SCIENCE OF THE NOOSPHERE

Peter Turchin and Daron Acemoglu

with

David Sloan Wilson

David Sloan Wilson: Okay. Well, welcome, Daron Acemoglu and Peter Turchin! I am so happy to be talking with you today.

This conversation is part of a project called the Science of the Noosphere. That term was coined by Teilhard de Chardin to refer to a mental dimension to human society. And Teilhard observed that in some ways, we're just another ape species. But in other ways, we're a new evolutionary process, cultural evolution, making the origin of our own species as significant in its own way as the origin of life. And he describes small scale society as tiny grains of thought which diversified but also coalesced into larger and larger units. And extrapolating into the future, he envisioned the entire earth as a kind of superorganism with a global consciousness.

And so, that's kind of the framing for today's talk. Both of you are highly qualified to comment on the expanding scale of human society from a modern scientific perspective. But you come from very different disciplinary backgrounds. And so, I think of this conversation as a coalescence of academic cultures, as part of the coalescence that's needed more generally. And so, I'd like to begin, if we may, with having each of you describe your academic backgrounds that brought you to the study of this subject. Daron, beginning with you, what is your academic background that kind of forms the basis of your approach?

Daron Acemoglu: Thank you, David. And hi, Peter. It's great to be here. Thanks for inviting me to be part of this conversation, David. I am an economist by training and a lot of my research has been on institutional foundations of long run economic growth, prosperity, poverty, and also by implication, understanding the dynamics of institutions. For example, democracy, that seems such an amazing innovation in terms of how human affairs are organized, where it comes from, when it works, when it doesn't work. So, those were the questions that motivated me for much of my career. But over the last few years, even more closely related to the subject matter, I'm also thinking about how we have evolved from the small hunter-gatherer-forager days to building institutions for large scale cooperation and conflict and what are the feasible limits of that cooperation, in what ways we can get that cooperation without getting all of the conflict and the carnage that it has produced over centuries. So I think having this conversation with you, David, and with you, Peter, is really an important milestone for me.

DSW: That's great. And Daron, could you say more about the tradition of what I call the new institutional economics as I understand it, associated with Douglass North and when it arose? My understanding is that it arose in the 1970s and kind of in reaction to neoclassical economics which had nothing to say about institutions. And it was disenchantment with that school of economic thought that led to this institutional focus. But you know more about it than I do. So, let's hear about it from an expert.

DA: Yeah. I mean, I think from the beginning, if you look at the classic economists, institutions did play an important role in their thinking. It wasn't just neoclassical sort of reasoning about supply and demand and prices, but early stages of the economic disciplines' evolution, of course, focused on the simpler problems. It's what the economist Abe Lerner sort of said, "Economics became the queen of social sciences by focusing on solved political problems." So, politics was left in the background. And I think many scholars have tried to bring that in one way or another. Thorstein Veblen was an early proponent of that. Karl Polanyi, although not as an economist, in some ways more as a political scientist or a sociologist, and Douglass North and many of his followers.

And I think there are pluses and minuses to each approach. Douglass North, in some sense, was most compatible with neoclassical economics because he tried to incorporate it. My thinking is that in fact there are many aspects of the economics discipline that are very powerful, both as an empirical approach and as a conceptual framework. But missing in that framework is the role of power, social power, and how that power is organized. Institution is one part of it. Cooperation is another dimension. Conflict is another dimension. And I think what I have tried to do, again complimentary to what Douglass North has achieved, is bring power in its various ramifications into the economic and political discussion.

DSW: That's great. And another conversation in this series is with Josiah Ober on Greek democracy, which was a wonderful conversation that's part of this series. So, Peter, now over to you. And could I ask you to begin with your father who was a major figure in the development of Teilhardian thoughts? So first, your father, and then you.

Peter Turchin: Thank you, David, for inviting me to this conversation. And nice to meet you, Daron. I've been admiring your books and articles for a long time. Yes. Well, starting with my father is quite appropriate because he always mentioned that he considered himself as a disciple of Teilhard de Chardin. And in fact, he admired his book, The Phenomenon of Man, greatly. And he in fact styled his most important philosophical book after Teilhard's book, because my father's major book was called The Phenomenon of Science, all right? So, my father actually was by training a theoretical physicist. But then, he switched in mid career to do more what he called cybernetics. So computer science, but also mathematics. A new type of mathematics where he contributed quite a lot.

And he was very interested in applying the ideas of cybernetics to human societies. Actually, to both science, as Phenomenon of Science, the title of his book says. But also, he wrote later a book called the Inertia of Fear which actually got him into very big trouble in the Soviet Union. Remember, this was all before the Soviet Union collapsed. And there, he was extending his ideas to societies. So, let me just run a little bit ahead and say that several of his ideas I've found extremely productive. So when we start talking, he actually has a whole chapter about multilevel cultural selection, although he does not call it that way, because he wrote the book in 1970s before this concept was even I think formed.

DSW: Peter, let me break in with these timelines here. 1970s, 1980s, so on. So the 1970s, when people like Douglass North were working, that was the dark age in evolutionary theory as far as group selection was concerned. It was thoroughly rejected, would not be revived until later. And so really, evolution had very little to contribute to this topic until it itself became multilevel. 1990s, 2000, so on and so forth. So, that's the extent to which things are coming together. And when your father then anticipated multilevel selection, that was on his own basically. He wasn't getting that from evolutionary theory.

PT: Yeah. And he was coming to these ideas from a very different direction than biological evolutionists.

DSW: Yeah. So, continue.

PT: Yeah. So, he was thinking about how do complex organisms arise and how do complex societies arise. And so, he proposed a model really of first multiplication of units. So think about an annelid worm, right? Your annelid worm has many segments. And my father's thinking was that this was a general mode of evolution from simple to complex things, is that first you get multiplication of units. So, each segment is the same. But then, once that multi-segmentary organism has arisen, then you can see evolution pushing for specialization of different segments that do different things.

So, one segment becomes the head and starts to control other things. Others specialize in something else. And very soon, you have an organism in which if you look at it, you won't even see the segments, right? Because they have evolved to bear different functions and it's all integrated. And so, that is really very close to what multilevel selection later on has proposed. And here, I'm referring to the books by John Maynard Smith and Eörs Szathmáry. So, they basically were talking about major evolutionary transitions. And that was later, after my father.

DSW: Yeah. And Peter, again, we're featuring major evolutionary transitions including Eörs Szathmáry as part of this series. Our series begins with the origin of life and major biological transitions before getting to human origins and major cultural transitions. That's the sweep of our series. So anyhow, continue please.

PT: No. Unless you have questions about my father's approach, which I'm happy to answer, but I think I got the gist of it.

DSW: Oh, yeah. Now, to you. So your trajectory, which I love, I know it well, basically you're here today because of a midlife crisis is the way I remember it.

PT: Well, that's true. I always wanted to be a scientist and follow in my father's footsteps. And so, when I started in college and then graduate school, I was really fascinated by theoretical biology. And that's what I was trained as. So, I applied the tools of statistical analysis and mathematical modeling to such questions as the non-linear dynamics of animal populations, both in time and in space. So for example, congregation of animals, and let's say, proto-societies that they could actually form. And as you say, yes, when I hit 40 years old, and I thought at that point that... Basically, the big question I was working until that point was why do populations of animals go through cycles and chaos. And we saw basically the outlines of the answer. It took me a few more years to publish a book called Complex Population Dynamics where I basically put everything I knew about it. But at that point, I wanted to have a challenge. And so, instead of divorcing my wife, I divorced biology and married social sciences basically.

DSW: And so, you came up with what you call cliodynamics.

PT: So initially, this was a hobby because I was thinking back to such giants of population dynamics as Alfred Lotka and Vito Volterra, who in the 1920s really overturned the study of population dynamics, because they showed that you can get population cycles without external drivers. That was the idea that first ecologists like Charles Elton, for example, thought that the reason for these cycles is because environment changes. But Volterra and Lotka showed mathematically that cycles can arise as a result of population interactions.

And so, I was thinking at first, let's try to create some simple mathematical models of societies, their dynamics and evolution. And I started doing that. But because I've always been working at the interface between theory and data, I could not stop at just making models. I wanted to see what the data could tell us. And I was really surprised because I found that in fact, there's huge amounts of data that archeologists and historians have gathered. And that basically started me on this path of both translating verbal theories into mathematical models, deriving predictions from them, and then building large databases of historical information to test those hypotheses.

DSW: Yeah. And I think Teilhard's theme of coalescence, and then the theme of academic coalescence is really important to consider and to get these timelines. For example, the study of complexity, which basically began with people like your father, couldn't really develop without the advent of widespread computing. So that takes us into the 1970s, 80s, 90s. And now, the study of history when you entered it. I mean, there had been grand theories of history in the past, and most of them had failed, were too simplistic. And at the time that you entered it, the idea of history as a quantitative science was very new and marginal as I understand it. And so, a little bit about your approach, how that interacted with historians basically as they did their work.

PT: Well, it's still somewhat marginal as far as the historians are concerned. The discipline actually has been having quite a lot of resonance amongst social scientists. So sociologists, economic historians, anthropologists, and archeologists. And so, this is where we get the most support. We launched a journal called Cliodynamics: The Journal of Quantitative History and Cultural Evolution. Cultural evolutionists, of course, are a major source of both inspiration and support. And so, most of the researchers active in this

field, they're social scientists. And I knew from when we started that it would be hard. That many historians would be not very happy about natural scientists invading their turf.

DSW: Now why, Peter? Why? Just dwell a little bit. Why?

PT: Well, first of all, the way that history and social science are divided in the anglophone countries, is that history is considered as a humanity. It's not a science. And so most historians, they don't really care about history of science because they don't care about testing theories, for example. Of course they do, when they explain things. Anytime a historian writes some kind of narrative, they sneak some explanatory theories into it, all right? But typically, what happens is that you have accumulation of explanations. So I'll have to cite this one German historian, Alexander Demandt, who in 1984, published a book where he counted 230 hypotheses, explanations, of why Roman empire collapsed, for example. And since then, there has been a couple dozen more. So the explanations multiplied, but there is no mechanism, which is key to science, which just means rejecting some hypothesis in favor of others.

And so, that's one of the reasons. But the other reason is that historians... I would say three reasons. The first one, because the historians are not scientists. Second is because most historians love the detail, the glorious detail and the differences between societies. And I actually love that too, but they think that, that's all there should be. There are no general principles. And the third one is that most historians have not bothered to read any of the articles or books that we say. And so, most of the reactions I see on Twitter is when there is some kind of popular article talking about cliodynamics, that's all that particular historian reads. And then, they basically spew their venom on Twitter and saying how this is so horrible and so on and so forth.

DSW:I remember the first time I invited you to our campus to give a talk. We have a very highly regarded Egyptologist who came to your talk and then at the end, stormed out of the room with a disgusted look on his face. And so, that kind of said it all.

PT: Let me just add one more thing. I should end this by saying that the reception among historians actually exceeded my wildest expectations, because a very substantial minority have taken it up. So for example, if we have a chance to talk about the Seshat data bank, that thing is impossible to do without historians and other scholars of the past. So, you have more than a hundred historians who have been supporting us by volunteering their knowledge and expertise. So a substantial minority, and growing by the way, have become very good colleagues.

DSW: Yeah. And this is the time to mention Seshat, that basically what you're doing and always have done has two components. As with your biological work, there's a theoretical dimension and there's an empirical dimension. And now, with Seshat. Well, you can say it. But basically, it's the assemblage of a worldwide historical database that you kind of liken to the human genome project. So a little bit more, and then we'll launch into our past, present, and future stage of this conversation.

PT: Sure. Just a few brief words. When I started actually reading more history and reading more historical research, I was basically flabbergasted by how much is actually known about. I mean, yes, there are lots of lacunas and there are gaps in our knowledge, but there is also a huge amount of information. And furthermore, it grows very rapidly, partly as a result of new technologies, such as, for example, in archeology, we have all kinds of new techniques. But also, historians are coming up with new ways to interpret historical records. And of course, digital humanities, specifically digital history, it has been a great way to organize data.

So basically, our job was to take that knowledge and translate that into data that could be analyzable. And that turned out to be quite possible. And so, that's why we now have just the whole batch of articles that are analyzing the 2020 data of these from Seshat. Lots of great results, very interesting results. This is after ten years of hard work. And the first five or six years were really hard because it's a huge amount

of work and it also took huge amount of money, resources from the funders to effect it. But now, we are at the sweet spot where you can see the fruits of this labor.

DSW: Okay. So Daron, do you want to comment on any of this before we segue to the next past, present, future stage?

DA: No. I mean, I think I don't have anything to add. Peter gave a very nice summary of his father's work and his work. And I'm a big fan. I think quantitative methods have a huge role in helping us understand the past and understand the social forces at work. I think that I have some different emphases on some of the details and somewhat different approaches complimentary to Peter's. But we'll probably talk about some of those as we go along.

PT: And I know, Daron, that you also integrate models with data in your work. So in this respect, we're fellow travelers.

DSW: Knowing both of your work well, I see tremendous continuity. And Why Nations Fail, your great book, Daron, begins historically with the colonization of the new world and just amazing stories about that which I'll return to, and I'll raise some of those points myself. So what I want to do now is to, is do three segments past present future and to have Peter you, lead the first segment. Let's cover Teilhard's ground from the original of our species in very small scale societies, tiny grains of thought, as he put it, gradually increasing to the nations of today coming into Daron's territory. But of course he would think of it and it is over the long term an increase in scale, but you described something called the Z shaped curve. But tell us more in detail of what science currently tells us about the last 10,000 years of human history, which led to a net increase in scale. Everyone knows that, but the dynamics basically that were responsible for that. And what's actually described more of a zigzagging process than just a linear process.

PT: Well, first of all, yes, during the Holocene, basically the last 10,000, 11,000 years, the scale of human society has grown by an astronomic six or seven orders of magnitude. So from society of hundreds, maybe few thousands, we now have hundreds of millions and even billions, right? So that is, it's a basic social fact of social science that really begs for explanation. But this change was first of all, not gradual. So right now we are about to finish an article where we show that in fact, it was much more like punctuated equilibrium. You have periods of rapid change and then long periods of apparent stagnation and things like that. So, even that, and of course for every two steps forward, there is one step back. So you have empires rise, but they're also fall and collapse.

So, that is one thing. But the other thing is that during this process, some other aspects of human experience have actually have gone on quite a roller coaster. So we can talk about equality. We can also talk about wellbeing, right? So we can talk about warfare and all those things have gone in very interesting and completely non-linear fashion. So the wellbeing, for example, the first urbanized societies who were based on Neolithic agriculture, they were extremely unhealthy people, so the wellbeing really collapsed. And then we see, we can trace the wellbeing by, let's say the average stature and we see cycles basically. Sometimes, the average population height is a very sensitive measure of biological quality of life.

DSW: Let me just flag that here. Because, it's something I love about your work. People ask, "how do we know this? How can we know this?" Well, body height will tell you a whole bunch. How big you become.

PT: Exactly. And you have skeletons. There are too many skeletons in European museums, spanning the last several thousand years and, Anthropometrics, I guess that's the name of the discipline, they've been processing this data. This is one of the examples of where we get really wonderful dynamical data on the past. But in terms of inequality, so you have already brought up the issue of democracy. Of course we cannot travel back into the Pleistocene and observe people there. But to the best of our knowledge, they were quite democratic. Not everywhere, there were some societies that would have had inequalities,

but they were much more egalitarian than what came after them. And so what happened was that, especially the first centralized societies, complex chiefdoms and archaic states. They were pretty horrible of places to live.

Even for Kings. The Kings were assassinated all the time. I mean, we have been gathering data on the probability of a ruler to be deposed or killed, and we can actually quantify these types of things. And of course, 90% of the population was living in abject poverty, was completely at the whim of the elites and rulers, and they were sacrificed, which to me is, human sacrifices is sort of the ultimate indignity and inequality. But also we can see the huge differences in heights between nobles and peasants and so on and so forth. And so then something happened and we started on our road to more democratic, more egalitarian, but by no means we got anywhere near to the egalitarianism that we see in the Pleistocene, because still, even in a democratic societies, we have huge disparities of wealth, all right? But at least, it's not as bad as living in an archaic despotic state.Certainly democracy has helped to counteract that move.

So that's why we see a Z curve. So five million years ago, our great ape ancestors, they were quite despotic, they had social hierarchies. So in the chimp populations, there is one person, what we call an alpha male, who beats up everybody. There is a beta male who beats everybody, but alpha male and so on. And then alpha female is beaten by all the males, but she beats all the females below her. So it's a very strict social hierarchy and it's violently maintained all the time. So that's very different from what happened to Homo sapiens, even the Homo genus starting with the two million years ago.

DSW: Daron, you begin with hunter-gatherer societies in South America, they were egalitarian. So the egalitarianism of small scale societies, what I want to emphasize is the importance of social control. That the reason that small scale societies are egalitarian is because they can effectively control bullies. And so this is what Christopher Boehm calls reverse dominance, basically. There's plenty of people that want to boss others around, but they can't because they can be collectively controlled. And so, social control, power really, is what makes small scale societies, past and present, because our series is covering current indigenous societies, so it's quite interesting, egalitarian. And then of course when the scale of society grew thanks to agriculture and so on, basically it resulted in power imbalances, and now you have your despotic environment. So it really does come down to power as I think we're going to elaborate in the present day. And Daron you've already indicated that that's where we're going.

DA: Thanks, David. I mean, I think to me what's really amazing is the diversity of social organizations that humans have created over the ages. If you look at all the other species I know about, and I think the two of you know about more of them, but they have very constricted ways of dealing with social and environmental problems. Humans have demonstrated a tremendous range of ways of dealing with problems. And I think that is why institutions are so important because institutions are the ways that we create for dealing with each other and dealing with these problems. And at the root of it, like you, David, I think Christopher Boehm's ideas of reverse dominance hierarchies versus, the more alpha male hierarchies, that the interaction of these two, I think is quite foundational here. If anybody who looks at human history cannot be, but struck by the ability of our kin to live under extremely hierarchical institutions and at the same time, defend egalitarianism, very vigorously.

So it's sort of self contradictory. And the way that we resolve that self contradiction in some sense is by building different sets of institutions and sometimes those institutions bring out the hierarchy aspect. Sometimes they suppress that hierarchy. And of course, and I think Peter's work is very relevant here, demographic economic and social circumstances are very important for that. It's no surprise in some sense that maintaining that egalitarian ethos is much harder once you can accumulate assets. And once you have to engage in much more systematic, much larger scale wars, although there are examples of many tribal societies, including the Germanic ones and the Mongolian ones that, increase the degree of hierarchy in society during war times, and then reduce it thereafter. So there are ways of dealing with

war that may not be completely despotic and hierarchical as well. But obviously the ability to accumulate assets, which takes a big leap, one of the punctuated equilibrium, I like that very much as Peter does together with settled life. The ability of hunter gatherers and foragers to accumulate assets was extremely limited.

Once you have settlements that changes that's going to complicate matters, it opens up a whole host of possibilities. And to me again, I guess this is one place there's a lot of overlap between what Peter has talked and my thinking here. In fact, probably I agree with 99.9% of what he said so far, but that's where I guess one place where we might start departing is, I think that confronted with the same challenges, different human groups are going to come up with different solutions. So the solutions that, say for example, you mentioned Josiah Ober's work or Josh Ober's work, which is fantastic and I'm very happy that he has featured in this program as well. If you just look at very similar conditions of 2,600, 2,700 years ago in the Greek peninsula. Well, the solutions that Spartans have come up with solving these problems is extremely different than those of Macedonians and that is extremely different again from the one the Athenians…

And then go just a couple of thousands of miles to the east and the ones of Persians come up with it's completely different as well. And I think that institutional diversity is what a lot of social science is about. And it's truly fascinating. And one of the reasons why I think this sort of quantitative history is so difficult is because of that diversity. So I depart, for example, from the more common explanations that see some sort of environmental factors as almost defining, and when you transition to agriculture, et cetera, I think there's a lot of human agency in there. Which again relates to innovations of social organization, institutional innovations and other choices that societies make.

DSW: I'm really eager for both Peter and me to respond to this. I think I know what Peter's going to say so, I think we're going to deliver a one, two reply to you Daron, to show that, that 1%, we agree on that 1% also, but Peter, why don't you respond to Daron and then I will. I'm fascinated to know how this diversity basically, this inherent diversity in how cultures respond to their environments. Which basically provides the raw material for selection. It's the variation component of a cultural evolutionary process. So Peter, take your turn, I'm dying to take mine.

PT: Oh no, I'm basically a 100 percent in agreement with what Daron has just said. So maybe build on this a little bit. So we are talking about institutions. So what are institutions? Well, there are different definitions, but one, I like is, it's a system of rules basically, that govern people's behaviors in certain situations, right? So for example, the institution of marriage, it tells what are the roles of the husband, the wife, the children, who has more power, has less power. And also there could be some ways to, typically there are some ways to enforce those roles. In terms of political institutions, that's where really things are becoming very interesting. And so to add to what Daron said, I agree that there is a huge variety of political institutions, specific arrangements that societies adopt to govern themselves. And this is really not biological evolution. I mean, yes, over the last 10,000 years, humans have evolved biologically, there's genetic selection, you know that.

But when we start talking about the organization of societies, it's really cultural evolution. So institution is a cultural trait. So traits, what's definition of traits? It means that there are at least two or typically more than one value. And so that's why diversity of institution is important is because there are many different types of institutions. And once you have such variable ideology, right now, we know from Darwin's postulates that there is possibility of selection, assuming that there is also two other conditions, one of them inheritance. And we know that inheritance works with cultural evolution because we see a lot of continuity, even United States forming as a colony of great Britain has inherited quite a bunch of institutions from them. So inheritance is very important. And then selection, so different institutions, and that's where it becomes very interesting.

Different institutions are more or less successful and this is now we are talking about the core of Daron's and Robinson's book, that it's really human choices, individual choices are playing out within those institutions. And that's why institutions, different institutional setups have been so influential in determining the traits of societies. So this means that you have all three Darwin's postulates and so that means that cultural evolution can proceed and we've seen that. There's one, for example, one class of institutions is what you call the state. I mean, there are many different types of the state, but they're all characterized by having, let's say professional bureaucracies. They have territory that they try to control, and they also try to create some internal peace. So the states have arisen only in Mid-Holocene maybe five, six thousand years ago, but they've taken over the earth and this is an example of selection. So I think that I'll stop here and let Daron speak.

DA: Yeah. So if I can add something, because I think it's complementary. I mean, I think you brought it to very nicely to cultural evolution and multilevel evolution that David already mentioned at the beginning. The way I think about it is that, absolutely, completely that cultural evolution is a very good framework for thinking about these issues. But we should really sort of think about three levels of cultural evolution. One is individual, I think what values, what social meaning individuals adopt. One is exactly group level, which you have emphasized already, Peter and David's work is central. What is good for groups? If your group is adopting some norms, some modes of behavior that are self-destructive of course it's going to disappear and be taken over by others. But then the third, which is a implicit in your discussion, but I think is important to emphasize is let's think of it as distributional, meaning that some of the norms and some of the institutions and some of the social meaning that we develop is because within a group it's favors some actors, sometimes at the expense of others.

So I think there are many different ways of thinking of transition to settled life in agriculture, many people early on and still think of that as a great human achievement. On the other hand, if you look at the data exactly like you emphasized, Peter, it looks like completely the opposite. People started working harder, their calories fail, their statures worsened, their health worsened, there was a lot less autonomy. So I think it's very difficult to make sense of it as a great achievement. Now, at least in the quote-unquote short run of about 8,000 years. But I think it makes much more sense once you start recognizing that, some people benefited more than other from that transition. Shamans, religious elites that were emerging and then political elites that were emerging, slowly but surely. So the costs were not completely equally distributed. And it's not about the group being successful, there's an element of that. But it's also some people within the group who have the power to influence also benefit.

DSW: That's multilevel selection. Welcome to multilevel selection.

DA: Exactly. It's multilevel, but I was emphasizing the three levels. Exactly.

DSW: Yeah, absolutely. There's so much to talk about here and so much of course to integrate. I want to make a point and here's where complexity comes in. Imagine that you take... I've done this as a biologist. So imagine that you assemble groups of organisms and you vary the initial size of the groups. It might be two individuals, it might be 20, it might be 2000, it might be two million. And then ask the question, at what point do these groups vary? And sampling error tells you that the larger the initial size of the group, then the less variation there'll be among groups. But when those groups are complex systems, then something else happens. And that's something akin to sensitive dependence on initial conditions like the weather, small differences between those groups is going to become larger and larger and larger. And so complex systems have a way of becoming diverse, variable, based on this process.

So now we're emphasizing the inherent diversity, basically of cultures, which we predict on the basis of complex systems theory should be scale independent, scale independent, no matter what the size of the society, we still expect this kind of butterfly effect that over time leads to larger differences. But then of course, some of these hang together and others fall apart and so basically you have this selection phase at various scales. And so when societies end up resembling each other, it's like, it is convergent

evolution. It's just the same way that many different species evolve hard shells, many different societies evolve these functional attributes. They must, or else they'll fall apart. Now back to Teilhard. And Teilhard thought about human cultural evolution as a true kind of a phylogenetic group, like the birds, like the reptiles, like the mammals, like the dinosaurs, that's the way human cultures are.

And I think we've really come to appreciate the wisdom of that, that although not so long ago, people thought of there being like a universal human nature. And then culture was kind of a thin veneer on a universal human nature. A lot of evolutionary psychology reads like that. But now more and more we're realizing how much, the way we are is thanks to cultural, how much cultural differences in diversity, how deep it runs, all the way back to languages, for example, there's no universal grammar, there's just language evolved on different parts of the earth. They're quite different from each other morphologically. And what they share in common are based on the functional demands on needing to communicate. And I think that here's where I think Peter, you could talk briefly about the Axial age. Because there's a case where the historians talked about this phase of human history and what your retelling of that, or Seshat's retelling of that is much more of this separate, loosely linked, but separate developments in the evolution of the scale of society, which were cases of convergent cultural evolution. So let's spend a little bit of time on the Axial Age and then we'll transition to the present.

PT: Actually, I would like to start to pick up where Daron left this topic. So we are talking about who benefits. Obviously, in hugely unequal societies, there is a small elite, the proverbial 1%, who benefit from inequality and the 99% are the sufferers. Let's think about these early complex societies. They arose pretty much as a result of conflict between polities, between political organizations, and so that's why it was natural that military leaders buttressed by their retinue would be able to grab a lot of power. And so at that level, a military leader, the king, or the chief, would be able to coerce everybody else because they're organized, they're well armed they're well trained and so on and so forth. So, at the level of within group selection, we should see more and more inequality and inegalitarianism arise.

But let's not forget that this society that we are looking at does not live in isolation. There are other societies around it. And it turns out, that those societies, which are more egalitarian, and they still could be unequal, but they're not quite as despotic as the one that we are looking at. They actually turned out to do well, to do better at the business of war. And so that's one of the common ways that despots actually, they are deposed by losing the war and together with their own people, unfortunately, oftentimes.

So what we have here, you have the two forces of evolution acting in opposite direction within the groups. We see a force favoring more and more inegalitarianism and by the way, this is what let's say Thomas Piketty came upon. In the absence of that external competition. What we see is that inequality will keep growing and more and more and more until the size of society basically collapses under its... Because it so hugely unequal. But what happens is that societies don't live in isolation with each other, and so there is a natural evolutionary process that weeds out those dysfunctional, despotic societies.

And so back to the your question, David, now, I'm prepared to answer it. What happened during the Axial age? So first of all, what's the Axial Age? Axial Age is the first millennium BCE. All right, so the key period is typically 800 BCE to 200 BCE. That's when a lot of new religions, world religions, or philosophies, and so on and so forth.

We have a paper that is out in pre-print and has been submitted to the journal. It turns out that we can actually reconnect what happened, and the story's quite neat, obviously, simplified as well. But around 1000 BC, nomadic herders leaving north of the Black Sea and Caspian Sea, they figured out how to control horses. So they used the bits and bridle. And so suddenly we see like thousands of metal bits, just show up and spread through the great steppe and farming societies living south of it. So this was the beginning of cavalry. They combined horse riding with iron metallurgy so that the arrows were tipped with iron, and also composite bows which have been actually known for thousands of years. So, they

created a weapon of mass destruction and put a lot of the farming society south of the steppe under really existential threat. So there was a huge uptick in the intensity of warfare and those societies had to do something or go under.

And they did a variety of things. First of all, they started building big armies of infantry men because they could not get enough horses. They came up with new ways of armor. So hoplite armor surely was invented during this time. They came up with new crossbows, but most importantly, they scaled up. They scaled up, and then you see huge empires such as the first one is the Persian, the Persian empire, but it was quickly followed by the Roman empire, and the Han dynasty in China, by the Mauryan empire in North India and so on and so forth. These were huge empires. They had tens of millions of people. Millions of square kilometers of terrain and new institutions, such as new religions that would allow them to integrate most of the…

DA: And here's where the diversity comes in, basically, Christianity, Buddhism, Confucianism. These were different solutions, basically, to the same problem, each providing…

PT: Christianity is an offshoot of Middle Eastern monotheism, so Middle Eastern monotheism are first in the middle of the first millennium BC. Christianity and Islam followed this some of the timeline.

DA: So if I could, I think Peter gave an excellent account of the Axial Age. I mean, I completely agree. I just want to underscore what David said, and then perhaps disagree with one little thing that Peter emphasized, which I think is actually not unimportant. The first one is, I think, Peter, my reading agrees completely with Peter's that there were common shocks that especially took the form of changes in military threats and military technology preceding the Axial Age. But exactly like David emphasized, I think the solutions that different societies developed are quite distinct. Yes, there is some commonality that they're all trying to sort of regulate conflict, but the way that ancient Athenians are regulating conflict is completely different from the ones of the Israelites, and that's in turn is very, very different from Confucius and the legalism that followed it.

So I think that diversity is super important. And precisely because of that diversity, I disagree with one part of what Peter said, which is this inequality dynamics that somehow societies left to their own devices will increase inequality, and that external conflict sometimes is a limit on that inequality. I think that's also quite contingent. First of all, my reading is that the early phase of the conflict between settled agriculturalists and hunter-gatherers went the way of the unequal ones. Because of their population, agriculturalists were much better at obliterating the hunter- gatherers from many parts of the world. And that was a huge boost to inequality, of course. But, second, I think, many societies came up with different ways of limiting that conflict. I mean, none of those are perfect equal societies, but the Athenian solution, despite the fact that it was based on slavery in that polity was still much more egalitarian than the solution that the Persians came up with or the Israelites came up with, at least at first.

So, I think there are ways in which institutional adaptations can put a break on inequality. And there's a good reason sometimes for that, because inequality is also very destabilizing. I mean, the way that the Athenian polity or the Greek societies illustrate is that the Dark Ages and the aftermath of the Dark Ages were very high in conflict because of the birth pains of a new elite and what they're trying to do with land, and how they were marginalizing a lot of the regular people. Many of the institutional adaptations from Solon to Cleisthenes were actually ways of trying to control that, which ultimately meant reducing inequality. So, I am actually quite open to the idea. I think it's that sometimes we are going to find good institutions that can create stability and put a limit to inequality, but then those are not going to be universal either as the scale of society grows or the nature of the assets change. Some of those institutions are no longer going to be feasible, so we need yet more institutional innovations.

PT: Actually, I don't think we are disagreeing that much, because I also agree with you that it's internal checks on individuals that are very important. I'm just saying that it is the inter-polity competition, doesn't have to be warfare, but it could be competition in other ways. That's really what disciplines the elites within the society, who typically have enough power to control the population and continue accumulating power internally. But it's an empirical question. It would be very interesting. In fact, this is what's something that we are doing. We're trying to collect data to resolve precisely this question. When we see a new, more egalitarian institutions or fairer institutions arise, what are the conditions under which they arise?

DA: I mean, the nature of the technology, military technology, matters a lot. During the colonial period, for example, I think some of the warfare really favored the elites because it really enriched them, and it really required further military investments, but there are then other periods during which we see exactly more egalitarian tribes or bands bringing down empires. So, I think, it really does depend on the nature of the military technology as well.

PT: Remember that Athens was not living there in isolation. There was intense warfare. In fact, there was warfare pretty much every year. All right, and so that was the period when intense warfare between poleis was actually driving the democracy within them, because the way to win in this war was to put a lot of hoplites into the field. And the way you did that, it was by giving them a say in the government and that's that... To me, I draw that causal connection.

DSW: Yeah. This dynamic plays itself out on all these scales. I want to introduce that first of all... We're going to segue to the present real fast here, but back to complexity, the idea of attractors basically bases of attraction are regimes that are stable, and they themselves there... You could have an egalitarian regime, or you could have a despotic regime. The thing about regimes is their stability. And so if you have a stable egalitarian regime, to some extent, it does resist being corrupted by various forms of selfishness and so on. Although, I think that that corrupting influence actually is probably true in every society, but I think the idea of selecting among local equilibria, basically, or bases of attraction...equilibrium selection, they sometimes call it, is an important refinement of this idea of multilevel selection.

So it's not the case that egalitarian regimes are always vulnerable to exploitation. Well, now let's do what I've been saying. If we focus on the present, the roughly 200 nations that now carve up the planet, it's really basically the current edge of cultural multilevel selection. And you, Daron, that's what you do, and, Peter, also what you do, for example, with your great book, Ages of Discord... Your analysis of American history. Daron, you make this fundamental distinction between inclusive and extractive regimes, which I think is just continuous to everything we've been saying. But if you could just take it from there, and outline your theory about why nations fail and why they succeed, then that will begin us on our discussion of the present.

DA: Yeah, I think it's very much builds on what we talked about. As Peter said, when you go back in history during times of very different military technology and very different types of states, there is a continuous process of inter-polity competition. And the nature of technology is different. That's going to generate a bunch of dynamics depending on who has the greater ability to cooperate with other nations, trade with them versus take them over and so on. But, today, we live in the age of industrial technology, and I think a critical aspect of both domestic economy and politics and international relations is how you leverage and develop that industrial technology. There is pretty much no society are on Earth right now that has not been touched by that technology. And the idea of the inclusive economic institutions is that by providing opportunities and incentives for a broad cross-section of society, rather than just sidelining them, it's going to be much better at developing and exploiting that technology.

In contrast, what we call extractive economic institutions, are going to monopolize economic opportunities in the hands of a very small group, and are not going to use the talents and the different approaches and the diversity. Again, back to diversity, the diversity of their populations, and we're

talking of nation states here. So, all of them have large populations, so using that diversity, that collective knowledge. Going back to the issues of the multilevel selection, I think a lot of industrial technology is just the fruit of the collective knowledge of humans. And how do we develop them? That's going to depend on how well we deploy that collective knowledge. And, of course, once you start thinking about this, this way, you see, it cannot be separated from politics. Inclusive economic institutions that provide opportunities and incentives for a broad set of people, well, they need to be supported by particular types of political institutions.

And if you're going to have systems that create an economic elite, that monopolizes everything, well, that needs to be supported by a set of political arrangements that's going to empower them politically as well. That's all about the co-evolution of economic and political institutions. So those were the ideas James Robinson and I developed in Why Nations Fail. In our more recent book The Narrow Corridor, we've sort of built on this and thought much more about the evolution of these political and economic institutions. And again, it comes back to the same themes that we are discussing here. For example, how do you balance state power versus societal power? If you build your institutions, for instance, as many of the archaic empires started doing, and many of the European states of the Middle Ages and beyond, or the Chinese tradition of state building from the Qing dynasty onward, that's going empower the state and sideline bottom-up participation.

On the other hand, we see different models. For example, like those that evolved after the collapse of the Roman empire in parts of Europe, which fused the more egalitarian ethos and institutions assemblies of the Germanic tribes, such as the Franks, together with some aspects of state institutions from Roman empire, then you will get a different set of institutions. And then, of course the egalitarian impulse is there, even though no societies like the foraging ones. You will see many examples where the same sort of norms of undercutting hierarchy are going to emerge. It's actually sort of interesting that the person who's made some of very interesting contribution to this area is also Christopher Boehm when he studied the Balkans and the Montenegrin societies and showing how they were undercutting any type of hierarchy and state institutions repeatedly. I think it's no surprise that we see a version of reverse dominance hierarchy. But I think this is where the institutions and diversity and conditions changing becomes important.

The reverse dominance hierarchies that humans were so amazing at building and maintaining for a million and a half years, perhaps. Well, at least 200,000 years. They're not going to work when you're looking at large scale societies. So you need different institutions if you're going to be able to build an egalitarian society or at this quasi-egalitarian society. So that's where modern democracy, I think, becomes part of the picture. And modern is important. Of course, the Athenian democracy is great. It's inspiring, and it's amazing to study, but that's not going to work in a large scale society either. It was exploiting the fact that that Athens was a small polity. Only men and citizens who, I mean, non-slaves were able to participate in politics so you could have a lot of direct democracy, that's not going to work today.

So how are you going to build those institutions to deal with the problems that we confront without sort of empowering just a particular, very narrow hierarchy? I think those are some of the issues, and they have huge consequences, both for equality and how we actually use industrial technology, and moving to the future part of it. How we use, for example, new digital technologies, including artificial intelligence, I think those questions can not be separated from the hierarchies we build and hierarchies we could limit.

DSW: So let's zoom in on America, and let me start it off with Daron's account and Why Nations Fail. One of my favorite stories is that when the colony of Jamestown was founded, first with the intention was just to conquer the Indians the way the Spaniards and Portuguese did and rule over the Indians, that didn't work. Their next step was to try to recreate a feudal European society by importing laborers and

housing them in barracks under threat of death, that didn't work. And so they were forced by circumstances to become more egalitarian, forced by circumstances. So, some cultural evolution took place there big time.

DA: Absolutely. I think that's actually a really, really good story. And the way you told it is perfect, David. Essentially, the Brits, I mean the English, they weren't British at the time. The English just wanted to repeat what the Spanish did. They wanted to go there and dominate and exploit the local population. They go there and there's no local population to exploit. The population density is extremely small and the native population is running away and not cooperating with them. And suddenly, those guys find themselves at the bottom of the hierarchy. That's the view that the Jamestown colony had. They okay, fine, we cannot exploit the Indians, so we're going to exploit these indentured servants and the settlers who came there with the promise that they're going to build a better life. Now, they're going to find themselves under even and harsher conditions. But that's where the egalitarian ethos kicks in. They say, "No, we're not going to put up with it."

And they revolt against it. They revolt by walking out and fleeing. The open frontier helps. They voice their concerns, and there is a protracted struggle, but ultimately, they are victorious. But it's also defines the character of American democracy for the next 300, 400 years, that this was rights for the European settlers. They never wanted rights for the native Americans. They still wanted to exploit them, and later when the slaves were imported, they-

DSW: That made them similar to Greek democracy in that regard, and-

DA: Exactly, even more extreme. But yes, similar, yes.

DSW: Yeah, and then another thing you say is that because the Spaniards and Portuguese could find societies that were already hierarchical, and basically just chop the head off of those, then, ever since, nations in Central and South America have been crippled, basically, by some kind of deep cultural structure that makes it difficult to be egalitarian.

DA: Absolutely.

DSW: That's a deep cultural streak.

DA: Cultural, political, but again.... But I'll emphasize that, again, history here is not destiny. You also see a lot of variation. That history that you very aptly summarize is completely common to Guatemala and Costa Rica. They were in fact part of the Guatemalan kingdom.

DSW: Yes.

DA: But then they separate and Costa Rica becomes much more egalitarian, much less unequal in terms of the organization of agriculture, and of course the leader in terms of democracy and political participation in Latin America. Again, showing that there are different ways of finding solutions to this large scale corporation and economic production problem.

DSW: History is not destiny, cultural evolution continues, but now I want to segue to you, Peter, you were accredited with having predicted our current unrest. And so outline for us the thesis of your book, "Ages of Discord" and the fact that actually America, which we've just been discussing, has cycled not once, but twice between the extremes of extractive and inclusive.

PT: First, let me just say that. I agree with Daron very much about the nature of competition between societies today. And this is actually a very hopeful sign because warfare is not the only way that societies can compete. Societies now…we haven't made a complete transition to this, but modern states actually compete in providing wellbeing to their citizens. I grew up in the Soviet Union, the country, which doesn't exist anymore. And the reason it does not exist anymore, it's not because it lost a war, it was conquered or anything. It lost the support of its citizens and the elites. And as a result, there was a very

substantial institutional change internally within the country, which was, much of it was selective copying of institutions, but also adapting them to the local environment.

Now this type of, and this type of desire by citizenries, for better life has been expressed. for example, very clearly during the Arab Spring, because many of the people demonstrating in Tahrir or elsewhere, they were basically blaming their governments for mismanaging politics, economy, everything essentially, and not delivering a better quality of life. And we see this type of pressure working even a hundred years ago. So here now in the United States. During the new deal. Roosevelt administration felt under strong competitive pressure from the totalitarian alternatives, including both Nazi Germany and Communist Russia. And in fact, they sent researchers to look into how, in Russia, for example, the state tries to make the life of workers better, things like that. And they, in fact, as I understand they incorporated some of those things, not wholesale, of course, but they were trying to learn from those experiences.

Certainly I would say that the reason that we had this great convergence in incomes and wealth in the United States was because of the competition specifically with Communist Russia. So it, it was one of the important elements. And so that basically, that and the experience of World War II, they essentially impressed on the political leadership of this country, the need for cooperation, cooperation broadly stated between the state, between the government agencies, between the capitalists, employers, and workers, or employees. So in fact, it's kind of interesting, but the United States was a Nordic country, until about 1960's. Between 1930s and 1960s there was an implicit unwritten contract, which is a tripartite contract between the state, the business owners and workers. And as long as that unwritten contract held, the society was quite functional.

I mean, there were all kinds of equalities. Obviously, the race issue was very important and not solved during this time. But at the same time, when we look at the median workers, for example, their wellbeing, their wages, were increasing at the rate of the overall economy. And at the same time, if you look at what was happening to the big fortunes they were disappearing. All right. And then we came to turnaround point of 1970s, and that's when the whole dynamic started going in reverse. And part of the reason is because the new generation of leaders came, they were much more selfish.

They assumed that two generations of stability and function and function that they saw is just automatic. And they started dismantling this unwritten contract. And as a result of that from 1980 or so, we see a huge explosion of inequality. And inequality is not just a relative thing, as Paul Krugman wrote recently in a column, that real wages of the median workers are actually lower than they were 40 years ago, slightly lower than they were 40 years ago, despite a huge increase of economy overall, and also a huge increase of the productivity of the American worker. So here we are. So we are talking really about what Daron and James wrote in their book, but now we are taking a very dynamical approach to it.

DA: I think that's a great account that Peter gave. And if I could add just two things, and then perhaps this is also a segue to the future.

I think Peter is absolutely right. That competition was very important. I think the best examples of that are actually South Korea and Taiwan. Both of those success stories cannot be understood without the threat from North Korea or mainland China. I mean, in Taiwan, Kuomintang, which was really a completely parasitic institution when it was in China, becomes a developmental state in Taiwan and, and social democracy, I think cannot be understood without the threat of communism from Soviet Russia. However, I think we also see the role of institutional innovations, ideas, institutional adaptations that depend on power dynamics and other things, the welfare state as any other institution had its problems.

And a group of thinkers led by economists, such as Milton Friedman really changed the tenor of how we should approach some of these problems starting in the 1970s. And I think without those institutional responses to the inefficiencies of the welfare state, we cannot understand how the way that market

economies, especially Anglo-Saxon countries are, are functioning today, or have been transformed. Globalization, technology have played a role too, but really we have also changed how we are structuring these market economies. So I think Peter is absolutely right, but it's not just external threats. The Berlin Wall's fall, I think, is important, but these internal dynamics are important as well.

And segueing into the future, I think, it's hard to imagine, but somehow the cold war exactly like Peter said, brought up some of the more cohesive elements in some communities, but I don't see any evidence of that happening because of competition against China. It seems to bring out the worst instincts of each political group and each economic interest grouping. One question moving into the future, especially as we are confronted with some of the most defining global challenges, such as climate change, pandemics, dealing with inequalities and new technologies, including automation. I'm not sure how the competition between China and the U.S. Is going to shape these things, but it's hard to be completely optimistic.

PT: Well, one possibility that the United States will fragment and not be something to compare to and whatever arises after that, we'll learn from those experiences. And, certainly China. I mean, we have the Washington consensus and Beijing consensus, there are two different ways of organizing states. And unfortunately China has shown itself to be a more functional state, especially in the last couple of years, looking at their view.

DA: But, I mean, if you think of Beijing consensus versus Washington consensus, the gap is much smaller than that existed between Soviet consensus and the Washington consensus or whatever American approach, Marshall Plan, whatever you're going to call it. So in some sense, one might have thought there would be more room for cooperation. But perhaps that's not true.

PT: Although, you should not overestimate communism in the Soviet Union I grew up in, it's basically... communism in the Soviet union was one big firm that was controlled by the party. As a result of that, there was no internal competition, which is very important as you know, between firms. That was one of the reasons why it didn't work so well. So it was more state capitalism than communism as envisioned by Karl Marx, for example.

DSW: So let's have you both try to be as optimistic as you can in terms of how we work our way towards some kind of global governance worth wanting. And then let's actually be not as pessimistic as you can, but really outline some of the scenarios. If that doesn't happen, what's in store for us? Because this idea that the Noosphere is coming, that there's any kind of inevitability to it, please, no, and we really need to have, I think the scary story in addition to the optimistic story. So let's begin on the optimistic side.

DA: Well, I think you have to weave in the optimism, because they're inseparable in my mind.

DSW: Okay, that's fine.

DA: I think on the optimistic side, of course, new technologies have the promise of improving our productivity, improving our health, eliminating the more unpleasant, dangerous physically unhealthy jobs. Of course, we have the capability to deal with the climate change crisis. We've already made amazing improvements in renewable technologies. I don't give any stock to ideas of super intelligence and galactic travel and things like that. I think those really are Silicon Valley fantasy. So I'm not gonna even go there, but I think there is the technological capabilities to be optimistic, on the other hand, I think if you look at the politics and the institutional framework, I don't see any way, but to be pessimistic.

I don't think we are up to the challenge of dealing with climate change. Despite the fact that just the minimal amount of intervention has led to tremendous progress in renewable energy today, renewable energy is competitive or in fact, according to some calculations cheaper than fossil fuel based energy. But without global cooperation between China, India, and the U.S., as well as Brazil and other large

countries, Europe, I don't see how we can deal with the climate change challenge. And even worse, I think even though digital technologies have the promise to bring improved welfare, I think right now there are tools in the hands of large companies and governments to suppress people, to automate jobs in a way that's really unequalizing. My research suggests, Peter, that is the driver of a lot of the facts that you mentioned, like median wages being stagnant or about 50% of Americans actually experiencing real wage declines.

And of course the huge amount of data and power in the hands of companies and governments, I think, is creating a completely different politics today than what we have been used to for the last hundreds of years. I don't think we are aware, we don't have… if you want to call it, wisdom, as a population to actually try to even confront these challenges. You know, there is a bit of grumbling right now about Facebook, but I think it's not systemic enough in recognizing how the power of these companies has multiplied and perhaps become inconsistent with democratic institutions. I think those are the things that make me really pessimistic as well as the climate change challenge, of course.

PT: Yeah, I'm by nature an optimist, but my optimism has to be long term. In the short run, realistically, we are in for a rough decade, especially here in the United States and, and partly in Western Europe. And because our current leadership is still too busy fighting each other different factions', fighting each other, rather than trying to address the core issues. But in the core issue, which seems to lie on the surface, is that you have to reverse that decline of the common people in the United States, all right? It's hugely unfair because why should the majority of the population slide down when the economy is increasing and you have all these wonderful technologies as Daron mentioned. So until this idea actually penetrates the political leadership, Democrats may be a little bit better, but I don't see the Biden administration is not doing anything about, let's say increasing the minimum wage, all right?

So that's the one very clear intervention. It's not enough obviously, but that would send a signal and also would improve the lives, of primarily by the way, African Americans, who are the ones who would benefit from this. They're not doing that. And so I'm afraid that you have to run the course of this Age of Discord as I called it. However, the optimism is that usually first of all, the two sources of optimism, first of all, Ages of Discord end, and often times in a violent manner. But after that a new age of prosperity does come, because these dynamics are setting new times, breeding bad times, but bad times breed good times. So it’s really a dynamical system here, not cycles, but dynamics.

A second source of optimism is that we have now collected a lot of data on previous crises going back thousands of years. And we don't have yet statistics, but it's pretty clear that humans are learning something. That institutions that we have, being creating and layering over the past thousands years, they start to work better and better. As a result, the collapses are less likely. They are also less severe and the periods of interregnums after that, breakdown, social breakdown, they're shorter. That means that maybe we are starting to learn more how to deal with such crises. So, and that's my second source of optimism.

DSW: Let me end with my source of optimism, which is actually quite to hard in. And when I had my conversation with Josh Ober about Greek democracy, and when I read his work, I was amazed by how deliberative the construction of Greek democracy was. I mean the Athenians, it was their explicit goal to make a democracy, complete with its institutions and its processes and its demes and its tribes. And it's just amazing the degree to which they were engaged in a process of conscious cultural evolution. And yes, there were the vagaries of history and all that, but the degree of consciousness that was on display in the invention of Greek democracy, and I think this is true in other cases, was amazing to me and that included the institution building.

And if we now actually become similarly conscious, but now we appreciate the scale that democracy needs to take place, namely the global scale. But if that actually became our paradigm, basically, if there was any kind of agreement among any kind of core of people, then it's the whole Earth that requires

good governance, and here's how we need to go about doing it. First of all, that objective getting that right, and that involves just eliminating the concept of the invisible hand as a profound untruth—that you don't just set about maximizing lower level goals. And then the invisible hand makes it all good at the higher scale. Absolutely not, we must have the highest scale in mind and then everything under that remains important, but requires coordination. If that became the worldview, if that became the worldview, then we would be working towards effective solutions, which actually are at hand. So that's my optimism, but it requires a conceptual sea change, and I think some of us have it.

DA: I completely agree with you, David, that would be a very laudable goal, but it seems like we are going in the opposite direction. Today nationalism is much stronger than it was 20 years ago. And there are reasons for that, it's imperfectly understood, but certainly related to globalization, inequalities, instabilities, insecurities. But I think when we are unable to build institutions that actually foster this sort of global corporation, I think it will only get worse. And climate change is as good a challenge for us to do that. And, we have completely failed perhaps...

PT: The glass is half full or half empty.

DSW: Yeah and also I think institutions can be the following event, not the leading event. Often I think, you know better than I do, that the first thing that happens is that some groundswell, and then institutions are built on the basis of that.

DA: Absolutely, that then that groundswell was there. I think after the fall of the Berlin Wall, there was a euphoria, not among everybody, but among some class of people, multi-nationally, or around the world, there was that euphoria. But now it has sort of…the pendulum has swung backwards. If you look at, if you go to developing countries, the amount of nationalism is completely incomparable to what was visible 20 years ago. And I think that the dynamic is quite concerning about exactly those challenges that you're pointing at.

PT: The turbulence and dysfunction that you see ahead of us is also going to be a factor. Historically, it has been a factor in creating and adopting new institutions and things like that. Think about the glorious revolution in England, it followed 40 years of civil wars and all kinds of nastiness, all right? So that's why optimism and pessimism have to be somehow in a dynamical equilibrium between themselves.

DA: Okay, this conversation has been dynamical to the end. And so this has been so great, Daron and Peter, so happy to have had it and to have captured it for widespread distribution. So thank you so much.