[2:54] And I remind us of the majesty of those opening verses. And then we'll come to 14 to 19. Christopher, you're eager there.

Could you read us 14 to 19? And God said, Let there be light in the expanse of the sky to separate the day from the night. And let them serve as signs to mark seasons and days and years.

And let there be light in the expanse of the sky to give light upon the earth. It was so. God made two great lights. The greater light to govern the day and the lesser light to govern the night.

He also made the stars. And God set them in the expanse of the sky to give light on the earth. To govern the day and the night. And to separate the light from darkness. And God saw that it was good.

And there was evening and there was morning to the fourth day. Thank you very much. What does it say that the... You've got the sun and the moon and the stars.

[3:59] What does it say that they're there for? Light. Okay. Thank you very much. So, sun and moon and stars.

So, they're there for light. Yeah. Anything else that they do? Hmm. Separate.

We've noticed that the way God does things is he separates light from dark and waters from waters. Which way? That way and then that way.

Or no. That way and then that way. Yeah. Separate. Yeah. Anything else? What the... Mark the days and years. Thank you. Let me just look back on this. Just tell us what it says again to Mark.

Verse 14. Yeah. Let them serve as signs to mark sacred times and days and years. Thank you. So, it's seasons or specific times, days and years.

[5:10] So, there's something there about time that... That word for seasons is the same word for festivals in the Jewish calendar.

So, it's saying that they're marking that time has significance. There are times that are important. Times to think.

Perhaps times to remember. Times to celebrate. Times which are more ordinary. But these times are marked. And the fact that God puts them there to mark tells us that not time is just one big blur. There's significance in time. Sometimes are particularly significant. So, thank you. Yep. Anything else that it says that they do? Govern.

Yeah. It says that they govern. Anybody got any different translation to that? Rule. Rule. Now, I didn't look this up.

[6:12] I usually try and look these things up. But I think there's a significance here of governing, ruling, authority. And let's give that a little bit of weight.

There's something of ruling and authority that is associated with these heavenly sun, moon, stars. And I'd just like to pull that one thread here of stars and authority. And I'd like to turn us to Genesis 37.

Genesis 37.

This is one of Joseph's dreams. And I'd like us to look at verse 9. This, well, let's take 9 to 11.

[7:21] These two verses here. Or three verses. 9 to 11. Ray, could you read us Genesis 37, 9 to 11? Then Joseph had another dream. And he told it to his brothers.

Listen, he said. I had another dream. And this time, the sun and moon and 11 stars were buried down to me. When he told his father, as well as his brothers, his father rebuked him and said, What is this dream about?

Will your mother and I and your brothers actually come and bow down to the ground before you? His brothers were jealous of him. His father kept him actually in mind.

Thank you. What does this... What's going on here about this dream? And how does his father interpret it? What's the... How is this working? Anybody like to suggest what's happening?

That the father is the sun and the mother is the moon and the children are the stars. Yeah, that's right. It's sort of an authority structure with the sun and moon and the stars, which is equal to the family.

[8:29] So there's something interesting going on there. Let's try another text with some heavenly bodies in it.

So Numbers 24, 17. So this is Balaam's fourth oracle.

And he was supposed to be cursing Israel, but he ends up saying blessing. He was supposed to say things that were nasty and unhelpful, but he ends up saying things that are true and beneficial. So this is Numbers 24, 17. Mark, could you read that, please? I see him, but not now. I behold him, but not near.

A star will come out of Jacob. A scepter will rise out of Israel. He will crush the foreheads of Moab, the skulls of all the sons of Shef.

[9:32] Thank you. So it mentions star. What does it link it with? Hebrew parallelism that you say it one way and then you say the same thing in different words, but you say the same thing.

What's the star and a scepter? So in this case, we've got a star. I'll put a crown because I can't draw a scepter.

But the idea of a king, a star and a king, a ruler in other words, there's an interesting connection there. I've got Daniel 8, verse 10.

I've got Daniel 8, verse 10. Daniel 8.

Now, admittedly, Daniel is not the most simple of books to interpret, but maybe there's a little insight here.

[10:43] In Daniel 8, verses 9, 10, 11. Should we do that? Daniel 8, 9, 10, 11.

Corinne, could you read that for us, please? Daniel 8, 9, 10, 11. Out of one thing, I'll then name another one, which started small, but very powerful.

To the east, towards the beautiful land, it grew into the reach of the host of the heavens. And it moved some of the story codes down to the earth.

It set itself up to the great commander of the army of the Lord, which is the way to do the sacrifice of the Lord, and the sanctuary was thrown down.

Thank you. I wonder whether there's a little bit of an insight here. This idea of stars being thrown down is a way of saying something about power and rulers, that this particular ruler will have such a drastic effect as to remove a lot of other rulers.

[12:04] So I'm just offering that as a thought. And I'm going to go to one other place about a star. Anybody like to guess where this is going to go in the New Testament? Pardon?

Bethlehem. Yes. And once you think about stars and rulers, this becomes a little bit more obvious, doesn't it? It makes a little bit more sense in Matthew chapter 2, verse 2.

Have I got the right one? Yeah. Matthew chapter 2, 1 and 2. Could Brenda read that, please?

Thank you.

It's interesting, isn't it? This is Matthew chapter 2, looking at verses 1 and 2. It's interesting that the magi make this connection of a ruler and star.

And they say, we've seen a star, so there must be a ruler. And we've come to worship this ruler. So I'll just draw that thread.

[13:15] I'm not trying to make a dogmatic thing about it. But I'm just trying to make this suggestion that the universe that God has made is not just a random, insignificant, disconnected thing.

It's actually full of meaning and that the Lord has made it so that it actually testifies in various ways. And certainly when I see the work of your hands, I'm full of awe and wonder.

And perhaps there is a particular way in which God has designed the sky to link up with what we have in our earthly experience of authorities and rulers.

So, I'm not going to press that point, but I'm going to sort of... There's something going on there, isn't the Bible? In the Bible about these sun, moon and stars remind us of, speak to us of, in some sense linked with, earthly rulers.

And God's designed it that way. Let's take a little break and we'll sing something. Can we sing 190?

[14:40] A little bit more about science. I think it's going to be a... What's the word? Not as good as the song. Let's think about what we mean by science.

Now, there's lots of different things called science. I'm particularly thinking of experimental science. I'll just do a little bit of sort of history and Steve can correct me because he probably knows a lot of this history as well.

But I used to be a science teacher and one of my favorite lessons was talking about the history of science. Experimental science is a thing.

Science wasn't always experimental. If you look back historically, the Greeks did a sort of science, but they did it not by experimenting, but by thinking about it.

And there became a change when people started experimenting. So I will do this. It's just a bit of fun, really. I'd like you to come with me to what in my lessons was the Leaning Tower of Pisa, but in the kids' exercise books often became the Leaning Tower of Pisa because they didn't spell it right.

[16:12] And I don't know whether this will work, but we'll see. I might need to climb on there if I fall off and you can rescue me.

I did cut two pieces of wood. But I would have liked Galileo had, I think, a big cannonball and a small cannonball. I haven't got that. I've got this piece of wood and this piece of wood.

And I did my best to make this one that much bigger than that one. Okay, so you can help me on this.

You have to be quick. So I've got one here and here. Will you point to the one that is bigger? Okay, this one is bigger. And will you now point to the one which is heavier?

This one. This one. Okay, right, good. Okay, well that's great. This one's heavier. And I'd like you to tell me in words this time how, just looking at the size of them, roughly speaking, how much heavier is that one than this one?

[17:19] Twice? Okay, twice. Now then, if I drop them, therefore, remember, this one's twice as heavy. If I drop them, which one was heavier?

This one. This one. Okay, so it's a simple question. Which one will hit the ground first? This one. Okay. All right, well, bear with me.

So I do this with the kids. They say, come on, Mr. Wells, that one's heavier. It's going to hit the ground first. And I say, okay, so if I drop them, this one's heavier, and it will hit the ground first because it's obvious, isn't it, if you think about it.

And so I say, if that one's twice as heavy and falls faster, how much faster do you think that one will fall?

Twice as fast. Twice as fast. Okay. So just watch. So if I hold them up like that twice, this one will get, I'm going to drop it, I'm not going to throw it. If I drop this one, both of them together, then twice as fast, you'd expect that one to hit the ground, and this one will be about there because it's about halfway, roughly.

[18:32] Yeah? Okay. So just watch. It's hardly worth doing because it's so obvious, isn't it? Heavier. Twice as heavy. Twice as fast. Hits the ground first.

That one will be about there. Okay. So I'll do it. So you just watch carefully. So which one hits the ground first? Right? Ready? The big one did hit the ground first, didn't it?

Let's do it again. This is called an experiment. Right? So watch. This one will be about there. That one will hit the ground. Ready? Ready?

See? What's the problem? What are you all laughing at?

Let it go, that one first. I think you should put them both together. Just not two hands. So if I put it like that so the bases are level with each other.

[19:46] Okay. This one hits the ground first. This one is about here. Experiment. Leaning Tower of Pisa. Let's just see what happens. Both hit the ground at the same time.

For thousands of years, Aristotle, the Greek philosopher, had thought about it and had taught, if you drop two items, if you drop two items, the heavy one will hit the ground first.

And everybody had believed it until somebody tried it. And they did an experiment. And when you start doing experiments like that and actually looking at what happens, it makes an awful lot of difference.

And do you know who did that experiment? Sure you do. It was Galileo. It was Galileo. Not as per in the song, but the same person, but different context. And this is doing an experiment.

This is testing something out. This is actually sort of getting hands on with the stuff of matter and trying it.

[20:50] And that is the moment when things really begin to develop in terms of Western science. And from then on, you can start doing things like looking through a telescope.

Or actually not always through a telescope, but looking and measuring where stars go and where planets go. And just to sort of almost insult your intelligence, what's the difference between a star and a planet?

There's both suns in there. There's both suns. Well, the sun is something. Yeah. That's a star. Yeah.

What's the difference between a star and a planet? If you were... Yeah? A planet you can stand on. A planet you can stand on. Well, that's possibly true. A planet is a wanderer.

And if you observe... See, we see the sky most evenings. Got nice dark nights. If you have the stars, they rotate.

[21:58] Always the same, like that. Why do they rotate? I mean, we know, don't we? But they just thought, well, they go round, don't they? And the planets...

So there are some of these stars that do extraordinary things. They go forward, and then they go back, and then they go forward again.

And they don't do what these do. And the planet means wanderer. It's planera, I think.

And in one place, Jesus is accused of being a deceiver. And I think it's the same route. He's making people wander off course. And so there are certain...

If you look at the heavens, there are a certain number of these stars that do this funny wandering thing. These are the planets. They look like stars.

[22:56] They're just little points of light. But as you observe them, they do a different thing. And I'll try not to make it too complicated. But this...

They go forward, and then they go back. It's called retrograde motion, meaning going backwards. And if I remember correctly, Alfonso the Wise of Castile said of this, it is incompatible with the orderly nature of a gentleman.

There's an interesting... I think I'm remembering that quote correctly, because it's such an amusing quote. What on earth are these things doing? Even a respectable businessman does not go forward and then change his mind and go back and then go forward again.

So what is happening here? And I mean, I could tell you the story of it. It gets a bit complicated. I don't know. So... Start off.

You say, what's happening? And Aristotle would say, we have the earth. We have the moon, which obviously goes around the earth. And we have then, above that, the stars.

[24:15] They're perhaps in some sort of crystal thing or something like that. I don't know. So, between the earth and the moon, motion is corrupt, imperfect, and sort of transitory.

And then, above the circle of the moon, a completely different set of laws apply. And we have here motion, which is perfect, because it's in the heavens.

And everything is perfect circles, and it never stops, and it's a completely different sort of scenario to here. So, the stars...

So, if you're here on earth, below the level of the moon, and you have a buggy with a baby in it, if you want to keep it going, you have to keep pushing. But if you were in the starry region, the stars go round, nobody pushes them.

They just keep on going forever and ever in a perfect circle. And that seems to make a lot of sense, except for these planets. And what on earth are they doing?

[25:21] They're going round, and then they're going back again. And so, you start to observe this, and this is sort of the beginnings of modern science.

And they say, well, how does that happen? And what they did was they said, ah, circles. The answer must lie in circles. And they go round, but they also go round while they're going round. And they go round in other cycles. So, as they're going, they're sort of spinning as well like this. And when you look at them, these are called epicycles. If you look at them, that's why they go backwards, you see, because they're going round, and they're going round that way as well.

So, this is the solution to retrograde motion. Are they still in their perfect circles? Yeah, they're perfect circles, but they're just more circles than we thought.

But they're not perfect. Well, as we look at them, so it goes across the sky like that, and then it does an epicycle. That's why it does this retrograde motion.

[26:28] I think this was Copernicus. No, no, no, no. I'm getting myself mixed up. So, they thought, okay, that solved it. But the more accurately people looked, the less this seemed to work.

And to get it to really be spot on, they had to say, actually, there must be another epicycle on that one. And then that will just adjust it, because as we look, if we had just one epicycle, the star would be there.

But actually, it's just there. So, perhaps there's another epicycle on top of the epicycle. And then they measured it more carefully, and they found, no, that doesn't quite work either.

Maybe there's an epicycle upon an epicycle upon an epicycle. And then you think, this is very complicated. Does it actually make any sense? And somebody had a brilliant idea and said, maybe we need to rethink this whole scheme.

So, instead of having the earth in the middle and everything going around the earth, suppose we did the same calculations and put the sun in the middle, and then put the planets going around the sun, and the stars fixed in the background.

[27:49] Now then, no, this is a little bit complicated, but let's suppose we're on earth here, and we're watching this planet here.

Now then, I'm trying to do this off the top of my head, which isn't a good idea. There's the fixed stars behind. And let's suppose we see the planet against the background of that star, and it's going, let's

say it's rotating in this direction.

Now suppose we go quite fast, and we get round to there. When this planet has only got to there, then as we look at it, it has gone forward, but it'll look as though it's gone backwards.

And if you, I'm just trying to do that quite roughly, if you go home with a piece of paper and work it out, that does work. This system, that's the geocentric system, that the earth is the center of the universe.

This is the heliocentric system, that the sun is the center. But this actually, you don't need epicycles for this. It all works like that.

[29:04] But what a huge conceptual jump. Instead of saying, God made us where the center of the universe, the earth is at the center, everything goes round us, you say, actually, the sun is the center, and we go round the sun.

There's a huge jump there, isn't there? But it does solve the problem of retrograde motion. And then, they did some more measurements, and it still doesn't quite work.

It is a lot more beautiful as a system. It still doesn't quite work. And Kepler, so I think Johannes Kepler, said, I think I can sort this.

Let's just tweak the perfect circles. And there is a thing called an ellipse, which if you have put two nails in a piece of board and stretch a string between them, like that, so that the string doesn't stretch, you end up with a sort of egg shape around those two points, the two foci of the ellipse. They're not the circles, but it's a proper shape. And Kepler said, suppose instead of a nail there, we put the sun there.

[30:29] This is all works. And we now have ellipses. This fits what we observe. No, that's just nothing.

It's useful if you're using a piece of string to draw it, but there's nothing particular there. That's where the sun is. So Kepler came up with that.

And then an English scientist said, I think I know why that works.

Anybody know which scientist this was who came up with this? Newton. So Newton came up with two or three simple lines of mathematics.

And he said, if my maths is right, we would get perfect, we would get these ellipses. If my mathematics is right, then the speed at which these things go around would be exactly right.

[31:39] And not only does this work for planets, but it also works for it also works for apples falling on your head.

And so we've got from the Aristotelian view, which says this is a non-experimental view, which says that motion on Earth is completely different to motion in the heavens.

And we've moved to this hugely powerful theory from Newton, which says the same laws that make an apple fall on your head are the same laws that keep the planets going round, the same laws that keeps the moon going round, and it just fits exactly what we observe.

And this is the sort of progress of Western science to observe and, like I say here, to experiment.

And what I'd like us to, I'd like to try and put across is that this is all a Christian way of thinking.

Newton was a Christian. I think he was probably a little bit of an odd Christian, but he was working in a Christian framework. I'm pretty sure Kepler was. Was Copernicus a Polish monk?

[33:05] Yeah. And Galileo. Pardon? Well, I don't know whether he was excommunicated. He still had his pension. Well, I did have a book about this which I couldn't find, and I think there's a sort of a bit of a myth which paints the church as being more obstructionist than it actually was.

But I think the reason that I'm saying this is Christian is that I think two reasons. One is that the God of the Bible is a consistent God.

That when he runs the universe, he runs the universe the same way yesterday and today and tomorrow. So if you find out the laws that he's operating, you can depend upon them.

There's something regular, dependable about the universe. And the second reason is that we're not pantheists. Do you know what pantheism is?

Pantheism says everything is God. Pantheism says that trees are God, the wind is God, the earth is God, called Gaia, and that stuff is divine.

[34:31] That's pantheism. And Christianity and biblical religion is not pantheistic, it is theistic, which says that God is separate to his universe.

He made it, but it's not him. So in other words, if you're fiddling around with the universe, you're not fiddling around with God. God, it's something that is separate from God, and you can experiment with it.

You can take bits of it and drop it and see whether which one hits the ground first. You can look into your telescope and measure it. It's not blasphemous to do that, it's reverent to do that.

It's looking at the way the great and glorious God has decided to make things and sort of thinking his thoughts after him. I should have some quotes about this, but I haven't, maybe somebody can fill in some quotes on this.

But it's saying that if we look into the universe and investigate it, it's a reverent and proper thing to do.

[35:35] And it's a Christian enterprise to be looking and wondering and marveling and investigating and looking.

And these guys are all in a Christian worldview. Christian tradition compared with, shall we say, a Hindu tradition or a Buddhist tradition or a Chinese tradition.

These have different worldviews, they have different achievements, but this, I would like to suggest, is a particularly Christian enterprise. And across the world, we reap the harvest of it, all the things that we've learned, the progress, if you put it that way, the progress that the scientific enterprise has made.

So as I said right at the beginning, medical, transport, technology, all these things have come off the back of Western science, which I'm trying to convince us is not our enemy, but is a Christian thing, born in a Christian worldview.

So I'll stop there. Now, anybody like to ask any questions or make any comments? Yeah.

[36:56] Yeah. So I work at the University of Brenton and in the School of Applied Sciences. I work next to a chemistry professor.

Do you at least the theist? He does a lecture, and I haven't listened to the lecture, but he mentioned it, and he said enthusiastically, when I encourage my students towards a belief in God, I know that's interesting, but I do it using a lecture called You Were Made of Stardust, and I guess this thought, the components of the human body consisting of the same elements that are in, let's say, the star, but I guess I was thinking of how do you respond to it, you're coming out from a kind of evolutionary perspective, that, I don't have to in this room, there'll be different perspectives on that, but I don't know how to respond to that, that means, you know, God made man from the dust of the earth, so yeah, I just wonder how to, any thoughts of how to respond to that in a useful way?

That's a good question for the audience, isn't it? Just to enlarge on what he's saying, he's saying that the components of, that we're made up of, on a cosmological, evolutionary basis, that the elements were made in the life of stars, so as the original few elements sort of bang into each other, they bang the bits off each other and produce, so iron and carbon and oxygen, and over a long course of time, this is what he says, isn't it, that you end up with the stuff that you make people out of, and I think this is a useful, does anybody want to take that home with them, I mean that's such a well-constructed an unconfusing diagram, isn't it?

I think that what he's saying is time plus chance equals people, and I suppose the response is, takes an awful lot of faith to believe that, an awful lot of time, an awful lot of chance, and you would always say, well if you believe that, I do admire your faith, because I think if you believe that, you believe anything, there must be more to it than that, mustn't there?

Yeah, Steve, have we got a microphone that have we got a lot of time? So Steve, could. I had an interesting experience, people don't know that probably, but while I was still working, at one time I was in charge of research training in the University of Brighton, and somebody, a student came to me one day, and I can't remember what we were talking about, we were just talking about basically about sort of methods of doing research, and she obviously didn't realise I was a Christian, and we were talking about, I think it was something in the social sciences, I can't remember all the details, but for some reason she said, well, you know, what about faith?

[40:56] Do you, you know, shouldn't you honour faith even if you don't share it? So she obviously didn't realise I was a Christian myself, and the answer I gave her, you can make of it what you will, but the answer I

gave her was that God said, let there be light, could be a true statement, but the purpose of science is to, well, I said two things, first of all, in a sense it's not a complete statement from the scientific point of view, because the job of science is to study the process by which that came about, God, and personally I don't, I mean, people can argue about this, I don't actually see a conflict between a view of, some developmental view of humanity and the animals, and say people dispute this, but the Bible is all about process, if you read the, if you read the, I mean, the question is not whether it took seven days to create the universe, but why didn't it all happen at once, and there's a process built into it, I mean, we could get into an argument on what's meant in the meaning of the seven days, and

I'd point out that before the stars were there to define time, then how could there been time, how could a day be defined anyway, so it can't mean days in the sense that we, simple sense that we mean it, so there's all sorts of issues you can talk here, but I think the process of science is to, is to, somebody said to think God's thoughts after him, to work out how the world works, because it's God created it, and you want to work out how the world works, and you can't experiment, it doesn't always work, and there's a, people had before considered whether possibly the sun went round the earth, the earth went round the sun rather than the other way, but they decided not, and the reason is for this, they said, let's assume that the sun does go, the earth does go round the sun, if you observed a star from there, and you observed a star from there, you would see that they were a different angle, and they couldn't observe what's called the stellar parallax, so they said the earth can't go round the sun because we'd be able to see the stellar parallax.

What they didn't notice, of course, is how far away the stars were, and eventually they were able to, now, with modern instruments, you can, so it's always an approximation science.

I mean, modern science is much more statistical, for instance, than it was in Newton's day. Yeah, Newton is exact. Yeah, but even that's Christian, I mean, one of the major developers of the use of statistics for political purposes was Florence Nightingale, of course, who was certainly a believer, Christian, and she used statistical arguments to prove that the hospitals were doing no good at all. thought. I guess there was a difference between what, I mean, Calvin didn't really believe in chance, and I think we've, I think in a sense we do believe in chance nowadays, at least in the sense that the universe is largely statistically, statistically, well, I don't know what the word is, it's statistically consistent, put it that way, that distributions of, statistical distributions make sense.

[44:45] So, I mean, we have changed the way we think about science, even Christians have, but it's undeniable that it's essentially a Western invention. The numbers, the Indians invented our number system in about 800, about the 8th and 9th century, but their view of, was essentially one of enlightenment, that when they saw, they didn't have any idea of mathematical proof, it was all enlightenment, and Ramanujan, the famous Indian number theorist, said he got his, his results from the, from the goddess, forget which goddess it was, but.

You just, enlightenment in the sense of he just suddenly see it. Yeah, you suddenly see it. Yeah. The fact that this is communicable, you can explain to somebody else exactly why when you drop two weights they fall at the same time, is, is, is, is essentially a Western idea.

Plus, of course, the West invented the calculus. And, um, you can't do modern science without calculus. Calculus is a very sophisticated way of computing change.

And, uh, if things are moving in a changing way, rather than saying who knows, you can actually calculate it. That's what calculus does. And it, uh, did Newton invent calculus?

Newton and Leibniz, yeah. who invented, it's more Leibniz is what we use nowadays, but essentially. Aristotle, not Aristotle, Archimedes nearly invented the calculus, but because he didn't have, the Greeks didn't have a full understanding of number, it never took off.

[46:23] So it really, and you can't, you can't actually, I mean, people want to nowadays want to de- westernize science. But the problem with that is that you can point out that the, the hours were very good at algebra and that the Indians invented the numbers.

I mean, talk about decolonizing science. We were doing this 15, 20 years ago, pointing this out. Um, but the fact is that the, the, the, modern science and computing, the laws of logic for computing and the laws of, um, and the laws of the calculus, the, the journalism of the calculus are essentially western inventions and you can't have modern science without them.

So you can't decolonize science in that sense. Anyway, I'm talking too much, sorry. I think, yeah, thank you because Steve's a professional so he knows about these things.

Um, I think it's worth just for two minutes to ask this question. What are the limitations of science? So what can't science do?

What is it not even meant to do? Would you like to turn to the person next to you, perhaps two or three, and come up very quickly with some what can't science do?

[47:34] What are its limitations? God is the responsible person above all.

So when he does good things, you praise him. And that's right. Praise and blame belong to being a person in the image of God. And when a human being in the image of God does something good, they're praiseworthy.

They do something evil. They are to be blamed. You don't do that with guns. You don't do that with trees. And only in a very limited way do you do that with animals.

That is a particularly human thing. Yeah, so morality is not in the realm of science, choice and responsibility. Science will say what happens.

It doesn't say what ought to happen. So this idea of morality is outside the scientific boundaries.

[48:45] Anything else? Limits? Because of its methodology, it can only tell you so much about the world. It can only tell you so much about the world.

That's absolutely right. If you take, if all the world is in that box, you'd say how much of that box is actually accessible to experimental science?

I mean, I don't know, but perhaps this much. Even physicists say 85% of the universe or whatever it is, we've no idea what it is.

We've no idea what's out there. There's dark matter, dark energy. It's there, but we've no idea what's going on. But if you include things like love, beauty, meaning, worship, science has got no handle on those things at all.

Friendship, being a friend, it's not something you can measure by science. And when scientists say, oh, we can explain everything, they're well out of order.

[49:58] I know, Dawkins, I brought the Dawkins letters along. When he says, oh, I'm a scientist, I can tell you all you lot believe is nonsense. He's well out of order for that because science does not cover the huge amounts.

It just covers its little bit and it does it very well, but it doesn't cover everything. Let's stop, shall we? Because we've usually stopped by now. Yeah.

Yeah. I think it's worth saying that in fact, what is becoming clear now, I mean, we talk about Dawkins.

15 years ago, Dawkins was just saying, we get away with religion and everything will be sweet rationality. And he's discovered that exactly the opposite has happened.

With the decline of religion, we get a decline of reason. So, all this stuff on gender and so on that you get nowadays on authority structures, post-modernism, it's all actually anti-rational.

[51:02] And I think, you know, in the end, if you abandon religion, you abandon rationality altogether. You know, you, because it makes no sense.

Whatever you assert is true. Yeah. Yeah. Yes. Let's, thanks Steve. Let's sing a verse from that song and then I'll ask Mark if you'll close with a prayer for us, please.

So, it was 190. Which is your favourite verse?