Time Patterns of Providence

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[0:00] Thanks for inviting me back after last time. Why don't we start by praying just a little snippet from the general thanksgiving because it sort of sets me up for somewhat I want to say.

So, Lord God, thank you for this new morning. We bless thee for our creation, preservation, and all the blessings of this life, but above all for thine inestimable love in the redemption of the world by our Lord Jesus Christ.
For the means of grace and for the hope of glory. Amen. So, why do I do this?
I ask myself always the night before, why do I do this? What I'm trying to grapple a little bit, having studied physics and theoretical physics, but not having really worked as a theoretical physicist for many years, I maintain my interest in physics.
And I'm less and less willing to keep my physics here and my faith here. I'm interested in how they talk to each other. And having been invited by Bill to talk to you, I'm sort of being a bit selfish taking this as my opportunity to explore this with really smart people who can help me understand it.
[1:17] So, today what I want to do is explore theological concepts of imminence, transcendence, and providence using physics paradigms.

Dr. Packer last week spoke about a meta-narrative in the Bible, meaning what's the overall story that we see in the Bible.
And what I want to talk about today from a physics point of view is what's the physics meta-narrative for creation, for all of what God has created.
Harvey Guest very kindly came over last night and chatted with me about this. And one of the things he said I need to do is talk about how physicists use the term model.
When we talk about a model, we're not saying that this is right and this is true. What we are saying is that it's useful. If we look at something in a very simplified way, because we're physicists, we always want to get something very simplified.
[2:22] If we look at a very simplified model, maybe we'll learn some intuition that will help us to understand the complicated stuff. So, I'm going to put some models up. And that's what we're trying to do, is trying to understand the complicated stuff with simple models.

And hoping that there's truth in those models, but not claiming the models to be truth. Personally, my personal commitment is that the truth is to be found in Scripture, and we must subvert our understanding of the cosmos to what we're taught in Scripture.
And I try to do that. But as a physicist, I probably see things a little differently than some of the writers of some of the books in Scripture. And so, perhaps my models are a little different.
The outline of the talk is... I really want to talk about providence. Providence being God intervening in the here and now, and affecting how things happen.
But I can't seem to separate that from creation, because from a physics point of view, and you'll see why in a minute, there's no...
[3:32] Well, we'll talk in a minute about why I think creation and providence are all interrelated. I think often in the literature, and physicists often do this as well, we talk about the beginning, the creation as one act of God, and then providence as being quite a different sort of action of God.

And I'm going to try and convince you guys not to think of it that way. So, we're going to start by talking about the big picture, all space and all time. And then I have to get...
I have to go to completely opposite extreme to the very, very detailed picture. And then after that, I'll try to bring it back out to the big picture again for my final point. So...
And I'm going to work off the whiteboard, because people who work with me at work know that I can't go five minutes without using some sort of visual representation. So...
There's a physics model of the... all of space and time. There's time going this way.

[4:32] And this is... Think of this as like a watermelon. I'm giving up the lemon, Harvey. Think of it as a watermelon, where we live on the surface of the watermelon.

Okay. So, this ring around here, if you like, is... is one dimension of our three dimensions.
We live in three dimensions of space and one dimension of time. And it's easy for us to understand a four-dimensional world, right? I think it's realistic to say we live in three dimensions, because we can't move back and forth in time.
We can move around in three dimensions of the world. So, we're three-dimensional creatures stuck on a train moving through time. And so, all I have room to plot on here in this model is one dimension of space.
And that's this dimension here. This is the whole universe, of course. The Earth is right here. But we're only seeing one dimension of the Earth.
[5:34] The other two dimensions I can't draw on here, because I'm stuck in a three-dimensional world. And if I, for example, shone a flashlight out the window in the middle of the night, the beam of light from that flashlight would go out at the speed of light.

Actually, go out at the speed of light. And keep going around the universe, because, and I need to talk about this in a minute, the model that we have of the universe is that it's a closed universe.
In the same way that the Earth is closed, right, I can walk north, and eventually, theoretically, I'll come back around into Vancouver again after walking all around the Earth.
So the surface of the Earth is finite but unbounded, right? In the same way the model we have of the universe is that it's finite but unbounded.
You could shine a beam of light out, and eventually it would come right back to where you shone it from, even though it's a three-dimensional world. So this is a... I don't want us to get too hung up on this, because my talk is not about this, but we need to start with this.
[6:49] For some of you, you've thought this too many times, and it's not a problem. And for others, you're having the trouble, the problem we all have, but we can't really truly understand the idea of a three-dimensional world that's finite but unbounded.

But I'm trying to sketch it here by saying that this dimension is like the surface of the Earth. A circle, in reality, it's a three-dimensional space.
It's finite but unbounded. A circle is finite but unbounded. The surface of the Earth is finite and unbounded. And our spatial universe is finite and unbounded. So the model that we have is that this universe is moving through time after starting here at a point that is often called the Big Bang, right? The time zero is the moment when it all started happening. And the laws of physics suggest that at some point in the future it may come to an end.
It's sometimes called the Big Bang. So... Let me just check to make sure I'm covering all my stuff here.
[8:18] Yeah. The idea that it's curved is something that Einstein's equation tells us. Einstein's general relativity equation says if there's mass in the universe it has to be curved in this way so that it loops around on itself.

He was really bothered by the idea that it was also curved in time. He was comfortable with the idea of it being curved in space. That's this one. Uncomfortable with it being curved in time.
So he tried to fix it with his cosmological constant that he later regretted. And he could put a constant in and change the equations and he got a cylindrical universe so that the size of it remained constant and it moved from time like a long cylinder.
It's been on forever. He later called that one of his biggest mistakes. And now it's pretty well accepted that our universe is shaped something like this.
But let's face it, we've never been to the Big Bang. We're only guessing what happened then based on a lot of evidence and based on what the equations tell us. Right. So hopefully I've got you a little bit comfortable with this idea of space and time.
[9:36] Now I've done something interesting here in that I've chosen to draw space as a loop and invited you to imagine this as a three-dimensional thing when in fact I'm really only drawing one dimension of time and one dimension of space.

So what's that third dimension? And we call it the embedding space. It's probably the simplest term for it. Houghton wants to call it the spiritual space. But I think the physicist would never call it that. So let's call it the embedding space for now. And what that says is that Einstein's equations are best understood in terms of the universe being bent or warped into another space that we can't

experience directly.
In the same way that the surface of the earth is bent around a sphere and before the invention of airplanes we had no way to get off the surface of the sphere.
We couldn't experience anything but the surface of the sphere. In the same way as creatures we can't experience anything but the three-dimensional space we live in but we model it as being bent into this fifth dimension which is the embedding space.
[10:50] So the universities of Calgary and British Columbia worked hard with me to get me to imagine time and space this way. And once I've seen it that way I can't help but be tempted to wonder if God sees it that way because what this invites us to do is think of God as something outside as a person outside space and time who acts on space and time because we know there's at least another dimension out there.

For those of you who watch Star Trek at all you know this is all very familiar to you, right? So I don't want to put too much weight on this but we have to get past this to move on.
So God sits outside space and time and I think it's fair to assume and I want to promote the idea although the Bible doesn't make this I don't think the Bible makes this completely clear that God created all space and time.
And as soon as I say God created space and time then we've got a problem because the word created is a verb and verbs operate in time so how can I possibly say that God acted to create time?
Because that's sort of self-referential, right? And really the best way, I think the only way to understand that is we have to somehow anthropomorphize a little bit and say that God has his time for God to act he has to have something like his own time in which he acts to create our time.
[12:27] And if you are willing to buy that then we can move on. And I think this has been written about a lot in the literature and I think scripture implies it in places although I don't want to get involved in that because as I said this is a prelude to where I really want to go.

But I like Pascal's quote where he said he implies something like this when he says God gave us prayer to communicate to his creatures the dignity of causality.
So what that implies is that God created time here because he had some sort of an experience of causality. God acts and things happen and he wanted us as his creatures to have that same experience of acting and things happening.
So when he created our world he gave us time so that we had that same experience of acting and things happening. Certainly that's sort of a presumptuous or well I haven't proven anything to you but I'm saying by way of analogy that perhaps that's why we can think that God experiences him in some sense.
Now some of you may at this point want to refer to 2 Peter 3.8 which I've often referred to in the past which says with the Lord a day is like a thousand years and a thousand years is like a day.
[13:58] And so there's a temptation at that point to say well there's Peter saying oh God's outside of time and God looks back and forth in time and God sort of plays with time. I don't think that's a fair interpretation of that piece of scripture because I really think what Peter is saying at that point is that God is not slow in keeping his promises.

A few weeks ago David Short spoke about the promises taking their time but coming when he talked about Abraham being impatient and Sarah particularly being impatient with God's promises.
So I'm sort of setting 2 Peter 3.8 aside. It would have been tempting to use it here as a proof text for this but I don't think it really works that way. So now the next point I want to do is I think when we start thinking of God as acting to create all of space and time it forces us to change our idea of what creation is like because we're tempted even physicists speak about the Big Bang in a sense and as believers we're tempted to think of some point in the past where God over a period of six of our days Now this is Please stay with me here because this has been to scare you a little bit but I'm not going to go heterodox on you really I'm not so stick with me.
If we were to think of this six days of creation and the seventh day of rest they would be rings in this at a certain time right?
This is the first day this is the second day and God may well have done it that way and there may be no bottom to this. Maybe God did it that way and just created the heavens and all the stars that we see and that could very well be.
[15:46] There's a sort of an elegance to another possibility and that is that the seven days of creation refer in some sense to God's time as God created the universe he was acting but if in fact

we buy into this idea that God created all space and time then what we don't have is a situation where here's God down here creating and we're up here far away from creation right?

Because God created all space and time we're just as close to that act of creation as Adam and Eve were and so the way I like to summarize that is that now if this model is correct now is the moment of creation we are just as close to the moment of creation as Adam and Eve were creation didn't happen somewhere in the past and carry on to here by God's providence keeping us going we are just as close to the act of creation as Adam and Eve were I hope I'm not losing you on this one alright one of the things that comes out of this is the whole problem of God foreknowing what's going to happen because of course if God creates all of time then it's not surprising that he knows what happens here because he created it right?
and Dorothy Sayers uses an analogy with the theater right? she says she talks about God as being like the playwright this is a metaphor that has its limits and you'll see the limits almost immediately but it's a useful metaphor so you're going to put on a theatrical production you get a script you work the director works with the actors and he works first of all in act two and then he works in act one and then he works in act three then they run it all through and then they work in act two again because it needs some work and and on opening night partway through act two somebody leans over to the director and says oh I really hope she doesn't die and the director says don't worry she won't die and that person goes my goodness how can you tell that how can you know but of course the director knows because the director created the whole thing the whole experience was created by the director right?
and so in the same way God having created all of space and time we shouldn't be surprised that God knows what's going to happen because he created the whole thing right?
okay so I want to finish talking about all of space and time for a minute and zero in on the microcosm because that's sort of where I want to make my point but are we are we stuck on this? [18:42] does anyone want to ask a question or raise a problem or tell me I'm a heretic at this point is that sorry oh Bill yeah yeah well I think we'll address that a little bit when we go to the microcosm I'm not sure I'll satisfy you but I'll address it okay I think maybe maybe someone else has to do the question about anger so we're going to zoom zoom zoom way way in we're going to zoom in past the level of galaxies and past the level of planets and past the level of human beings and past the level of the cells in our body and we're going to try and get right down to the level of atomic and subatomic particles and the model physicists use there is one of particles traveling with exactly the same model but we've zoomed way in time going up now we don't need the embedding dimension by the way because when you zoom way in it's essentially flat you can't see all that curvature so you've got essentially a flat universe it might as well be flat and and now what you see is

I'm trying to draw lines like this and they're called world lines and so this is x and y space north and south north and west if you like particles going forward in time and they're these are particles sitting still in one place but of course time goes forward so if they sit still in one time they drag out a line in time and each of these lines represents one spot in the world because I'm using one of my dimensions to draw time I can only draw two dimensions of space so you can imagine a third dimension of particles sitting there moving through time well you can maybe imagine but it's a little hard because that would be a four dimensional space so these are called world lines I really like I don't know if any of you know Stan Rogers one of Canada's great folk singers who died in a plane crash in the 1980s but he has a song called Northwest Passage in which he talks about Franklin the Franklin expedition and he the chorus of the song talks about Franklin tracing one warm line through a land so wild and savage
Franklin the one warm point in a frozen world up north so there he's talking about Franklin as a world line one warm line traveling through the north I've drawn these as straight lines those are simple particles they're not interacting they're just sitting there in reality particles interact all the time and Richard Feynman the great physicist invented notation by which we describe how particles interact and if you ever see Feynman diagrams just remember what I showed you about world lines and it'll all make sense so here's a simple example of these are world lines going in time this is time going up so this is a proton this is an electron and at this point they interact in that a photon is exchanged between them and what you would see if you looked at this is the photon and the electron actually photons and electrons would be attracted to each other so they would actually bounce the opposite way let's say it's two photons protons protons protons come near each other

they repel each other they bounce and that's mediated by a photon in here so what this really means is two things coming and bouncing and there's all kinds of rules like this that apply to every kind of particle you could imagine every kind of particle your body is made up of and the rules talk about how they interact physicists really like rules and when Newton was around we'll come to Newton in a minute

Newton did you know about Feynman diagrams I need to make a couple of points about Feynman diagrams before we're done one is that all the rules we have for how they interact are time reversible what that means is that you could run these things and all the rules would hold in fact Feynman made an interesting observation which is sort of getting now to the meat of where I want to go Feynman said he said if you have an electron and an anti-electron sometimes called a positron if they come together so here they are going forward in time and moving closer together and they meet they will emit a high energy gamma ray and that gamma ray very quickly will cause the spontaneous creation of a muon I don't remember what kind of muon I'm not a subatomic physicist you've got a muon and an anti-muon going on and so that's a standard type of interaction you'll see like a triumph

I think of being a muon factory I assume you'll see this kind of thing happening all the time Feynman said something interesting which kind of blew all our minds he said well he pointed out that the equations for a positron are exactly like the equations for an electron going backwards in time and he said well another way of thinking of this is to say that this is one particle an electron that goes up and bounces backwards in time it's the same particle it bounces off this gamma ray and the same with the muon and the anti-muon that they come one comes backwards in time meets this electron and bounces forward in time again and as soon as you start talking about things going backwards and forwards in time then physicists get really intrigued right but you can see that this is where when you talk about a model of the universe in which we stand outside and see time as one dimension then we can begin to postulate things like this and it sort of illustrates the usefulness of a model in getting us to think in new ways but the key thing the key point we need here is not this particular

[26:02] Feynman diagram and objects going backwards in time the key point I need to make I'm afraid is that all the laws of physics almost all I better put almost almost all the laws of physics are time reversal invariant and so what that means is that if a billiard ball hits another billiard ball and they bounce off and you played it exactly backwards you would see exactly the reverse and all the laws of physics would be held this hardly ever happens but I saw it a couple of weeks ago in the gymnasium here my boys like to play hockey after Sunday school is over and this is St. Jerome's gym and I was here at this goal and there was another goal over here and a little girl whose name I didn't catch hit the puck going this way and because it's crazy in there we always have many pucks going on and at the same time

I hit a puck going this way and my puck hit her puck into the net and my puck went off that way right so I just exactly knocked her puck into the net now if you played that backwards you would see a puck come out of this net hit my puck into my net and her puck would go off that way right and so it's time reversal invariant right I should draw these in separate colors here so it's absolutely what I'm talking about I thought Bill was good enough to give me colors I should use them right so my puck went that way and her puck went into the net now normally what would happen if pucks hit is that my puck would hit her puck and her puck would go off like this right and if you saw that interaction inflated backwards you would say well that's backwards you know why because you got two pucks coming together and one going to a very specific place a net right well what are the chances of that happening infinitesimally small and so you say well that must be going backwards because there's no way two pucks could hit and make one go into the net so the only reason mine was time reversibly invariant was because it was so improbable right because no matter which way you played it one of the pucks played into the net right and so what this leads to is the way we know when I say almost all the laws the laws that aren't time reversible are the ones that talk about what's likely to happen and so the ones that talk about what's likely to happen are the laws of entropy and so they say that if you drop an egg on the floor you'll get egg splattered all over the floor that's likely to happen but what's very unlikely to happen is all the pieces of an egg to come together and jump up into your hands that's unlikely to happen so when you play that film forwards or backwards you can tell which way is time forward so all of this to say that there's a tremendous frustration as a physicist there's whole books been written about time symmetry and time asymmetry because the

the underlying laws of physics are all time reversal invariant but we hardly ever see it right so how frustrating to have a whole bunch of laws which are time reversal invariant and our experience is completely the opposite that we always know when time is going forward and time is going back so I'm going to leave that with you as a puzzle and we'll get back to it in a moment
I've brought along a model here and I'm going to need some Rod maybe you could help me with this this is this is there we go okay so what I need you to do is stand behind here and hold this like this for me thank you okay so so this is these are this is time going upwards right time is going upwards and these are some particles going through space-time these are the world lines of them and so the question I want to ask is what would it look like for God to intervene in this world and that's what providence is providence is God intervening in the world and at a microscopic level what it would mean would be God saying I want this particle to go over here and I want this particle to go over here right that's God intervening and saying
I'm going to change the way things go in fact Bill Bill put this here because he knew there'd be a problem with that so why don't we put it right up here that be alright okay so so these are the world lines and what I'm saying is that if God's going to intervene he's going to he's going to say at this point this is time going up at this point in time I want this particle to be over here and this particle to be over here and that's my intervention now let's make this a little more tangible and say that we're going to treat Bill Chandler as a particle and Mike Davenport as a particle and we're going to say that God wanted us at a certain point to meet at Starbucks and talk about time symmetry then what God's doing is pulling this particle over here and this particle over here and realistically things are more complicated than that and so to pull me over there meant interactions here you know
I had to our home oh sorry down here our home had to run out of coffee so I had to go to Starbucks and Bill had to be just driving by and have a craving for a brownie and all of these things brought us together at this point and then the impact of that might be that Bill asked me to give a talk at Learners Exchange and this influences people to become physicists and the world changes or something you know thank you I'm going to ask for you again in a minute so this raises a couple of questions right is God allowed to move these lines around well the theologian you ask you ask the theologian that question and the theologian says well God created the universe he can do whatever he likes you ask a physicist that question and the physicist says well the physicist with no faith would say no of course
[33:04] God can't move the particles around because the particles behave according to the laws of physics right you're not allowed to intervene no one can intervene with the laws of physics right the and somewhere in the middle is the possibility which I think is worth considering that God having created the laws of physics rather likes them and he he notices that having created the world and the universe using the laws of physics or imposing the laws of physics on it he's created something beautiful that he stepped back he looked at and he saw that it was good and that he might choose as he intervenes and I believe he does intervene he might choose to encourage the world to go forward following the laws of physics whenever possible reserving the right at any moment to go in and cut a few of these lines if that's necessary physicists by the way say that if you cut one of these lines there's a big explosion right because you're taking matter and turning it into energy or something who knows what's going to go on but physicists are cautious about cutting these lines so let's ask the question is God allowed to move the particles around now if you had asked Newton that question how long ago was Newton 300 years ago or something some time ago anyway before Miles

I think Newton was Newton was the one who began reducing a whole bunch of magic in the world down to equations right and he would have said although I shouldn't put words in Newton's mouth because he was a believer he was at the time considered a bit of a heretic because of some of his theology and I haven't studied his theology so I don't know maybe he was a heretic but he was a believer and it was a real struggle for him because through his lifetime he kept reducing things that were thought to be God's actions down to equations and so we no longer needed God in a sense but what he would have said the kinds of rules he had were rules which said if you hit this ball here and it hits that ball there if I hit this puck the puck will go into the net and that one will go over there everything was reducible to rules that were immovable right you know I've lost my mind for a minute but the universe was a what's the word you guys know what somebody hit you pardon me yeah I like clockwork but immutable might be the word anyway

I've lost the word for the moment but pardon me deterministic thank you that's the word two points to Jack I didn't have it written down so the universe was deterministic right if I understand completely the situation now it implies what's going to happen later Newton's world was deterministic and I find a lot of people today still think that that's where physicists are at there's a deterministic world and there's no room for God to intervene what started to happen about a hundred years ago was there became more and more acceptance of a quantum world view in which there is room for unexpected things to happen so I call this my spaghetti model of the universe I'm going to take these things and postulate two possibilities these are the same things right these are these are world lines of particles going forward right and so are these so the question being have you had spaghetti in this talk recently no you see that's why you pay me the big bucks to bring spaghetti in so

Newton's world was an uncooked spaghetti world in which particles go forward and have no flexibility and the only way God can intervene would be to break the noodles right and what we find instead with a quantum world view is that it's cooked spaghetti with lots of olive oil and there this has not got lots of olive oil it's sticky if I put enough olive oil on it what you would see is that the the noodles are allowed to slide and move around each other and so and those are the the laws of quantum mechanics determine the interactions the Feynman diagrams were diagrams of the laws of quantum mechanics right and the laws of quantum mechanics say that the world is made up of cooked noodles not raw noodles and that's sort of a summary there's more technical description and that there's lots of room for those noodles to move and slide around each other as they move through time but they still are constrained by rules and by laws that the laws are flexible and in fact what the laws of quantum mechanics says is the actual instantaneous interactions between two particles are very very flexible but the statistics are quite inflexible we know that we can predict things very very precisely using quantum mechanics and what that means is that we can predict the statistics very precisely and the statistics are not flexible the noodles are flexible but the statistics are not flexible so we get back to this model again

Rod sorry so here we are back with our world lines this is the spaghetti made flexible not sticking and so if we now we now go back to ask the question is God allowed within the laws of physics to intervene at a particular point in time and the answer is that with quantum mechanics yes God can intervene at any point in time the only threat that it causes is it somewhat threatens the statistics and the statistics of quantum mechanics are the things that we firmly experience and believe from experimentation to be stiff but the noodles themselves are flexible so I would propose to you that our quantum mechanical spaghetti cosmology allows God to intervene there to be providence without breaking the laws of physics and that God can certainly arrange this to allow the statistics to occur anyway and we'll have to talk in a minute about why I want

[39:51] God to obey the laws and physics always now finally we're getting to the point that I'm quite interested in and that is I'm going to take the blue guy I'm going to say that's Bill Bill's meeting me go over here like this and there we are we're meeting at Starbucks right here and if we go upwards in time from that then what you see is that the result of our meeting causes a bunch of other things to happen and we're all very familiar with that idea that something that happens now ripples down in time and causes other things to happen we're very familiar with that but there's an interesting thing that you see as soon as you do this model and that is that when you look backwards in time what do you see you see a bunch of other interactions going backwards in time these are the laws of physics that I said were time reversible right they're going backwards in time and causing consequences backwards in time and so trying to get into the point of what I want to talk about and that is what's the time pattern of God intervening in time what's the time pattern of providence and I'd like to suggest to you that the time pattern is that if we believe

God intervenes at a particular point in time then not only will we see consequences ripple forwards in time we'll see them ripple backwards in time and what does it mean to see a consequence ripple backwards in time I think what that means is that we would look at it and we would say God brought a whole bunch of seemingly unrelated events to happen together to cause this event that happens at a particular point in time that's what a consequence looks like when it rolls backwards in time you say God works things together for good to will and to do what needs to be done at a particular point in time and that's our experience I think that's our experience of God's intervention right that things work together that this happens and this happens and this happens and suddenly we see that the result of those things was something that needed to be done happened right and so I get excited as

a physicist because
I think I mentioned before that time symmetry doesn't give us anything as physicists because we don't observe it right but suddenly when I put God into the equation intervening in the middle of time then time symmetry gives me a really nice model for why things work together for good and I've never seen that before I've never seen the time symmetry working something useful out I've never seen the equation the time symmetry of the equation having an impact that's useful so then I sit back and think well why is that why is it we never see time symmetry in the real world but we do when God means and I think because I just said that wrongly we do see time symmetry in our real world we just didn't recognize it for that and the reason we didn't recognize it for that is because as physicists we don't have God in there we don't see God making things happen at a certain time as soon as you see God intervening then you see the time symmetry it's obvious right the time symmetry was there all the time and we didn't notice it and the reason we didn't notice it is because as physicists there's only one event that's worthy of note and that's the big bang right the big bang caused everything and that happened right at the beginning so we're going to go back to our macroscopic model again the time started here and went forward time equal to zero and so without God intervening then we saw all consequences of flowing forward through time we were never challenged to look for consequences going backwards but as soon as you take into account the possibility that God intervenes at some moment in time then you see consequences flowing backwards and forwards in time and I really like that model it works for me so if you want to go back to the theater analogy let's go back to the theater analogy this is very familiar to those of you who have been in a theater production right that if the director needs a glass of water to be beside the heroine partway through act two then what you'll see is early on in act two come on and in the process of doing something else set a glass of water down on the table and then move on and do other things because the director knows that glass of water needs to be there the heroine needs it the director makes sure the glass of water is there right and that's the kind of backwards consequence that we're talking about here
Anton Chekhov said if you see a gun on the wall in act one it will be used by the end of act three so where am I going to get to on this I think we're almost done all of this brings me to Colossians one verses 15 to 17 which says the sun is the image of the invisible God the firstborn over all creation for by him all things were created things in heaven and on earth visible and invisible whether thrones or powers or rulers or authorities all things were created by him and for him he is before all things and in him all things hold together so in this model God this this is specifically a model in which
God it's not panentheos I'm not modeling a physicist I can't imagine a physical way to say God is in every particle in every realm any strip of spaghetti has God in that strip of spaghetti so now that model doesn't work for me there's probably metaphors where it's very apt but in this metaphor it isn't because we see God outside creating the universe and acting if you like like a weaver moving the strands because this is all made up of strands when you zoom right in you see strands world-like and you see the creator moving the strands around to create patterns and events that make sense and the ripples from that the consequences from moving the strands around ripple backwards in time and forwards in time that's the cosmology that we're talking about here now if you want to get a little poetic about this quantum mechanics says that all those things that we model as strips of spaghetti are actually waves right and sound is a wave as well so if you like these lines running backwards and forwards in time you can think of them as sound waves as the word of God being spoken if you like right or if you want to be like Narnia you can think of Asla and singing the world into creation right every one of these lines is a line of song that's for you a bit in Narnia for me and then the final point once you accept that an action of God here ripples backwards in time and forwards in time then it suddenly becomes possible that
[47:27] God was in Christ doing something and that was his core creation for all of cosmology and that the whole that everything that preceded it simply was a ripple back from that action of God at this point in time right and everything that comes after it is a ripple forwards in time and so we're no longer we no longer have a cosmology in which the world was created and God tries the best of it we have a cosmology in which God acts here and ripples forwards so there those are my thoughts and I hope I haven't gone off the rails but I think I've got a bit of time now for you guys to give me some feedback and suggestions yeah God's time rather than our time right and of course God in his time can change and rearrange things as much as he likes he can look

I personally believe I think the Bible teaches us that we have a lot of autonomy right in time that God doesn't micromanage what goes on and you'll find that with directors in the theaters they don't tell the actors when to breathe and when not to breathe but they the key things that are important for the drama that the director controls right and so in the same way it could well be that God as he creates this huge tapestry sees patterns and moves things around because it makes the whole picture better he stands back and says it's true and then he pictures but that's in his and so we as thread in here the awesome possibility is that as threads in here we get to influence the reader right we get as we make choices about how we do things the God the creator would look at that pattern that's emerging and say I like that I want to do that I don't know
I'm anthropomorphizing yeah yeah yeah I think we are completely outside any possibility of experimenting in God's time right I like that that one as well and I don't think it's incompatible with what I'm saying at the very end of my talk I did say that I thought God gave like some theater directors will gives a certain amount of autonomy to the the thread and what you're saying is no you don't think that you think that every one of those threads he controls and puts in a particular place if you have other dimensions I think you'd need another dimension I think you'd need another dimension but let me quickly go over the models you talked about the first one which is God not being involved is compatible with this model you just have to remove the God right you have problems then with where it came from and physicists have that problem the second one God creating the beginning and letting it run is not compatible with this model you then have to say in some sense
God didn't create time he created space but not time because he started it and let it run it suggests that the creation work was finished at some point and then things went on right what was the third one God intervening through time right again somehow to my sensibility it's more compatible with what we're saying but a little bit strange because it's God somehow in two modes and he sort of didn't create this part but he likes to operate on this part and I still like the model better where God created the whole thing I think it's more compatible with what you're promoting right where at that sense every moment in time is the moment of creation right every moment of our time was created by God and therefore we're no farther from that moment of creation than Adam and Eve right we're just as close to that moment of creation so I think what Jack's alluding to is if you if you like you could think of this as a five dimensional bigger space in which God acts according to his own perhaps bigger laws or perhaps it's lawless in the fifth dimension we don't know but God then could move say an angel in here and the angel who was not touching our space time moved into our space time and we would see the angel there the angel would be there and then move out again and the angel would be gone right and none of this is him sort of breaking the laws of physics rather than just bringing a creature from another higher dimension into contact with our dimension and that that would be another model for God's intervention yeah but I'll talk about reductionist for a moment I was very aware that when I went from this to the micro spaghetti I was open to the criticism of being reductionist because what I'm saying is this huge thing is made up of a bunch of little things right and we can learn from looking at the little things we can learn the patterns and the big things and that's what reductionists do and I think yes you're right physicists tend to say if reductionism doesn't work well we'll give it to the biologists or the chemists because it's too hard for us right so you're right I think we are open to that criticism and the second the other criticism was materialist maybe you need to clarify what materialism means but I thought materialism meant something like dealing with things that are material and if that's true we're certainly materialists but if in fact what it means is assuming that there is nothing except that which is material then atheistic physicists are materialists but I'm not but I don't assume that that holds here in this relationship right frankly [53:34] I can't imagine this relationship this when you talk about immortal invisible God only wise there's no physics that deals with that that becomes a matter of praise and I specifically don't I do yes because I think what you're saying is that there's a danger in me spending a whole hour talking about this that it could be interpreted I'm trying to place physics above God's revelation in the word and that's not what I'm trying to do what I'm trying to do when I think complementary I think of things that are in a sense at right angles to each other right two views of the same thing at right angles you look at a car from the front you look at a car from the side if you had no three-dimensional model you might think they were two different objects but perhaps by looking from complementary views you can come up with a more fully dimensional understanding and that's what I'm trying to do and it's a bit of an overstatement to say this is a hypothesis hypothesis in that it's hypothesis is generally more fully formed is what I'm trying to do but yes right and that's helpful thank you Dr.

Factor and I think the point I want to make sure we get back to is the whole lot of the stuff I talked about was the preamble to the point that I found these two complementary views intersecting at this question of cause and effect and recognizing that whereas physicists cosmologists in general are constantly working in an acausal universe where there is no cause ultimately and things are happening randomly if you put the idea of God being the cause providence into that same universe you see new time patterns of providence that entirely jive with our experience of reality and that is that things work together for good for the kingdom of God and that that makes sense from the physics point of view as well as of course what we experience well and so what does our choice mean here I know we're out of time but let me just say quickly somewhere back here I think personally that a huge perhaps the center of creation was God coming in Christ as a man dying for our sins that's what this star is to represent and the consequences flow out and ripple forward in time and we all experience it but what are the consequences that flow backwards in time and just to give you an example of a little one at some point
God sent an angel to a young woman and said that he needed her to carry a child into the world and a choice was made I don't know maybe he went to three other women before he found Mary who said yes right I don't know the Bible certainly doesn't forget that and somewhere back here in this world line a choice was made by a woman who and somewhere back here someone had to do it and she was the one who said yes right and we see that as part and the scripture is so rich in talking about all that worked together to bring us to that point of God saving the world yeah well of course to me what that speaks of if I think of the world as time and space then before the foundation of the world before God founded the earth literally before God in his time created the world he was there with Christ Christ is not part of creation but rather Christ was inserted into creation from this bigger world of his that's what it says to me how well that's what it's what it is what it of him is what it like is what itonna that het it what it you■■■■■ it is what they and what women they
Thank you.
Thank you.