

# OpenTheo

## Faith, Hope, Love, & Climate Change | Dorothy Boorse & John Nolt

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### The Veritas Forum

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### Transcript

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[Music] As we continue to wrestle with the reality of a changing climate, Wendell Berry's invocation—"Be joyful, though you have considered all the facts"—is a great challenge. At a notably emotional Veritas Forum in 2016, Dorothy Boorse, Professor of Biology at Gordon College, and John Nolt, Professor of Philosophy at the University of Tennessee Knoxville, discussed the nature of climate change and the hope that can guide our action.

[Music] Thank you.

What a joy to be here with you all. I am thankful to the Veritas Forum, to the Department of Philosophy, and to all who have hosted me so kindly here in my trip to Tennessee. This is my first visit to Knoxville, although I was in Tennessee once before.

You are the land of salamanders and caves. And what a pleasure to be here with you. Our topic is faith, hope, love, and climate change.

And I have been struggling to come up with a single topic sentence that would describe what I want to say about that and have not been able to do so. But let's reorder that a little bit and make a couple of comments about climate change, and then my own

journey as a person, both of faith and as a scientist, and then our a few ideas just to open the conversation with John Nolt. In September of 2014, I was marching with 350,000 people in the center of Manhattan, where the tromping of feet shook the ground as we walked in the people's climate march.

I was in a unit, one of six major units that was many blocks long, and that unit was comprised of faith communities and scientists. I walked with this banner. They let me walk with them, although I do not qualify as young.

But these young evangelicals for climate action, they let me walk next to them, along with the Christian Reform Church Office of Social Justice. And students from various Christian colleges ahead of us was the banner for the Harvard Divinity School, and behind us were other faith communities. But right next to me was an entire group of scientists wearing lab coats and marching under a banner that said, "The data are in." And I thought, "I am home.

I am home. These are my people, both of these groups." And that has been my journey. Now, let me say a little bit about why climate change can call 350,000 people too march at the opening of UN Climate Week.

And I'm going to tell you right now that if you wonder if it's all a crock, it is not a crock, but I don't have the time to explain all of that to you. But this group is really good. The National Academies of Sciences, they have a whole website and they have put out these very, very useful documents called climate change evidence and causes and climate change evidence and facts and choices.

And I would point you toward them. I would also point you toward NASA's wonderful interactive website. And this is just one of their views that you could see if you went there telling you what the current state of carbon dioxide global temperature and ice is, this rotates through so you can see other topics as well.

And if you went farther down on their webpage, they would also say, what are the evidences and what are the impacts. But just to summarize, some of those evidences very, very quickly, this is from a 2009 report by NOAA, the National Oceanic and Atmospheric Association in their state of the climate report. And this one graphic puts it right out there for you that shows seven things we expect to rise if climate is changing and they are rising.

And it shows three things we expect ought to be decreasing if climate is changing and voila, they are decreasing. So right there, we could take every single one of them, parse it out and ask, how do we actually know this? But you know what, we're going to move on because I only have a few minutes. So let me just say if you've got further questions about the actual science, we could entertain them a little bit later.

But I'm an aquatic ecologist. I am not actually a climate scientist and in fact from my bio, you might have gathered, but I don't do a great deal of actual original research in the sciences, in part because I spend a lot of time loving people and talking about hard conversations. And because of that, I talk a lot about the science and that's really my role.

Nonetheless, I am an aquatic ecologist. So I just want to say that climate change is in a matrix of this concept that there are boundaries to our planet. That idea of planetary boundaries, that phrase, was first used by Rockstrom et al.

And a 2009 paper in which they describe nine different planetary processes that humans are changing. And for each one, they try to figure out how much of humans done and what are the potential boundaries beyond which we would hit a tipping point. And where, how are we doing? And this graphic shows what the top science estimates are for our impacts on the global world.

So one of the things I want you to walk away from is climate change is big. It is potentially very scary, but it's not the only thing happening in the world at the same time. And in fact, some of the solutions for climate change solve other problems we are also causing.

That is, we need to be looking for joint solutions that solve multiple problems at the same time. So why does climate change matter? Well, I'm not going to spell it out entirely because I know John Knowles is going to talk about some of that as well. But this is again, back to NASA, three quick pictures of what they describe rise in fires in drought and floods in major storms potentially.

But you know, everybody cares about the place they live. So let's talk about Tennessee for a while. You have those 129 freshwater mussels.

You've got those 320 species of fish. You've got more crayfish species than I can shake a stick at and 56 types of salamanders. I have died and gone to heaven, I think, because I'm an aquatic ecologist.

So this is my kind of place. And they live here because of a mixture of going up those mountains, finding all those little niches, living in tiny headwater streams. The diversification of evolutionarily is amazing here.

Climate change will change that some. But maybe if you were expecting me to say it's going to go to hell and have basket in Tennessee tomorrow. Uh-uh.

This is what it is likely to affect forests and agriculture. Public health think Lyme disease or Zika virus or who knows what's going to be moving up your way. And I do know you've got more than 150 miles of rivers and streams that are closed to public use because of bacteria.

And that will certainly increase within increasing temperature. But also most of the water precipitation, which is expected to come to Tennessee that's going to increase that will come during the winter and not during the summer when agriculture needs it, which means you are likely to see both an increase in floods and an increase in drought and how that will play out isn't really clear. And then some of you, any hunters in here? This isn't probably a giant hunting crew, but those of you go out and want to hunt for waterfowl, they will be heavily impacted by their breeding and feeding sites up in that Prairie, a pothole, wetland in the Midwest and up in Canada.

And those sites are likely to lead to a dramatic loss of waterfowl. But I mentioned that Tennessee isn't going to be the first place to feel the effects. So most people feel regional, but you know what? We have to look at the world to see the biggest defects.

And this just came out on March 1st. This is from NASA as well, where newest research says that a drought in the eastern Mediterranean is the worst of the past 900 years. And some of you know that a study came out in the fall that directly said that very large droughts in Syria directly helped contribute to the conflicts there and have led to those large numbers of refugees.

So climate change is real, there's a lot of information about it, it will have local effects, it will have worldwide effects, and we're going to move on. Let me just make a couple of comments about my own faith journey. I grew up in Pennsylvania, so that's a beautiful picture of Pennsylvania near where I grew up.

And I love the outdoors. I have a passionate love of the world, the natural world and of people and of God. My parents are Christians and I was taught from a young age that part of being a Christian was to care about the natural world.

And probably the most important portion of my own upbringing within the Christian tradition was attending Mennonite schools. Now Mennonites are from the Anabaptist tradition, if you're not familiar with them, they're a pacifist group. And I was taught from a young age that you eat low on the food chain so you can feed more people with the same resources that care of other people requires a protection of the environment and is a part of peacemaking.

That seeking justice for others is a part of moving out your faith. When I went away to college, I had a giant crisis in which I wondered, can I be a scientist and a Christian? And I wondered, how can I be a person of faith in a world that is as broken as this? I saw the history of brutality human to human and my heart was broken. And I saw the history of brutality human to the natural world and my heart was rebroken.

And sometimes my heart is still broken. But in that period of time, which was quite extensive and very painful, I ended up coming back to the person of Jesus. And I looked at the words of Jesus and Jesus was calling for humans to behave in a way that was

upside down to the way I see the world work, but it resonated with me as the right way.

I saw Jesus call people to be unselfish, to care about the poor, to not be all about themselves. And I saw commands that if I thought, if we actually did that, it would be a better world. And it was so compelling to me that I said, okay, I'm choosing this again, and we're walking forward.

And that's been where I am. Now, I have only a few more minutes, so I want to make sure I actually talk about the main ideas of this. The phrase, faith, open love comes from a part of the Bible.

It's in a book called First Corinthians and a chapter called 13, which is the one everybody says at weddings, the love chapter. And now these three remain. See, that was my invitation of a minister at a wedding.

Okay, but the greatest of these is love. And I believe that. And in fact, my own view of how faith, hope, and love relate to climate change is that I have a faith.

It causes me to love. And that love is then going to drive and empower hope. So let's watch that.

In December of 2011, I was able to be the lead author on a document put out by the National Association of Evangelicals called "Loving the least of these, addressing a changing environment." The goal of this was to make a case to people who were not thinking about climate change that in fact, you could not possibly love your neighbor and you certainly couldn't take care of the poor if you didn't think that climate change mattered. In this, we argued that poor people cannot afford mitigation, that poor people cannot afford the cost of adaptation, that they are more likely to be affected by conflict and more likely to end up being environmental refugees. That is, all of the teachings of Christ said, say, you need to take care of the poor.

You could not be done if you didn't care about climate change. That came out very shortly after a significant event in 2010, which was a worldwide Congress called the "Lusan movement," that met in Cape Town, South Africa. The "Lusan movement" was started by Billy Graham in the 1970s and it's only met a few times, but it is a gathering of people with similar faith commitments from across the whole world, in some part of the world, to hatch out.

What does this mean about living in our world today? And this document mattered. They made a document in which they said this, "We cannot separate our relationship to Christ from how we act in relationship to the earth." Creation care is a gospel issue. Gospel means the good news and it's a word that evangelical Christians use a lot.

It may be familiar or not to the rest of you, but this actually meant that as an entire globe, people with a similar faith commitment were saying, "Wow, we have to be on

board about taking care of the environment in a way we haven't been so far." Out of that, spraying a group that met in 2012 in Jamaica to talk about creation care and what it means for evangelical Christians. And they came up with the, with a whole statement you can find, but they boiled down to two ideas. Creation care is a gospel issue and we are faced with a crisis that is pressing urgent and must be resolved.

At the same time that this was happening, the Christian Reformed Church was going through its own thinking process and they put out a major document on creation care that said similar things. So we have faith and we have made an argument that to love others, you have to be working out to this by taking care of the environment, but where does hope come from? Why do you get up in the morning and have any kind of hope? And I have to go back to 1 Corinthians which says, "Love, that's love, bears all things, believes all things and hopes all things and endures all things." That is, it is the nature of love to hope. Now, Wendell Berry, the patron saint of many of us who care about the environment, says, "Be joyful even though you have considered all the facts." There is a practical side to being hopeful and that is you can't do anything useful if you're not.

So this is another way to say that same thing and this is from a chapter in a book called Creation Care in the Gospel that is going to come out in just a couple of weeks and I have a chapter in there too. But I don't even quote my own chapter. Faith, hope and love are mutually engaging, mutually sustaining, mutually enhancing and each is necessary for the flourishing of others, says Richard Malcolm, author of this chapter.

Among other things he says about love, Paul, the apostle, says that believing all things, that it believes all things and it hopes all things and is the cause. So Malcolm claims that we could divide hope into proximal hope and ultimate hope. For Christians philosophically our ultimate hope is in God.

But your proximal hope might come from things that are current and I am going to say some things that make me hopeful. One is just the movement that I see both within the Christian community in which I engage but also in the world at large. This book by Jonathan Mu and Robert White came out in 2014 called Let Creation Rejoice and the whole thing is about hope.

It's got a whole chapter on climate change. How devastating it is, where we are headed and how we should be hopeful and also make a difference. I went to a conference in 2014 called Hope in a Time of Crisis Creation Care in the Mission of the Church.

I also though have some other proximal moments of hope and some have to do with the nature of living today. Today we have a lot of opportunities that were not available to me when I was coming out of college. You couldn't make a nonprofit with five bucks and a smartphone and today you can.

So one of the things that has happened has been people in dire circumstances are

innovating wonderfully with small amounts of equipment and this is a woman doing so. Some of you may have seen things like this, Leader of Light program. How many of you have heard of this? Yeah, super cool, very innovative.

I have another version of Otaku which I have like 15 slides like this. All sorts of things, it slums all over the world, rich places all over the world. All sorts of innovative ideas that people are moving forward with and I think that energy and drive is very exciting even at the same time that the issues we face are very concerning.

And then finally I have to say that I am encouraged by some of the other groups working on these things. So a Sable Institute of Environmental Studies was mentioned. A ROCHA is a group working on conservation and mobilizing Christians for that.

Groups like Christians for the mountains that work here in Appalachia and others are working in conservation. So I'm going to just leave us with how thrilled I am to be a part of this conversation on gay folk and wealth. I welcome what you have to say and I'm going to thank you for the part.

By the way, those were wonderful remarks. I very much enjoyed what you had to say and inspired in fact by your words and your emotion. That's great.

I've got just a few minutes here and so what I want to do is several things. One, I want to talk a little bit about the relationship between carbon emissions and climate change because I don't think the science is very well understood even by lots of educated people. So I want to say a little bit about that.

So my first bit is going to be about science. And then I want to address maybe a little bit about my journey into all this and then conclude with some brief thoughts about faith, hope and love and their relation to my understanding of climate change. So I'm an environmental ethicist.

I'm a fairly skeptical guy when it comes to religions. And so I don't profess a particular religion, although I go to a Unitarian church on occasion. A lot of my view of the world is shaped by my understanding of the science.

And so I want to talk to you a little bit about what I understand the science to be telling us. So I'll cut right to the chase. Question, how many people are we killing with climate change? Estimates vary.

There are a number of studies that have been done on this by such agencies as the World Health Organization, Development Research Associates, Global Humanitarian Reform and so on. They all range in the hundreds of thousands annually, currently, and the projections are for significant increases over the next few decades. So just last week, the World Health, no, this was, wasn't last week.

It was recently the World Health Organization came out with an estimate of 250,000 deaths by malnutrition due to climate change in the period between 2030 and 2050, but that's annually, 250,000 annually. An article this week in the Lancet, sorry, that 250,000 was by disease. And then the other article I mentioned is in the Lancet, which is a public health and medical journal.

And it also said 250,000, but this was in particular from malnutrition. So these are various causes. Development Research Associates projects 700,000 annually by 2030 from all causes.

And they looked at a larger range of things, including droughts and extreme weather events and so on. Now, those are annual figures. And we know that climate change doesn't stop in the next couple of decades.

Even if we manage to get control of it, it will take us many decades to stabilize the temperature and then start to bring it down if we do that. So we're looking at significant casualties at least through the end of the century. And that means tens of millions, minimally tens of millions of casualties.

That is the cost of fossil fuel. That's the actual cost of fossil fuel in terms of human lives. And Dr. Burs was talking about the relationship between climate victimization and poverty.

About 90% of those will be impoverished areas, particularly in Africa and in Southeast Asia. That's where the majority of those climate deaths are expected to occur. We in Tennessee, in the United States, where we have a lot of money and a lot of ways to protect ourselves will not be that badly impacted.

Although there will be people killed by storms and the spread of tropical diseases and so on. Those casualties are going to take place among the world's poor. So the question is how long does this go on then? How long do those deaths continue? We talked about the next state of the end of the century, 2100.

They're going to continue that long. Even if we get our act together tomorrow, they're going to continue that long. How long? But one of the recent studies, this is Richard Zeevey writing in the Proceedings of the National Academy of Sciences, 23,000 to 165,000 years.

That's the best science we've got. Talking about hundreds, not just hundreds, we're talking about thousands, not just thousands, but tens of thousands of years of elevated temperature. We will adapt to be elevated temperatures.

Human beings are very resourceful. We will learn to live in a much warmer world. But there will be a price to pay for living in a very much warmer world.



The price will be among other things, military conflict. We had a talk last year. Some of you may have been there at the Baker Center, retired Marine Corps General, retired British Navy Admiral, talking about the military preparations of their nations for the coming climate change.

If anybody here is interested in think, think, think, skeptical about climate change. I invite you to read the Pentagon's reports on climate change and the seriousness with which the Pentagon takes this situation. As Dr. Burs said, we're looking at the potential, not just potential, we're looking at refugees now from Syria, being a huge major problem in Europe, lots of suffering.

Any events set off in part by climate change, or at least there's a good reason to believe that it has been set off by climate change. I've just talked about human life so far. We could also talk about non-human life.

There are quite a few biologists now who are talking about the possibility of a sixth mass extinction. The last mass extinction occurred about 65 million years ago when an asteroid hit the earth and was accompanied by a lot of volcanic eruptions. That was the event that killed the dinosaur, so it was a major change in the Earth's biota.

Many biologists are beginning to fear that as a result of not only climate change but habitat destruction and other changes at the human race is making on the Earth. We could be precipitating a sixth mass extinction. That will not happen in your lifetime.

It'll take a couple of hundred years to occur, but that's faster than historic mass extinctions. That is something whose effects last not tens of thousands of years, but millions of years. It takes biodiversity millions of years to recover from a mass extinction.

So that's the scale of the thing that we're talking about. That's the scale of the effects that we're talking about. That's the seriousness of the issue.

So that's the science part. That's what I wanted to get out of the way. Well, no, there's a second part to it.

The second part is, what does that have to do with driving our cars? What does that have to do with having lights on or running an air conditioner? I invite you to consider two facts. These are very well-established facts. Extremely well-established facts.

The first is that the maximum temperature that the Earth will reach due to climate change as a result is directly or almost directly proportional to carbon emissions, the gross carbon emissions. Every bit of carbon we put into the atmosphere has the effect of raising the temperature. You don't believe that.

Understand the physics here. Every single carbon molecule that we put into the atmosphere is capable of absorbing infrared radiation, which is radiated back from the

surface of the Earth as a result of the sun's warming. That's radiation that would normally escape out into space.

That's the Earth's natural cooling system. Every single molecule of carbon dioxide we put in the atmosphere can absorb some of that radiation, which is then circulated in the environment as heat. That means every emission that we make, every carbon emission that we do, every time we burn fossil fuels we contribute to this.

That's one of the two facts. The other is that the harm increases with temperature. The hotter the Earth gets, the more harm.

The more tropical diseases are spread, the greater the the intensity of extreme weather events, the greater the droughts, the greater the flooding, the higher the sea level rise, the greater the melting of ice. All those effects increase with temperature increase. Those are indisputable facts.

Now combine that with the duration. Tens of thousands of years. You're not talking about a harm like somebody shoots a gun and somebody dies.

You're not talking about a harm like somebody emits a toxic chemical and people get sick. You're talking about a harm that's caused by the introduction of carbon into the atmosphere, which continues to create new harm, each generation, every generation, for an extremely long period of time. These figures don't have to be even very close.

If anything approximately like that is true. We're talking about enormous effects from small emissions. The fossil fuel era is coming to an end within the next couple of centuries.

We can't burn much more fossil fuel. We know that. Eventually we'll run out.

If we do that, we're going to raise the earth's temperature beyond the point of human habitability over most of the earth. So that's impossible. So in that time we will have released all that carbon which will cause the disruption of the earth for a period of tens of thousands of years and if we have a mass extinction millions of years.

So that's the point. That means we've got to do everything we can to stop emitting carbon. This is a responsibility for governments.

It's a responsibility for corporations and I think it's a responsibility for you and me. The average American release is, I don't know, I forget the number of tons of carbon into the atmosphere over a lifetime. But it's not an insignificant number.

If you think about how the effect of that will ramify down tens of thousands of years and all the harms to which that will contribute. So every emission matters. Every emission matters.

We've got to keep fossil fuels in the ground. We've got to make sure that that carbon is not released. Okay, so just a few brief words on faith, hope and love.

I want to reverse those. I think you did the same thing. You did the opposite order.

You started with love and I'm going to do the same thing and I thought of this before we talked. So this is not, I'm not like copying, right? It's in my notes you can see. I want to start about out with love because for me this whole thing began, my involvement with this whole thing began with a lifetime love affair with the natural world.

I love the mountains here. I love lakes. I love rivers.

I love the ocean. I've always done that from the time I was a little kid. I love being outside.

So I love natural life. Maybe sometimes even better than I love people and you're better with people. Sometimes I get really frustrated with people.

I sometimes feel a lot more comfortable in nature. But I love, and it's that love that keeps me going. I want to protect what it is that I can.

My faith tends to be empirical in the sense that I have a tremendous sense of the resilience of life. Having understood what I've understood just from science education about what life has undergone in the last three and a half billion years, we are not going to sterilize the planet. We are not going to destroy the planet.

We cannot get rid of life. It will persist. It's persisted under incredibly difficult conditions much more severe than anything we can throw at it.

Life will survive. And that's part of my faith. And it's just grounded in natural history.

We know that life can survive incredibly difficult circumstances. The other part of that faith though is, so I guess you might even call that belief. I like to make a distinction between belief and faith.

I believe that. I believe that. I also believe that humans are going to survive.

We're not going to wipe ourselves out. We're really smart. We're really adaptive.

Eventually the human race will go extinct. But it's going to take a long time. It's not going to happen due to climate change.

We could talk about it. If you want, I've got reasons for that. But let's just leave it at that but there's also a faith that's just action.

That's just doing something even without the good reason to believe that it's going to make any difference because somebody needs to be doing something because it

matters what we do. And I don't know where that faith comes from but I believe that. I believe that we really ought everyone of us to have the faith to think that we ought to do something.

That it will matter what actions we take as individuals. And finally hope. I've written a lot on this so I could talk for hours about hope.

But the hope comes out of that. As you said, it comes out of love. It comes out of love.

You love something. You automatically hope for it. But it also is, I see hope as a fundamental human need.

If you're going to live a meaningful life, you have to have hope. Life without hope is a life in despair and that's not a meaningful human life. So hope is a fundamental human need.

And then the question is how do you get it? This is one thing I learned from John Hardwick over there. John taught me this many years ago. If all you care about is yourself, then when you come to die, everything you care about dies with you.

If you care about others, you can still hope. You can still hope. And I call that self-transcendence.

A lot of other people call it self-transcendence too. I like the word self-transcendence. And the interesting thing to me is about self-transcendence is the more widely self-transcendent you are capable of being the more you have to hope for.

And the less what happens to you matters. So wide self-transcendence is sustainable self-transcendence. It's self-transcendence that you can carry with you to the end of life.

And so you can then your hope can be in others, not in yourself. And those others don't have to be human. They can be the creatures that live in the Great Smoky Mountains.

They can be, as I said in one of my papers, the red-tailed hawks that fly over the hill where I live, that I love. I love those hawks. So for me, hope is self-transcendence.

But self-transcendence, if you're going to be a person who cares about others, then you have to do something. Caring is not just something you feel. It's something that's part of your life.

It's part of your action. And so caring naturally leads to some kind of action. And that's where I think I'll stop looking to carry that out in the conversation.

Thank you very much. I can't really appreciate your comments and your passion for this topic. I want to, since we're reversing orders up here, let me reverse the order of our conversation from the order that you all talked about, these things.

And you went from the more practical what do we need to do to the more theoretical was faith, hope, and love. Let's start with faith, hope, and love. And let's talk about, or you could do it, love, faith, and hope if you want.

That's fine. But what I wanted to ask first and just kick things off with is, Dorothy, you're coming from an academic perspective that's informed by your faith. And John, you're coming from an academic perspective that's more secular in nature.

And I'd like to hear how your ideas of faith, hope, and love, and whatever order you want to put them in, have they converge, how their complementary to each other, but also have their divergent, how they're different from each other. So if we could start there and go wherever you take us. You mean between the two of us? Yes.

So I can say one difference is probably going to be that the notion of a God or of Jesus, a Savior, doesn't fit into. My way of thinking about things, certainly not to the degree it does to yours. I'm not a raging atheist, but I guess I'd say I'm an atheist or an agnostic if you have some vague conception of God.

But I do have a sense that there's something extraordinary about life itself. And if you think of, I don't know if the term spiritual is the right term here, but life itself affects me the way church affects some people, I think. I have religious experiences in nature.

I've never had one in a church. And so it does, and what I attach that to is not the notion of a God, but the notion of the living world. I think we would have a lot of similarities to me when you were talking about people have to have hope.

There's a practical side to it. And in fact, it's very similar to the practical need to believe that the universe is knowable. I mean, you couldn't get out of bed and choose where to put your feet or whether or not you could put clothing on.

I mean, you couldn't do anything if you didn't believe that. So sometimes that belief is really just a practical choice. Well, there's a certain practical choice to hope, even though I think we both would say it comes out of love.

You hope is empowered by the fact that you love things. I have had my own transcendent spiritual experiences, and I did credit them to God, but they were with microscopes, and they were in wetlands. And I, there's nothing better than a well.

I mean, there's, I mean that actually. There's just, so I guess I would say I'm right with you, except I did end up back at God. And I would say one of the parts that were just so not disagree, but that we differ on is the God piece.

And one of the reasons I just sort of stubbornly keep ending back there is I think this sense of sin. And I think it's because I personally fail to live up to my own deeply held beliefs regularly. And I regularly take the short option and I regularly do the lazy thing.

And I regularly justify myself. And I know you all do do. And I just, and I don't scorn you for that because I'm right in there in the human condition, but that is so consistent with my belief that people are just beautiful and loved and also sinful.

But it also means that I don't think there's a technological fix for environmental problems. And I think there are the problems that we face are in this category of things that Garrett Harden called "Provis for which there is no technological solution." And in his famous 1968 essay on the tragedy of the commons, he talks about how you can't technofix yourself out of things. One of the things I've seen as a person who cares about the environment is every time we get a new technology that could save energy.

Instead of saving energy, we actually do more of something. Have you seen that? That should be a problem. That's not what we're trying to do.

And I think fundamentally, I just keep coming back to I too need to believe that our actions matter. And I do. But part of the reason I do is because actually my entire life view is imbued with a sense that there's an eternal component to the world and that everything we do matters, everything we do now matters.

And yeah, so okay, I've said nothing. I'm not going to ask all the questions. Well, I had a thought here.

It's not necessarily connected with what you just said. But I'll see it anyway. I deal every day with one of the gloomiest outlooks that one could have on life.

It's not me. It's that I'm dealing with this idea of climate change. And I think long term, that's part of the work that I do is not thinking just for the next 100 years.

Let's think about the next 1000. Let's think about the next 10,000. Looks really bad.

I am absolutely convinced that at least the young people here will see great tragedies in their lifetimes. You'll see lots and lots of death and suffering as a result of what we've done to this planet. But I'm also just as firmly convinced and here's where the faith lies for me.

That just because they're inevitably going to be great tragedies, that doesn't give us any reason to accede to still greater tragedies. We can still do something that's important and it's going to change the course of history for the better. And we can do that individually and it won't do much or we can do that together and it'll do a lot.

And, you know, one of the things that frustrates me more than anything else is the polarization in this nation particularly between conservatives and liberals, Christians and non-Christians. All these lines that divide us. If we can work together with people with whom we share deep disagreements on common goals that we know are the right goals, that we know are the important goals.

We have an opportunity to accomplish a lot pretty quickly. So even though we do disagree about things like God, that needn't keep us from working together and accomplishing great things. I agree wholeheartedly and I was we were saying in our earlier conversation that one of my philosophical commitments is to agree with people when I disagree with them and disagree with them when I disagree with them.

And, you know, that sounds very simple but it is remarkably difficult to do. And I think it's more difficult in the political climate in America today, increasingly so. And I'm not completely sure I understand why but very often what happens is you have a group you mostly agree with and then you admit that you don't agree about one thing that shot out of the group into space.

Has that ever happened to you? Yeah, or, you know, anyway, if you've ever seen that happen to somebody. So one of the things that I think is really important is to try and uphold people who live in narrow spaces who are or actually cultivate a desire for moderate voices to support moderate voices and cross-talking voices. So I think we'd really be an agreement on that and I appreciate this here.

Yeah, and thanks to Julian for making this possible because this is exactly the sort of thing that he's talking about. Thank you, it's been a pleasure. You alluded to, at least Dorothy, primarily did, the conflict, I guess, the struggle we have in this country between science, the idea of science, and also the idea of religious faith and often there's a tension or even an outright hostility between the two.

Could you talk a little about that? I think it's partly the responsibility in the fault of the scientists and intellectuals, frankly, because we tend to look down our noses at people who don't know the science and who don't disagree with us and don't listen. And if we're ever going to get some kind of common action, it won't be among everybody, but at least among a large mass of people, we've got to listen to one another. We've got to hear each other.

And I think people who feel threatened by science and just close it off, they're not listening. And the scientists are not listening to the concerns of those who feel threatened by science. They feel threatened by these people.

So everybody's down in their trenches taking little potshots at each other and they have a lot in common that they just come out and talk in many cases. And listen, mostly listen. I was a remarkably shy child and I was always conflict diverse.

And then as an adult, I sort of came out of my shell as I unfurled, but I still don't prefer conflict. And I just decided at some point, sort of like a game of whack-a-mole. And there's one thing I'm willing to stand up for.

And it's going to be the environment and God. Like that, this is a conversation that

should be happening with churches, that people of faith should be included in the conversation with scientists that we have to care for the environment. This is going to be my one thing.

I stick my head above. Of course, in their daily life, you do about other things too, and I vote and all that. But I think that sense that we live in a culture that has promoted a conflict model of the way different groups interrelate is so dysfunctional that anything you can do to fight against it is a good thing.

And I have to say that some of the time I experience that kind of of dysfunction, but actually lots of people don't have a conflict model between science and religious belief for a variety of religions. I mean, and so it's not the only way to view the universe. And it isn't the only way, the only lived experience of people that are scientists and people of faith.

And so I guess I would just encourage sort of a broader view that isn't all about conflict. What do we say to our friends who are people of faith and they don't trust the science? Like maybe they say, oh, well, they used to call it global warming, and now they call it climate change. Or they say, they used to say that everybody knows that fat causes heart disease, and now they change their mind.

So they say there's a fundamental mistrust of science. So they say, this is what you say today, but five years from now, how do we know you'll say the same thing? What do you say to that? Here's one thing I would say that when those people are having heart problems, they go to see the doctor, and the doctor relies on science. Now maybe not, maybe they're also praying, I'm hoping for a miracle, but they're going to see the doctor.

They do believe in science. They just don't want to believe in certain parts of science. And so the question is why? Why do you not want to believe in climate science? We really believe in medical science, you're willing to trust your life to medical science in some cases.

Why don't you want to believe in climate science? And there I think we need to listen to the answer because people are acting out of fear, and those fears need to be addressed before this issue can be dealt with in an effective way. We got to understand what those fears are and do something to address those fears. I would say let's just quickly knock that global climate change warming thing out.

Warming is the main result from increasing CO<sub>2</sub>, but it's hard to picture because we talk about it in terms of averages, but the world isn't average. And so the concern is not actually for the most part about the warming itself. There is the direct effect of some heat waves, but most of the effects are indirect.

So that enormous amount of heat trapped may only average to a degree around the



globe, but it actually translates into a much increased evapotranspiration in an area, and that's a drought, or it increases the water cycle, and when areas get wetter, that causes flooding. So because the actual effects were so much more than actual just a temperature, scientists said people are not getting this, what we're talking about. We're really talking about the climate is changing, and that's been sort of 20 years people have been using that term to try and get people to get their heads around what we're actually talking about.

But to the question about how science changes, this is actually not a small question. This is an enormous question, sort of a paradigmatic shift that has taken 60 years of people studying, and actually our knowledge that this was likely to happen goes back 200 years. So this is more like the development of plate tectonics than it is like this fat-clause heart disease, or is it really sugar, right? I mean, we're going to tease those things out, but it's really more like going does heart disease, you know, cause you to die, or was it something completely unrelated to your heart, right? So for my students, sometimes I try to describe it this way, but you get a little bit of information, it's like a pencil painting.

And the people that are staring while all this data comes in all over, they start saying, I think an image is forming, and one says, I think it's a cow, and the next one says, I think it's an elephant, and then they duke it out, is the cow, is it out, and people are walking, more data, more data, more data, and then something starts to gel. Well, guess what, that first elephant guy was wrong, everybody says, you're so dumb, and then they, you know, but the rest of the group starts to come in, but then there's people that are not experts, and they're walking around behind, and they're saying, I think it's a squid, and then there's people that are saying, you know, I'm not even looking at the data, I'm just listening, and they're like playing telephone, and saying, the scientists say this, and it's not even related at all to what the data are showing. But eventually then, the group says, look at these data, they're coming in, I'm seeing a dog, I'm seeing a dog, and then finally there's going to be this one person that is convinced it's an elephant, and never is going to change their mind until they die.

And, was that the wrong thing to say? Sorry about that, that's how people work. Like, there are people that by personality cannot change their minds, and there are people that are running off out the starting ain't way too soon, and then there's this massive group of people that are just carefully looking at the information, and they're going to be the people that see it first, right? And if you're like pointed the other direction, you're not going to hell, so you have to actually ask them. So why would you, did you ask why would you leave science? Was that the thing? Because what are our alternatives? Like voting? Why do you do your alternatives to that? Was there more to the question? No, that was a great answer.

I do want to circle back around to dealing with people's fear. What are people of faith afraid of, and what are science people afraid of? What are our fears and how do we deal

with them? Can I see, are you seeing about a religion of a faith in science? Are you talking about climate change? I'm talking about science and faith right now, and the reason I brought that up is because we've been talking about the science of climate change. Climate science.

So I think, I won't try to speak for religious people, but for scientists broadly to include intellectuals, what they're afraid of is their academic reputations, among other things. People, it's an in-group like any other in-group, and skepticism is a hallmark of academics, and people don't want to be seen as non-skeptical or worse credulous. And so they fear too close in association with religion.

And it seems pretty straightforward to me, at least for that group. Let me say as a scientist, I feel that too. Like I'm out as a Christian, I'm a teacher at a Christian school.

However, when I'm with a lot of scientists, sometimes I'm afraid they'll think I'm really stupid. And sometimes that happens. And I think, dang, you know, like I, there is sort of I don't know, a sense that you can't go there, or that you can't cut somebody, you can't believe that there is intelligent as you are if that's a part of it.

But what are people of faith who don't believe science afraid of? You know, as a scientist, that is hard for me to relate to, and it's not something I could, I feel like I could really answer. That's not a part of my faith commitment. But I do know people like that.

And I guess sometimes they're afraid of being disrespected. It's probably part of it. Like disrespected by their own faith community? No, no, I mean, by the world at large.

That's a part of it. I realize that I am a scientist, you know, so I'm sort of extrapolated from conversations with other people. What can we do about our fear about science or our fear about faith? Or should we do anything? It's love.

It's love. That's what you would say too. Okay.

You have to love other people. You're doing it really. You're bringing people together to talk.

That's how it's done. It's about respecting other people. And whenever you can, supporting moderate voices of me, that's got to be, you know, I think we need a great deal more commitment in society to just the goal of simple discourse as a good.

So thank you. Good. Good.

Well, both of you started out with a whole lot of passion. That more passion than I was probably expecting. If we can go back there, I want to hear your passion.

And I want to hear you talk about moving forward, moving into hope, moving into faith, and being grounded in love. Let me go back there. Yeah.

I'll say something about that. I mean, you all saw that I feel a lot about this issue. It's hard for me to restrain my emotion when I talk about it.

This is long standing with me because, well, it's grounded. It's grounded, first of all, in that love that I have for nature. And it's grounded in a frustration when I see so much of it being destroyed.

This really came to a head for me back in 1985. And my daughter's up there. She knows this.

Yeah. That's when she was born. And I began thinking about the world that she would grow up in.

No, I didn't. I began being depressed is what it was. I was depressed when she was born.

And I didn't understand it. But I came to understand it after a year or two. I understood it wasn't depression.

It was anger. So what you see in me is anger. It's really anger.

And it's anger at the destruction of life. And when I realized that, I thought, there's something I need to do here. And that something is do the best I can to defend life against that destruction.

That's when I became an environmental activist. And I've been doing that for 30 years. And it was a funny thing.

The minute, I won't say the minute, but as soon as I became an environmental activist, that depression was gone. And that became energy. And the energy is what's carried me.

It's carried me for 30 years. That's my passion. That's the source of it.

Thank you. I'm not sure what to add to that. Except that as you cry, I cry too.

I mean, I'm absolutely telling the truth when I say I'm very hopeful about many things. But there are things I can't allow myself to think about. Or I have to do it in small doses.

Elephants, rhinoceros, you know, my heart almost stops to think about what we've done to grand creatures. And I'm with you on that, exactly. And even though I have a hope, and even though I have a faith in God, I don't think that God will magically step in and save us from screwing up.

I don't have a magical thinking that says, even though we don't deserve it, that elephants won't be killed off because someone will stop us. So I have written now three times on an environmental science text, what they come out every three years. And

environmental science is the only thing I can think of that deserves to come out every day because it's out of date by the time you print it.

But every time I get to certain places, species loss is one of them. It's like my heart stops and I just have to breathe. I have to take care of myself.

And I will say that when I, in 1985, I was in my own big stadium college. That was when I gave up Russian literature. I have to say.

Like that does it. There's some moments where you have to take care of yourself. No offense if you're a Russian literature major or something.

By which I just say that you somewhat have to protect yourself. And the way I justify that, at least, is to say no human being can face all of the reality of the brokenness of the world at one time. So you can only do one piece or you can only face one piece.

There's no way to access all of that at once and be okay. So it's okay. Ranisha Ferry says protect yourself if you have to.

But you can't protect yourself by choosing to be ignorant for life. So I think the two temptations are to deliberately be willfully ignorant or to despair. And somehow we have to navigate a walkway in between.

For me that that walkway has been impossible without a belief in God. And maybe that makes me a weakling or maybe that makes me like wise to the fact that God is. You know, I don't, I can't speak to that.

But that's where I'm at. Which I'd leave us with. What we can do.

I mean, John especially your comments is such a huge problem. I mean you're talking thousands and millions and you know of years and people and Dorothy you were in the same bank. Not as much I guess.

And I'm just one person. What can I do? What can we do? Everybody can burn less carbon. That's not going to make a huge difference.

And that's not going to be enough. And that's not what, that's not all of what you can do. But you can drive your car less.

That's one thing. You can think of other ways to burn less carbon. But it's not going to happen without political action.

If you're a student, one of the things you can do is support a divestment campaign. To get your university to divest from investments in fossil fuel corporations and to support renewable energy. That is the single most effective thing that can be done at the university level by students.

To change the economic picture which will help to transform the climate picture. Get out there and vote. Everybody's got a vote.

Vote for people who are going to fix the problem are not just going to deny it or argue about it. But who have a plan to work with it? And love? Love something. Protect it.

I hardly agree. I think a lot of times when people ask me that question they want me to list five easy steps. Well, if you would just put that recycling in the right place or if we just didn't have that water bottle.

That was a joke. I laughed. But it's remarkable how it requires, it requires individuals all to believe this and and want to change it.

Because the people making decisions can't make those decisions if they don't think they're going to have the backing of the constituents, right? So your elected leaders need to know you will back them if they do unpopular things. And unpopular things, it's almost always unpopular to think more than two years in advance. So everything that we do that is short term good and long term bad.

You have to say no to it and you have to tell your elected representatives to say no to that. But I do agree that it's going to take huge systematic change and yet it requires all a lot of individuals to be a part of that. And so let me give you a couple of hopeful stories of changes that have occurred that I've seen.

And this is part of my hope too is when I came out of college, just like young people today, there wasn't as many ways to do anything. There weren't as many organizations already working on it. There wasn't as much.

And nowadays there's a lot of people trying and there's a lot of excitement about things that could be done. There's smart cities and there's all sorts of urban and regional planning that's planning for climate change. And there's all sorts of careers in this.

And so I just want to be a little bit encouraging that you're not alone if you care about these things and there's groups trying to work on them. And I know a lot of groups that are Christian that are trying to work on them. But if you're from some other group, go for it.

There's all sorts of things going on. So I would not feel like you have to be the only person that cares about this. Thank you.

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