

# AI and You

Transcript

Guest: Thomas Homer-Dixon

Episode 25

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Welcome to episode 25. Today's guest is Thomas Homer-Dixon, and we are going to talk about hope. Now I know that sounds like it's going to be a politician talking about their campaign, and didn't we just finally get done with elections? It's okay, don't worry; Thomas isn't a politician, and when we do have one on we'll talk about something more substantive than campaign rhetoric.

Thomas is director of the new Cascade Institute at Royal Roads University in Victoria, British Columbia. He holds a University Research Chair in the Faculty of Environment at the University of Waterloo where he was founding director of their Institute for Complexity and Innovation. He has a PhD from MIT in international relations, defense and arms control policy, and conflict theory, which gives you a good idea of what the Cascade Institute is all about. They are a research center "addressing the full range of humanity's converging environmental, economic, political, technological, and health crises." Now you see where we come in. Artificial intelligence is perhaps the most extreme example of dual-use technology there is, in that it's capable of producing equally beneficial and harmful effects for us all the way out to utopia versus extinction, and that puts it on the Cascade Institute's radar.

Thomas' latest book is called *Commanding Hope* – I know, it sounds like he's running for office – but it's addressing an issue that often gets neglected in considering crises, which is how do we manage our reaction to it? Because if we let doubt or despair steal our hope, it's hard to be motivated to do what we need to do. So Thomas brings an academic methodology to bear on understanding the dynamics of how our psychology is shaped by crisis and how we can use that understanding to effect positive change. One of the examples he uses in the book is Stephanie May, who as a housewife in Connecticut in the fifties started a movement to stop atmospheric nuclear weapon testing. She had no resources other than a desire to make a difference and the commitment to do that. Just like Greta Thunberg who started with her school strike for climate change.

So let's find out more about *Commanding Hope*, and the Cascade Institute, in part 1 of the interview with Thomas Homer-Dixon.

All right, here we are. Tad, Thomas Homer Dixon, welcome to the show.

Very glad to be with you today.

Tell us about your background, how you got into this field, what you call it, what you call what you do, and why it's important to you.

I'm a difficult person to categorize. When people say, "What's your discipline?" I don't really know how to answer. I'm trained formally in political science. I started out originally in the 1970s, at the University of Victoria, pursuing an interest in conflict theory, and especially in the

causes of the arms race between the United States and the Soviet Union. So I was very interested in what causes people to fight each other, what causes war, what caused that extraordinary investment of resources and waste of resources, building nuclear weapons. And I continued to pursue that broad range of topics through my graduate studies at MIT into the 1980s, the late 1980s. And I did my doctorate in defense and arms control studies at MIT and in theory, social psychological theories of conflict, especially group identity conflict, what was called in those days, social identity theory. But as I dug down into those theories, I started to really question the foundations of the social sciences, especially the status of what people call law-like generalizations in the social sciences and the nature of causation. That got me to think much more seriously and in a much more penetrating way than I had before about the nature of belief systems, human belief systems, and how they work as both causes and effects in our social behavior. And the other thing that happened at that point is I started to study the relationship between environmental stress and conflict in countries around the world. So in a sense, my work went onto parallel tracks at that point. The work on environment and conflict took up most of my time during the 1990s with the research group at the University of Toronto and it attracted a great deal of attention around the world, basically looking at how water scarcity, shortages of agricultural land, deforestation, perhaps climate change further down the road, which could cause major violence in between countries. And that project started to get me thinking about how societies adapt to severe stresses and how they solve their problems collectively, what determines whether they are successful solving their problems, and produced a body of work I call ingenuity theory and my first major popular book *Ingenuity Gap* in the early 2000s. And eventually, these two parallel tracks of work have come back together in this latest book, *Commanding Hope*. I'm interested again now in how human belief systems work, and how disagreements between us that are grounded in those belief systems can prevent us from solving our problems, like climate change. So it's all in some sense in this latter part of my career, come back together as an integrated set of issues. So what am I? I basically call myself a complex systems theorist. My work for the last 20 or 30 years has been grounded in complexity theory, which is a body of work that looks at basically the nonlinear behavior of highly connected systems, whether they're natural or social systems. And I use that as a basis for trying to understand, again, why people fight and how people can be more effective in solving their problems collectively.

It sounds like a background that could either have taken you into the State Department or foreign office or international diplomacy or where you are which-- Well, looking at the Cascade Institute, the mission statement, you "identify high-leverage intervention points in cognitive, institutional, and technological systems that, if effectively exploited, could shift global civilization away from a path that leads to calamity and towards one that leads to fair and sustainable prosperity." Hard to come up with a bigger goal. That's one of the foundations of this podcast and what I do. So you're tackling something very important there. It could scarcely have a larger context or aim. And I was struck by your latest book, *Commanding Hope*, about the emotional impact of it. It's not the dry recitation of socio-economic and geopolitical conflicts, it is intensely personal. Do you feel that there's an intensely personal driver here for you?

Oh, absolutely. And there has been ever since I was young. Growing up in Victoria, sort of this idyllic, calm, peaceful environment, I always regard it as just incomprehensible that people could slaughter themselves in enormous numbers, as we've seen earlier in the 20th century. So there was that bewilderment, incomprehensibility, but also, it's like so many of us, a kind of felt empathy for the people who are in those circumstances. And so that was the underlying personal motivation for pursuing Conflict Studies in the early days. But then, in the 2000s, I had children. Ben was born in 2005 and Kate was born in 2008, and I started this new book, *Commanding Hope* in 2012 when they were seven and four. It was an extraordinarily difficult book to write. At first, it wasn't about hope. It was basically a generic set of prescriptions for the future. But as the kids grew up, and as I tried and failed twice to write the book, I realized that the thing that was evoking in me the most anguish was the possibility that they would lose hope as they grew into adults, and that I had to write something for them that would help them hold on to hope and push through what could be very difficult times, try to search for a positive outcome in the future. So yes, and that's all the way through the book. I decided, you know, in my two previous trade books for general audiences, *The Ingenuity Gap* and *The Upside of Down*, I'd had plotlines, I'd had stories that had taken me around the world, adventures I'd gone on to discover facts or meet people in far corners of the world. And in this case, because Sarah and I had a family, I wasn't in a position to travel all over the world anymore, so my adventure became very personal and very emotional, and very much a home adventure. So I thought it was best in this book to make that very clear where I'm coming from. So there's an autobiographical component to the book too. The children form one of two very important narrative arcs through the book that people can keep coming back to and see where I am personally in this story.

And you do a lot of dissecting and deconstructing hope as a concept, as a principle. It actually reminds me of one of the tightropes I walk when I'm speaking and the audiences tend to divide when I'm talking about apocalyptic possibilities into those that are paralyzed with fear or [those who] want to dismiss it. And that's why I've largely stopped answering the question "Am I an optimist or a pessimist?" Because the reactions either seem to break down into, if I'm an optimist, then, "Good everything is going to be right. I don't have to worry about that." Or if I'm a pessimist, "Oh, my gosh, we're doomed. I'm going to go sit under a rock." Have you felt that kind of reaction? What do you do about that?

Yeah, I mean, that's, in some sense, a really nice way of stating the starting point for the intellectual, more conceptual voyage of the book is this effort to reconcile honesty and hope, as I put it. The more honest we are about the difficulty of the situation we face, the seriousness of the climate problem, the harder it is to hope. And yet I anchor my notion of hope in what I call honest hope. It's the first of three components; honest, astute, and then powerful hope. But I'd say that probably half the book makes the case for not only the necessity of being honest but the possibility of being honest and still having hope. So yes, I have the same reaction from my audiences. "Are you an optimist or a pessimist? Tell us should we give up and walk away or should we just convince ourselves we don't have to think about these problems because they'll go away on their own?" And, of course, neither is a workable psychological approach in our critical situation. I call myself a realist. I think optimism, both optimism, pessimism, I define these terms in the book involve selective use of data and, and the deliberate selection of data to reinforce a

preconceived, sort of temperamental bias towards either being positive about one's circumstances or negative about one's circumstances. I'd like to strip away as much as possible that bias and just look at the data and what they're telling us. Now, of course, you always have to come to those data with a certain set of filters, but you can make those filters as much as possible, not biased by your initial values so that you can see what the constraints are as we move forward, and what we have to build our hope within. It's very difficult to imagine a world that's going to warm less than two degrees, for example, and that will have manifold consequences for not just ecosystems, but societies and food production and civil stability and liberal democracy around the world. What of those consequences can we mitigate or manage, and which ones do we kind of have to live with, and just assume that those are going to be future constraints? That's part of the exercise we have to go through in grounding our hope in an honest perspective on the world and on the future. So it takes some guts, basically, to do this. And so I conclude the first third of the book, which is titled "The Necessity of Hope", with a chapter on courage, because I think hope and courage are very closely tied to each other. Aristotle made that point in a very convincing way. And I think we need to reach down inside ourselves and have the courage to be honest about the difficulty of the situation we face, and then have the courage to still have hope and to still believe that there are possibilities there that we haven't explored, that can make the world a good place for our kids. I actually am more convinced of that at the end of this process than I was at the beginning. And I'm not known as a person who is a fount of feel-good optimism, as I say at one point in the book. I actually think that there are more possibilities for novelty and positive outcomes at the end of this exercise than I did at the beginning. And so I'm more hopeful than I was. Maybe that's an indication that there's still some reasonable grounds for hope out there.

It's working, then. And as I tell audiences that are starting to feel the weight of this, I say, "Look, if you work on this long enough it inures you to the dread because you realize that it's time to work on it and do something as opposed to just sitting there feeling awful. And that that won't get you anywhere.

Or lying to yourself, like saying that the problems aren't that bad, which is the other alternative. Exactly.

Exactly. So this is a good point to talk about the Cascade Institute, what it does and why it's called that.

So the Cascade Institute is a brand new institute here at Royal Roads University on Vancouver Island. I grew up on the island. I was very interested in coming home but I also needed an environment in which I had the elbow room to be highly entrepreneurial in creating this institute. To go back to some of the things we talked about at the beginning, I'm a highly interdisciplinary person who's difficult to pigeonhole and most of the people I work with, truly brilliant young scholars I work with as part of a research lab essentially at the University of Waterloo are very similar. You can't easily pigeonhole them. You need an institution that is going to provide a venue or an environment that's very focused on pragmatic problem solving and receptive to radical interdisciplinary work. And I came to the new president at Royal Roads, University, Philip Steenkamp, and proposed this idea. And as you were indicating at the beginning, it's

almost absurdly, insanely ambitious, but when you dig down, there's some serious rationale there. The whole point of complex systems theory and complex systems science is to better understand how certain kinds of systems can change their behavior really dramatically. We call these sharp nonlinearities or in the vernacular, tipping point behavior, where they jump from one equilibrium to another. And we know enough about the systems and they can range from ecological systems, rain forests or lake systems, the freshwater lake systems to climate and ocean-atmospheric systems to the social systems like the human economy, our electrical grids or even the human brain is a nonlinear system. We know enough about how these systems work now to actually understand some of the underlying mechanisms of nonlinearity - what causes some of these systems to flip or shift suddenly from one state to another. And it's not always the case that those nonlinearities are a bad outcome. Sometimes they can be really positive outcomes. I refer to a social setting. I refer to several in the book - the collapse of the apartheid regime in South Africa in the late 1980s, early 1990s. That shift was almost entirely unanticipated by the people in that society itself, that extraordinary shift to a multiparty democracy. Almost everybody there, and I happen to have traveled there in earlier years, almost everybody thought that there was going to be a massive racial Civil War, a bloodbath in the country, and that didn't happen. The collapse of the Soviet bloc in Eastern Europe, again, remarkably peaceful. Those of us in the business who were studying the building stresses in Eastern Europe at the time didn't see how it was going to be possible for there not to be a war in that region, a massive war as those societies started to shift their political and institutional form. It didn't happen. So sometimes the big shifts can be actually very positive and not disastrous, and not collapses of systems. They're instead shifts to new states that are very positive. So the Cascade Institute is really focused on that kind of outcome. If we need to make some extraordinarily quick changes, we need to go big and fast in the world now to deal with the climate problem. What are the routes through which we can achieve those changes in as peaceful a way as possible? Are there still routes and pathways or trigger points that we can exploit to produce those kinds of outcomes? And it's a gamble but there are two or three groups in the world now doing exactly this kind of research, and Canada through the Cascade Institute is now at the front with our leading edge of that research program.

And here we are in the Cascadia region of the Pacific Northwest, but the Cascade Institute has a double meaning. That name is based on a model of some kind, is that right?

Yes, so we have a little icon or logo that we use, which is three dominoes falling over or starting to tip over. Interestingly enough, I explained the idea to my son who was 11, 12 at the time, and he said, "Oh, I'll come up with a logo." And he went off and did the domino logo within about five minutes. And we've had professionals working on [it who] never come up with anything better. So the idea of tipping dominoes is appropriate and inappropriate. It captures one important idea, which is this kind of cascade of disturbances within a system - one domino tipping into another, tipping into another. It's not so good at capturing something else that complex systems theorists realize produce nonlinear behavior, which is feedback loops, where you have a change in a system producing a series of changes that go back to affect the original change, either reinforce it or counteract it. Of course, a row of dominoes is all in one line. It's not usually constructed so it comes back to the beginning. And even if it did, all the dominoes would

have already fallen over and so you're not really going to change the state of the system at the beginning. But in a feedback loop, you get these reinforcing cycles. In the climate, a really good one would be, we're losing the Arctic sea ice, opening up open Arctic water, which is dark, which absorbs more solar radiation, which causes more sea ice to be lost. That's a positive or self-reinforcing feedback loop that's turning out to be quite disastrous for the climate. So yeah, so the Cascade Institute looks at these underlying mechanisms of nonlinearity. The falling dominoes is one way of thinking about it, feedback loop is another; there are several others. And that's part of the double entendre in the name. The other is, as you mentioned, Cascadia. This is an institute that's very much rooted in a particular culture that we have in the Cascadia biozone or bioregion on the West Coast of North America, which stretches from Northern California to Haida Gwaii and east to the mountains. It's a particular culture of much greater sensitivity and awareness of connectivity to nature, and the vitality of our natural ecosystems, and how important they are to human well-being. So the two things are right there in the name, and that's quite intentional. And interestingly enough, it's only people in the Cascadia bioregion who get the second meaning in the name. They get the dominoes right away, but they don't get Cascadia because most people outside the bioregion don't realize how rooted we are here in our identity, our natural identity.

Yes, and we very much are on Vancouver Island as I am as well.

That's the end of part one of the interview. I realize that if I step back for a bit – if I think about the perspective of someone just tuning in and hearing us talking about human belief systems and hope – it might sound like, what the heck does that have to do with AI? And one answer to that is to listen to last week's episode to hear how I answered a question I received about the uncertainty of when artificial general intelligence will arrive. When there's a huge amount of uncertainty about the scale and schedule of impactful events, they act as kind of a mirror for us, they reflect our fears and hopes and biases. And there's a huge range of those reactions for impactful events like climate change or AI, and we end up embroiled in debate and conflict about those reactions. You've only got to look at the headlines to realize that most of what's front and center in world conversations right now is subjective opinion in conflict with other subjective opinions, and the conflict causes a great deal of distress. If we're to face the challenges of future crises with our best selves then we can't afford to handicap ourselves with despair or other emotions that hold us back and sap our energy.

That of course is one dimension which we look at AI from, but it's certainly not the only one, because as I said in the first episode, we're going really broad here, so one week we might be talking with science fiction authors about conscious machines that don't exist yet, and the next week we might be talking with the CEO of a company that develops AI for robots, right now. We're aiming for a useful gestalt here, precisely because AI is going to have such far-reaching impacts.

In today's AI headlines, researchers at the Medical University of South Carolina and the University of South Florida report in the *Journal of Medical Internet Research Medical Informatics* that they have created an AI algorithm that can automatically identify patients at high risk of intentional self-harm, based on clinical notes in the electronic health record. This is important news because suicide is the tenth leading cause of death in the United States, with over 1.4 million suicide *attempts* recorded in 2018, and clinicians do not have a reliable way of predicting which patients are likely to make a suicide attempt.

The study was led by doctors Jihad Obeid and Brian Bunnell, using deep learning to analyze the unstructured text in the health record. Obviously, diagnosing mental state is not going to come from a numeric metric like temperature; it's going to be buried inside this free-form text. There was a large amount of data to train the model on. Regrettably, there is a large amount of data on people with medical records going on to commit suicide, but the doctors were able to use that for a positive purpose, because their model reached an accuracy of almost 80% with relatively high sensitivity and precision. In the future they hope to change the timeframe of predictions from six months to one year. I hardly need to say how useful this work could be.

In next week's episode we'll conclude the interview with Thomas Homer-Dixon, when we'll get his perspective on the pandemic seen through his lens of human behavior, we'll talk about the cusp moment of humanity with some historical parallels, and how to understand at a systemic level what it will take to shift our behavior at a global scale. That's next week on *AI and You*.

Until then, remember: no matter how much computers learn how to do, it's how we come together as *humans* that matters.

<http://aiandyou.net>