Jordan Hall

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SPEAKERS

Sam Coleman, Jordan Hall, Tom Pegram

Tom Pegram 00:00
Hi, and welcome to 'Imperfect Utopias' based out of the UCL, Global Governance Institute. If you're new to the show, and you want to get a list of our favourite books are the resources, listen to past shows, and join our community go to ucl.ac.uk/global-governance.

Sam Coleman 00:09
Today we're in conversation with Jordan Hall. Jordan is the Executive Chair and co-founder of the Neurohacker Collective, a company that makes ground-breaking products for health and wellbeing through complex systems science. Mr. Hall is in his seventeenth year building disruptive technologies. His previous positions include crafting strategy and product for MP3.com, then at InterVU (acquired by Akamai) and then finally in 2000 launching and leading the online digital video revolution as founder and CEO of DivX. For more information on Jordan Hall, please refer to the links provided in the description. And we hope you enjoy this episode of 'Imperfect Utopias.'

Tom Pegram 00:23
Look, I want to say thank you so much for speaking with me really appreciate it.

Jordan Hall 00:25
It's my pleasure.

Tom Pegram 00:25
It's as I said in the email, I'm trying to really branch out in a slightly more imaginative direction, if you will. I don't know if you engage much with academics.

Jordan Hall 00:28
Not really, actually, I don't recall the last time let me think, it's been a long time

Tom Pegram 00:45
Really?

Jordan Hall 00:45
Yeah. 15/20 years.

Tom Pegram 00:55
Oh, wow. Goodness. Oh I feel very privileged. You were at the Santa Fe Institute, though, right?

Jordan Hall 01:00
Yes. And in that context, there, it's funny. Like, it doesn't feel like academics in that context. Because everybody's got their discipline, they leave it at the door. But yes, in a few cases, I've actually felt like there's been a bit of a feeling of academia there. A particular event we did on Big History.

Tom Pegram 02:13
Yeah, I mean, I do think perhaps, you know, academia, academics, in a way they are part of the problem, I hope they might also be part of the solution. And I think one of the key challenges which I'm currently facing is just how do we bridge these two worlds? I suppose the world of the paradigmatic mind, as you might put it to the transdisciplinary mind. And it's very early stages. I'm hoping my students gonna help me out on that one a bit.

Jordan Hall 02:38
Yeah, well, there's, there's some very interesting moves that can be done there in terms of, yeah, maybe we can hold that as a case study of the difference between the problem and the solution.

Tom Pegram 02:48
Absolutely. That'd be great. So yeah, I hope perhaps this might be the start of more conversations. We'll see how this develops. How long do we have roughly just so I know not to try your patience?

Jordan Hall 02:55
I believe we committed to 90 minutes?

Tom Pegram 02:57
Okay. Wonderful. That's fantastic. Well, so I said, I suppose what would be helpful first is, before we perhaps get into the, the really tough questions, as you say, is, it would be wonderful if you could just, perhaps give us a sense of the lay of the land here. I mean, you have said elsewhere that we are in a situation, that is extremely challenging? Could you help us focus our minds? And what are your chief concerns, perhaps particularly drawing on the situational assessment from this year, and putting the challenges in a global context?

Jordan Hall 03:38
Sure. Let's see if we can take this step by step almost zooming in by zooming out. So if you take a given problem that happens to be ready at hand, it might be, as you mentioned, for example, some of the challenges that an individual might experience in their journey through academia and for that matter, we could take it all the way through the journey through education. They might be the problems that individual encounters if they find themselves rushed to the emergency room, or having to go to the DMV or go to the TSA or pay their taxes, or voting in elections, or noticing the increase in trash in their

neighbourhood or dot, dot, dot, you can sort of do that. And there's almost two moves in association with any one of those problems. Sometimes there's a way to truly respond to the problem. At let's call it at the tactical level or at the level that it is at. So to echo Jordan Peterson if your room is not clean, then clean your room. And sometimes it is as simple as that, we can also echo Admiral McRaven, which is if your bed is not made then make your bed, and it's more of the same sentiment. In the confines of your own house, where you perhaps have the capacity to respond to the entropy of life, you can keep a tidy house, keep a nice garden, right, this is the sort of thing people familiar with. But sometimes the nature of the problem is deeper or broader than what appears to be ready at hand. So a simple example is the problem of say, being, interfacing with the TSA, see, you may be standing there in line noticing about 15 things that would make everything better. But where you are, the scale that you are at, now, you are not empowered to be able to respond to the problems at hand. And in fact, what you notice if you contemplate it, is that the process whereby you would be able to respond is in fact, very complicated. Imagine what it would take to be able to shift the way that even your local TSA at the airport that is in your town behaves? Honestly, I haven't the slightest idea what that Byzantine labyrinth of bureaucracy might look like. What do you write a letter to your congressman, is there some kind of website you can send complaints to? It seems rather obscure, actually. So that the level of response, particularly, in this case, obviously in the human domain, can oftentimes take the response out of your hands. And so you have to be thinking about responding at a larger level, in this case, invoke some level of system, whether it's a regulatory system, or some kind of bureaucratic structure, or as I think you and I will probably talk about some sort of governance system. This is now beyond the scope of that individual. And, of course, we can find these also nested so there's a neighbourhood scale, or home owners scale, or even an apartment scale, and then it goes up bigger village scale, town scale, city scale, nation state scale, global scale. And each one, of course, is further away from the agency of the individual. But we don't have to be strictly at the human level, we could also do this with the level of natural systems. So if I notice that my lawn is dry, I can moderate. And that's fine. And I can solve that problem for a moment. But if my lawn is dry, because climate change is causing rainfall to be low, then I might find myself in a circumstance where my local agency is inadequate. The local aquifer or source of water might, in fact, be drying up. So I've got two different things going on. The ability to use the human system of pipe water is vulnerable to the complex natural context that it finds itself in. So the problem I'm seeing right in front of me is actually connected to something that is vastly larger. So this is maybe the simple frame to be able to notice that you can have problems that are different levels of scale that require capacities to respond to themselves at different levels of scale.

Jordan Hall 08:32
Right, so now we've got the second, so that's the first move. That's like the first conceptual piece. The second conception, second conceptual piece, is how we humans can go about designing ways of responding at different levels of scale. And this, I would say, is really the crux of the matter. My work has led me to the proposition that there has been more or less since the dawn of agricultural civilization, one fundamental toolkit. As a toolkit, of course, you could give rise to a very large number of different expressions, the one fundamental toolkit that human beings use to design approaches to problems that are larger than human scale. And I've been calling this game A actually. There's a, the metaphor of game is to bring to consciousness the notion that this is a very much a human level things is not baked into, it is not obligate in reality, it is a way of going about trying to solve problems. Therefore, we could in principle, at least choose an alternative and in fact, in the past have and then A,

game A which is to point out that it's one of potentially many, and so here I have to broaden our conceptual toolkit. Is this a good pace and a good approach? Do you feel like we're going the right way?

Tom Pegram 10:02
Yes, this is helpful. Yes. Thank you, Jordan. Yeah.

Jordan Hall 10:05
Okay. So here what I want to do is I just want to, to invoke the Cynefin framework from David Snowden, spelled C-Y-N-F-E-N. I think or F-I-N, I've forgotten.

Tom Pegram 10:21
Okay.

Jordan Hall 10:23
It's pronounced kinevin, but it's Welsh so it's spelled Cynefin. I'm saying that just so that somebody can look it up on their own but Dave Snowden is the originator. And the key distinction here is a, an ontological distinction between a complex system and a complicated system. And the distinction has to do with a number of characteristics. But I'll link to that I think, more or less, make the distinction clear. In a complex system, what you have is something that has many, many different nested levels of scale, all the way down, by the way to the quantum level, and all the way up to the cosmic level of the entire universe, but nested in many, many levels. So molecules nesting into cells nesting into tissues nesting into organs nesting into bodies, nesting into groups nesting into social structures, etc, etc. Where causation can move up and down the levels of scale. And so cells can have upward causation on tissues, but organs can have downward causation on cells. And with sort of characteristics of complexity, like sensitive dependence on initial conditions, and poised states, so that it can be that tiny, tiny movements at a micro level, can give rise to large movements at a more macro level, one snowflake causes an avalanche. And right, so that's one piece. And then the other piece is that the space of possibility, the quality of what can happen at each of these levels of scale, is in fact evolving. So what that means is that well, let me get back to that with the, with the opposite. And then we can kind of look in, kind of close.

Tom Pegram 12:26
Is that kind of the idea of emergent properties?

Jordan Hall 12:29
Yeah, that's a good way of putting it. So I've got a model, if I tried to model a complex system, I'm never going to be done, because something might emerge, some new thing, or some new characteristic. If I have a dice, a six sided dice, I can model that very easily, right? There's six sides, there's 123456 vertices, and it's 12 edges or something like that. That's it. That's the whole thing. I've got the whole thing modelled. But if there was some way that when I were to throw the dice, it could magically transform into an eight sided dice, well, my model is going to have to include that possibility, if it could become a 20 sided dice or 100 sided dice, then I have to actually change the model. And the whole point is that in complex systems, there is no point at which I can ever know that my model is going to be

complete. In fact it is never complete, it is ontologically incomplete. That's nested stuff, right. So we have many, many different nested levels of scale with both upward and downward causation. And we have an ontological incompleteness to any possible model, the possibility there's novelty at any one of these levels of scale. That's complexity. Complicatedness, by contrast, is much simpler. It is finite, it is bounded, to give sort of a very easy example: if I have the motion of a pendulum, and I'm really just focusing on it, in this complicated sense, because obviously it's a real phenomenon in nature so it's actually complex. But if I think of it just as a pendulum, I really only have two characteristics that matter. One characteristic is the direction that it's swinging at any given moment in time. Another characteristic is its momentum at any given moment in time. And I can more or less model this very simply, which is to say that when the pendulum is at the top of its arc, on either side, its momentum has reached its minimum, and the direction is reversed. So I can say that the direction is, goes from minus one in the top left to plus one in the top right and passes through zero at the bottom. And momentum goes from zero at the top left to the top right, and passes to plus one and minus one as it goes back and forth, left to right at the bottom. Now if I put that on a graph with an X, Y, I have a minus one plus one in direction and minus one plus one in momentum and it turns out it defines a circle. And I'm done. As a way of saying, "I'm done, the model is complete." Taking a look at this piece of reality as just this, these pieces, right, these four characteristics are all that I care about, that I have constructed a complete model. And that's the essence of a complicated system is if you're endeavouring to abstract from complex reality, some finite state that can have a complete end, by the way, fixed, unchanging model, right. So that's the like the essence, you've got complex, you've got complicated,

Tom Pegram 15:36
Okay, yeah?

Jordan Hall 15:37
Now in Dave's system, he actually has complex and chaotic on the left side, complicated and simple on the right side. But as far as I can tell, those are epistemological boundaries. Which is to say that a simple system is one that is within the intelligence capacity of the agent it's dealing with. So the pendulum is simple. Whereas the workings of a digital computer might be no one person or any group of people might be able to really understand exactly what's going on. But it is nonetheless actually finite and bounded. So the distinction is simple and complicated. we'll ignore that we'll just work with complicated and complex. Alright, so the proposition is that humans when we're endeavouring to do design, when we're trying to create something to respond to the world, we're building tools of which culture, by the way, is the, a tool. I need to make that point that culture is possibly the ERD tool and all tools are part of culture. We're engaging in complicatedness, we're making a move, we're endeavouring to abstract some finite boundary, to the complex environment. And that we are trying to set up some kind of rules base on how to go about operating either in or with that tool. So you look at any bureaucracy, any institution of any construct, and there is a, the humaneness to it, is of that sort, it is complicated. Now, again, it's very important to recognise that all complicated systems are intrinsically and inevitably, actually complex. So this, of course, is the point of the problem we run into. When we take our, we create our rules of how people are going to be, supposed to behave, but we're also dealing with the actual complexity of real human behaviour. So this then begins the process. So we have is- Are we good? Do you have any questions?

Tom Pegram 17:40
Yeah, perhaps, I'll just to perhaps restate what you're saying, to make sure that I've understood and perhaps put it in a context on which my students would understand as well. So the initial point on the water aquifer? I mean, essentially, what you're saying is that these problems are at a level of complexity, that it limits our ability to be effective to act effectively, to really understand the consequences of our actions as well, because of the magnitude or scale of the complexity, which say water scarcity presents. And I suppose the- Would that be a correct interpretation?

Jordan Hall 18:22
Well, that's one of three problems.

Tom Pegram 18:24
Right.

Jordan Hall 18:25
Right. So that's a good one. So what we can say is, there's a relationship between the amount of complexity that a given complicated system can handle.

Tom Pegram 18:36
Yes.

Jordan Hall 18:36
Can effectively bound and the amount of complexity that it is in fact faced with. So if you have a complicated system that can handle the complexity of the environment that it's dealing with, by the way, for the moment, this is, this is problem number two,

Tom Pegram 18:52
Yeah.

Jordan Hall 18:53
Then it can be perceived as a well-functioning system.

Tom Pegram 18:57
Yes. But can I just ask Jordan on that point, then? So if we think about the suite of trans boundary challenges, we might say global catastrophic risks? Would you, can we differentiate between sort of complex and super complex or even complicated and complex. For instance, nuclear weapons, you do have clear lines of attribution of responsibility, or potentially you have some attribution of responsibility that can be clearly identified. The consequences are direct. One can, one understands how that causal process works out, it is catastrophic. And we might compare that to say biodiversity where attribution of responsibility is incredibly diffuse, where often it's the indirect consequences of very decentralised activity that leads to these kind, to exacerbation of biodiversity loss. So have the problems got more complex got harder, or am I, actually have they always been complex and complicated it's just not a you, it never was a game plan?

Jordan Hall 19:59
Yeah, so here this is just like, be precise, which by the way, I would say is one of the ways that academia can be helpful. So let's be precise. The distinction I was making between complicated and complex was ontological in character, we can then expand that with an epistemological dimension. And here we can talk about degrees of complexity. So that there's a, and we can actually if we'd like to measure it in terms of bits of factual information. So a, what are those things called? The May Fly? What are they called [inaudible] May Fly? Anyway.

Tom Pegram 20:37
May Fly? Okay, yeah.

Jordan Hall 20:39
Yeah. Are these small worms where the total length of its DNA strand is like 120 nucleotides?

Tom Pegram 20:45
Yeah, yeah.

Jordan Hall 20:46
Where we can actually identify every single cell. It's very, it is it is complex in the ontological sense. But the amount of complexity is, at this point small enough that we actually can hold it, more or less, it's within the boundaries of our computational capacity. So we can build a complicated model that is able to have enough information processing capacity to bound the complexity of this particular underlying system. So there's a very important dynamic of the epistemological relationship. So in this case, yes, there's quite a difference between mutually assured destruction in a two state actor, problem domain, which is actually as you said, a relatively simple complex domain, there's not a whole lot of different moves to the, to the model that I have to create. And my model can be pretty effective. It still has fundamental ontological challenges that we'll get to in a moment, but at least at the level of being a well-functioning model, that works, okay. But if I, as you say, if I expand out to some other more, more complex system or system that has more complexity to it, to deal with climate as an example. We find ourselves noticing that even our best models, clearly, aren't even close to being able to hold the amount of complexity that they would need to be able to hold to actually bound the system within certain degrees. Now, here, I also feel like it's useful to invoke Nassim Taleb and the idea of Black Swans. So one of the problems that we run into at the epistemological/ontological boundary is that whenever I have a complicated model that has enough informational capacity to bound or to well model a complex system, it's always going to ultimately still be more or less. So there's always going to be some rounding some quantization of the analogue reality that drops the you know, the fifth, the ninth 30,000 digits past the decimal point. And broadly speaking, what we humans say is that well, that rounding error is okay, we can, it's all right, to round off at the edge, I should say, by the way that this goes all the way back to Calculus. If you're familiar with Leibniz, the notion of how calculus actually solves the problem of how do you measure the area under curve is through the method of the limit as x approaches infinity? Which is to say that we're going to reduce the error to what he called the infinitesimal. And then we're going to, we're going to round off. So our mathematics imp- explicitly includes this notion of rounding up. And of course, any model must because reality, complex reality, is infinite in its possibility.

Tom Pegram 23:51
Right

Jordan Hall 23:52
So what we find ourselves with is one of the problems we run into. So essentially, our first order problem is, do we have at all enough computational capacity to bound the complex system that we're observing inside a model that can actually give us any kind of predictability at all? Okay, yes or no? Let's just go through them and say yes, but then second order problem is that we're going to be running up against Black Swans, which is very, very low probability events, that nonetheless had very large magnitude consequences so that our, our model doesn't include them. And most of the time, that's fine, but some of the time that's catastrophic. So that's one of the challenges that actually lives at the epistemological ontological boundary and is irreducible, meaning that anytime you endeavour to manage a complex system using a complicated model, or framework, Black Swans are going to be part of what you're, of your life. Okay, so that's one. So then we have now three more problems. Let's see if I can, if I can get them slowly enough so that they land cleanly.

Tom Pegram 25:01
Thanks. Yeah.

Jordan Hall 25:04
Okay, so one, I would, I'll name the Tainter boundary named after the anthropologist Joseph Tainter, who was examining the collapse of what he called complex societies. The next is the, the Arc-Hideysmith boundary. And then the third-

Tom Pegram 25:32
Sorry, what was the second one there Jordan?

Jordan Hall 25:35
The second is the Arc-Hideysmith.

Tom Pegram 25:38
Okay.

Jordan Hall 25:38
A R C hyphen H I D E Y S M I T H. These are again the individuals who first brought it to my awareness. By the way.

Tom Pegram 25:47
I've not heard of that one.

Jordan Hall 25:49
I can imagine. I don't know that many people have.

Tom Pegram 25:52
Okay. So not just my ignorance. Yeah.

Jordan Hall 25:55
And the third, I'm just going to flag as the, as a sort of Heisenberg uncertainty problem. There's, I don't know that anybody has stated this well. By the way, they probably have. It's just I'm not familiar with it. But we'll get there last.

Tom Pegram 26:09
Okay.

Jordan Hall 26:10
So in in the Tainter boundary, what we, we might observe is a very, very specific set of relationships between the underlying complex reality of nature and the dynamics of complicatedness as it responds to complex nature in time. And I don't want to go into a whole lot of detail there just yet, because it's a bit of a long story. And I've spoken about it a couple of different times.

Tom Pegram 26:11
I think what you're saying, what you're suggesting is that essentially, ultimately, the complex conditions will overwhelm system designs that respond to complicated design principles.

Jordan Hall 26:59
Yeah, well, what happens is that you get two primary failure conditions that kind of co-create each other. On the complex side, the complicated actuation, the capacity of your complicated system to abstract the complex environment, destabilises the homeostatic equilibrium of the complex environment. So you dump carbon dioxide into the atmosphere, and destabilise the complex system that you were assuming was relatively stable, or you extract all of the oil, that's easy to get to. And the complex system isn't able to produce oil quickly enough. So there's a mismatch between the regenerative capacity of the complex system and the extractive and/or toxic capacity of the complicated system that leads to some kind of fragility and collapse on the complex side of the equation. So that's one side. And on the other side, what you have is that as complicated systems respond to changing demands, they have a real challenge in becoming more complicated, and therefore having a higher entropy, a higher carrying cost. And a complexity creeps in, in the gaps. So if you sort of zoom in on your- You sound like you're, you're British.

Tom Pegram 28:32
I am British. Yes.

Jordan Hall 28:34
Have you ever been to Heathrow?

Tom Pegram 28:36
Recently? Yes.

Jordan Hall 28:37
Great so Heathrow's an excellent example. But what you notice is this characteristic of how hard it is to actually maintain a very complicated system in good working order over time. Complexity kind of seeps in, a dirt gathers in the corners that doesn't ever quite creep up. Oil lines break out, rain begins to crack in the seams. And also, every single time that we try to deal with a new problem, that complicated model wasn't quite well in responding to either because we didn't notice it, or because something's actually changed. The effort of going back and re-engineering the complicated system all the way back down to its base is really, really hard. So we almost always add more complicatedness. So in America, we have a very simple example, which is we've got the Constitution, which is the first order complicated system, which is, you know, can fit on 10 pages. And then you've got, you know, a modern, like the, what was it called? The TPP I think the Trans Pacific Partnership?

Tom Pegram 29:50
Yeah.

Jordan Hall 29:51
Something like 12,000 pages for a single treaty. And that's the idea right what happens is that the complicated system, it cannot help them become simultaneously bloated in its own actuation. And become corroded in its interior. And the energy cost, the cost of actually tried to maintain the bloated system. And the increasing cost of trying to keep it working well puts pressures on the system on the complicated side, which can collapse on that side. [inaudible]

Tom Pegram 30:24
Sorry, Jordan, I was just wondering, would you apply that then to, for instance, the United Nations where, yeah, you see a lot of bloating, a lot of proliferation. You don't see a lot of organisations actually being decommissioned, for instance, when they no longer serve their purpose or being reconstituted, fundamentally re constituted.

Jordan Hall 30:45
It's broadly impossible. For reasons having to do with cybernetic control there, we have to do with the- You would need to have a complicated system, you would actually need to have a new system that was able to hold the totality of United Nations in itself to be able to actually update or modify the United Nations with precision. So if you try to do it from inside the United Nations, by definition, you have an amount of complexity in the United Nations as a functioning system that is larger than the United Nations as a computational, that the intelligence of the UN is smaller than the complexity of the UN. So you're done right. That you - by problem number one, you're already stuck. And so this will happen by the way, generically, across all possible relationships between complicated systems and complex systems, that is a statement about the nature of reality. And so you get to a place where you've got the, remember the Deepwater Horizon, the oil spill in the Gulf of Mexico? That was at the boundary between the complex collapse and the complicated collapse. As oil becomes harder and harder to get you know the extractive capacity, complicated systems actually pulled the complex system into more and more fragility. The complicated system has to become more and more capacitated, which means also more and more complicated, which makes it more and more fragile to better conditions. And so the Tainter painter model then says, "Well, this is going to end badly at some point somewhere, one of

these two sides ends up collapsing," either, your complicated system just kind of collapses on itself, like Rome, where even a small push, a barbarian invasion finally just collapses the whole thing. Or the complex system, reaches it's, you can't take any more fruit out of some piece of it, and you get a Mayan style collapse. That's the Tainter problem. Right. So this is, again, we're trying to describe the fact that so long as human beings are endeavouring to use complicated solutions to navigate complex reality, we have a number of categorical properties that are intrinsic to that dynamic.

Tom Pegram 33:06
Yes.

Jordan Hall 33:07
And the proposition is that that's, that's sort of the best way of describing the thing we're trying to deal with. Alright, so we've looked at number one, which is that you may run into a situation where you just don't have enough computational capacity to build a complicated system that can truly model and therefore bound the complex environment you're dealing with. And even if you do, there's going to be Black Swans popping up randomly. That's one, two is the Tainter dynamic, we just talked about, which is the relationship between the asymmetry of the extractive and/or toxic capacity of the complicated system to the regenerative capacity of the complex system and the becoming more complicated entropic decline of the complicated system into bloat and or into corrosion on the interior. Okay?

Tom Pegram 34:03
Yes. Which very much feels like where we are today? Of course, yeah,

Jordan Hall 34:07
It's all over the place. I had a wonderful opportunity when I came out to London to actually fly from JFK, no, sorry, from LAX to Heathrow, and just literally just wandered through the absurdity of a late stage couple of days just begging for collapse. I should mention, by the way, that historically, the way that we've dealt with this problem is in fact collapse. So the way we've broadly sort of flushed the system of complicated structures is gone ahead and collapse, Roman collapse, the Bronze Age collapse, the middle of the Dark Age collapse that was precipitated by the Black Plague, and we've had very and of course, China, historically has had these dynastic cycles where a dynasty emerges, rises, falls into corruption and collapses very badly, from which chaos rejuvenation actually occurred. The complicated systems really do go away, they fall to some very low level. And then, in a true state of just first chaos, and then complexity, we reinvent new systems so we move from Rome to Western civilization. So historically, that's how we've dealt with the problem. I don't think it's too hard a move to point out that it's unlikely that global collapse that a Rome or Bronze Age scale in 2025, is a very good option for what we're dealing with.

Tom Pegram 35:31
No. I mean, it's unbounded, as I think you're suggesting. Are you working with those kinds of timeframes?

Jordan Hall 35:38
Yeah, yeah, we're definitely we're definitely in the zone where a sort of a five to 15 year time frame for some set of cascade effects is entirely possible. I mean we, if we take a look back at 2008, and witness how the global financial system went through a massive convulsion that took truly heroic efforts on the part of effectively everybody on the planet, and push and push risk, almost everywhere they could stick it just barely held on by its fingernails. That's a good example. You know starting not too long ago, we entered into a point where the fragility of the total complicated system of the post-World War Two order was reaching points of fragility, and the sort of, every day that fragility just continues to grow for, for whatever reasons, all right, but then you got the next problem. And this will not seem unfamiliar to you at all. This is the Arc-Hideysmith problem. And so here we have is we have the human factor. So in the Tainter area, we're talking about more or less the direct relationship between complicated and complex and nature. In the Arc-Hideysmith what we're going to deal with is humans, and what we notice is that any complicated system that we put in place becomes a niche, for exploitation by some subset of the human beings that are contained by the complicated system. So this becomes, if you're familiar with evolutionary theory, this becomes an actual example of what's called group selection. Group selection is somewhat controversial in sort of, standard order, biological evolution. But here we're talking about group selection as something happening within human society. So what happens is, we have a complicated system, and that complicated system is finite and bounded, which means that there are going to be gaps. In fact, there's going to be gaps all over the place. And this creates a niche for defection. So within the archives with model growth, more or less dealing with the problem of game theory, it's a game. And in the context of game theory, what we begin to see is that anytime a prisoner's dilemma style defection scenario shows up, or any kind of tragedy of Commons style defection scenario shows up with a multipolar dilemma. Game Theory begins to apply, and that there will be a niche for some group to figure out how to take advantage of the gap between the complicated and the complex, to achieve local selective advantage in the context of the larger complicated system. Of course, this gives rise to things like policing. So you know to use just a very simple example, if the basic problem is there's a group of 10 of us. And we're trying to carry a heavy log from point A to point B. And so all 10 of us carry the log, and we just sort of put it on our shoulders and we even arrange by height, so it's actually relatively convenient. There's a possibility that one of us could slack off right? We have a multipolar problem. And if there's a reward for doing that, if there's something about maintaining energy, to the advantage here, it gives you a local selected advantage over everybody else. Like let's say the way the game works is, we carry the logs from point A to point B. And then at point B, we engage in some kind of endurance test and whoever wins, wins the big prize, right? Well immediately we see how the games can play out, right, there's going to be a, everyone's going to endeavour to slack off as much as they can get away with, such that the primary tasks, the global task happens, the logs carried from point A to point B, but they get local selected advantage for their smaller group in this case, one in the second task. Broadly speaking, what happens is, this again, is a general characteristic of complicatedness that the complexity of a human being an actual discrete human. And by the way, I should say, up to Dunbar limit human groups, has a capacity to find the niche. He can't help it. Actually there's an evolutionary mandate, that if there is a niche, that niche will be exploited, it'll be found, it will be utilised. Because if I don't, then you will. And this begins the process that the Arc-Hideysmith model moves from what they call the wild, to the domestic, to the feral to again collapse. And the basic story here is that in the wild, there's a very Dunbar complexity based, a human relationship to other humans, we come with a very strong relationship to nature.

Tom Pegram 40:37
Could we draw some analogies to say, I don't know Ostrom's work on how to map- how small communities manage the commons?

Jordan Hall 40:46
Absolutely right, exactly, inside the Dunbar limit, or instead of community that has, can use those kinds of human scale, evolved capacities to do policing. Specifically, then we have a capacity to manage commons, we can solve multipolar dilemmas. But as the scale of humans begins to go beyond that limit, we start running into having to use complicated systems, mostly bureaucracies to endeavour to manage defection.

Tom Pegram 41:20
Yes.

Jordan Hall 41:21
And we have begun the process. And there can be many, many, by the way, you can take a look at this in any civilization. So you look at the origin, for example of Rome. And the extreme intensity of the origin of Rome, their conflict with the Celts almost was existential. And so they had to develop, develop an extremely effective what's called Asabiyyah by the Islamic scholar, Ibn [Khaldun] - forgot his last name, well Asabiyyah's the word you might call it teamwork or capacity to be on the same team. And first generation second generation, again, kind of like coming out of World War Two, the guys who fought together in the foxholes and built real human levels of why it's important not to defect on each other. It's around and you can actually do some pretty good stuff with that, to use the recently debauched, but almost perfect story up until the last season Game of Thrones. You've got the Starks you've got the Night's Watch right on the border metaphorically, literally at the wall between civilization and nature, where complex nature is constantly pushing back on human society. And every time local defection, any group tries to defect. It's quickly noticed and quickly policed. And so at the wall and the Night's Watch, you have a wild type human who's actively using complexity in relationship with complexity. Then as you move further from the border, and where nature is, is actually being held back successfully, by your complicated social environment, people are no longer having to deal directly with nature every day. They're actually dealing with society as their primary niche. This is the key, was to shift when you move from nature as the human niche to societies as the human niche, you're now in the Arc-Hideysmith model. We're now at Winterfell. Right? We're in the north, you still are close and the story of winter is coming still has traction. And defectors get punished remember, the very first season where Ned Stark is saying you know as the King, "Yes, it feels bad to have to chop the head off of this poor guy who just ran from a scary thing, but them's the rules." And by the way, the King has to have his hand in the sword, you've got to enforce the law directly, like this is good domesticated humans, this is well functioning, complicated society, where we're still in the period with a complicated system is being enforced in good faith, by the by most people by - in particular, by the leadership but as you move further

Tom Pegram 43:58
I mean, what we're talking about also, I suppose is ethics. And are we talking about sort of virtue ethics and sort of strong social norms?

Jordan Hall 44:10
We're yes, we're talking about the relationship between the niche of society and the durability of virtue ethics in time. So this is the story of history right, the story of Ned Stark exhibiting virtue and virtue of showing up as successful humans in Winterfell, but when Ned Stark moves to King's Landing his virtues become naïveté, and he gets his head chopped off, by the way, by an executioner and not by the King. Rules in King's Landing are now moving into the feral space, where complex humans now begin to prey on each other. Because the niche is society, no longer nature and the virtues of wild, the virtues, even of domesticity become prey, they become something that other humans can choose to play on. And these, by the way have to do with very, two very specific gaps. One gap has to do with the gap in communication, which we see constantly. Meaning that if there's an opportunity for me to communicate in a way that you can't check perfectly the veracity of my communication, then there opens up a possibility for me to communicate in a fashion, which ever so slightly advantages me over you. The other, of course, is the gap with objective reality, to the degree to which it's actually difficult to know what's actually going on, then there's a way for there to be a, again, an opportunity to exploit it for my local advantage. So use climate change as a great example, a perfect example. Is there climate change? Is there? What's it look like? How's it working? What would happen if we did X, Y, or Z? Well, the reason why it's so hard for us to actually make any movement here is because of those two problems. On the one hand, it's possible for me to tell you a story, a really good narrative that gets you to make choices that may in fact, benefit you. But more importantly, benefit me more. And it's actually really, really hard to know, complex nature is bounded. And so even if we tried really hard in good faith to know exactly what's going on, there's a gap. And so now, of course, the question is, well, what do I do with that gap? Do I put do I take the personal hit on myself? Do I bear the risk of that gap? Or do I protect myself in that society, people who I don't even know where the risk on that gap? Again, the calculus of game theory is that even if for a while most people choose to take the hit themselves, they will ultimately begin to actually be ultimately selecting against themselves, they will become losers in the social game, they will not win political power, they will not win fame and wealth. And those who play the play the social game correctly, they play game theory right, will begin to win. And so they will eventually begin to select against the dupes and the rubes who don't understand that once you've moved into social space: the game is different. Now, of course, again, historically, this has led to collapse. And the way we've solved this problem is we've had a nice big fat purge. And lots and lots of people die, including, by the way, the Pharaohs who very quickly find themselves on the wrong side of a bad bet. So ferality is a great strategy in the beginning of a social expansion. You actually become a tyrant lineage like the Hapsburgs, who lived off the feudalism for generations. But when the collapse does finally come, generally speaking, ferality has a very, very hard time because once you once you find yourself having to navigate complex reality directly, the water does not flow, and you can't just go to the store and buy food, then you're right back to Dunbar level human virtue as the fundamental currency.

Tom Pegram 48:20
Connecting back to the Tainter principle, I suppose. Also, if we continue to play a game A, ultimately you're going to extinguish the playing field.

Jordan Hall 48:33
Yes, that's right. So, so again, you can actually kind of, you can see the Tainter principle as having its own characteristics, and the Arc-Hideysmith model as having their own characteristics. But of course, they're both happening simultaneously. So you've got now if I use Heathrow as my example, I have the difficulty of the increasing complicatedness of the global transportation network. I have the difficulty of the increasing complicated missive would have this managing a more and more complicated system that starts having more places for entropy to show up. And then I have the difficulty of the fact that bureaucrats are paid bureaucrats, and there's very little possibility of policing them. And the mechanisms for police just add another layer of petty bureaucrats who eventually need to be policed, which creates more area for exploitation and/or for entropy to show up. And so this is the problem. And then we have the final problem. This is what I've been thinking, referring to as kind of the Heisenberg uncertainty problems. So just to make the reference point of Heisenberg uncertainty in physics is that at certain levels of scale, you cannot decouple the consequences of the observer from the system. So physics in particular, but broadly speaking, science is premised on the capacity to separate the observer from the system. So I can look at the system and my impact on the system should be zero. What Heisenberg notices is that in physics, at least, when you get down to the very, very small, the capacity to observe the capacity to perceive information from the system at all, must actually have a, not only nonzero but oftentimes fundamental impact on the dynamics of the system. So if I try to measure the momentum of a quantum phenomenon, I cannot measure its location. And, and vice versa. So if I measured the momentum with high precision, actually move my uncertainty of its location almost completely and vice versa. Well, as it turns out, this principle is not just limited to quantum physics, it's actually universal in nature, but it just has to do with the relationship between the power of the agent and the strength of the system. So if I am using photons to observe quantum phenomena, my photons are not going to move a mountain or a, even a small weight. So if I'm looking at a 1gram weight with my eyeballs, the photons of light bouncing off that 1gram weight, the power of my observation is relatively small compared to the strength or the inertia of the system under observation, so I can more or less rule it out. This is almost like a Black Swan thing. But if I'm using nuclear bombs to probe that 1gram weight, then I vaporise that 1gram weight, right? So it's just really a relationship between the two. Well, now just take this whole story that I've been telling, as we begin to try to deal with more and more complex systems that we're trying to deal with. Now we're trying to deal with the whole global climate, for example.

Tom Pegram 51:56
Yes.

Jordan Hall 51:57
We find we actually have to use more and more powerful, complicated capacities to both model them, and then to control them and manage them. But now, the power of what we're using is nonzero in the context of the system that we're dealing with. And this gets us to an infinite regress uncertainty problem. So at a certain threshold, our complicated approach is actually creating ripples in the complex

environment, which makes the environment harder to manage, which becomes a positive feedback loop in the direction of collapse. Does that make sense?

Tom Pegram 52:37
Yes, I mean, it's a positive feedback loop in the direction of chaos, potentially, I suppose.

Jordan Hall 52:41
Exactly.

Tom Pegram 52:42
Unintended consequences.

Jordan Hall 52:45
And, and cybernetics theory and control theory actually has lots and lots and lots of these kinds of things, you know, if you've got a, an aeroplane is trying to fly and the control stick, the movement that you create generates more effect than the state you're able to measure, then you'll get a very quick collapse, it'll actually come out of control. And we'll see this by the way, it shows up in control theory, more or less perfectly. And so -

Tom Pegram 53:17
That's really interesting. Um, so

Jordan Hall 53:20
If we move to a threshold, which is where we are at, where we are dealing with a level of complexity that is either outside of the bounds of our epistemological capacity to model it at all, which happens in some cases, or where the level of power necessary to be able to model and respond to it is actually showing up in the system itself. Then we've once again reached the boundary conditions of game A, of the ability to use complicatedness to manage complexity. That's it. Now-

Tom Pegram 54:01
Yeah. I was gonna say Jordan, I think you've done a fantastic job of setting up the problem. And, and now I'm really worried. And it seems that what you're suggesting is that we have to actually handle the total complexity of the situation, you would have to be able to hold all three of these principles simultaneously, anything less than that will likely lead to a collapse. And I'm also interested as a political theorist that you don't really place so much emphasis on power on, say, internal corruption capture, as much as really the daunting structural challenge that these super complex problems pose. That'd be a correct interpretation.

Jordan Hall 54:44
Well, I would just say that the all of those questions are real, but they're more or less captured as a subset of the first and the second. So for example, corruption and capture is going to be some variation on multipolar dilemmas that show up in the Arc-Hideysmith model.

Tom Pegram 55:01
Yeah, yeah. That makes a lot of sense.

Jordan Hall 55:05
You know, bureaucratic. Like the problem that von Mises describes in terms of how command and control economies can't actually govern economic systems.

Tom Pegram 55:18
Yeah.

Jordan Hall 55:18
More or less is either problem kind one, which is that the complexity of economies is larger than the full capacity of the complicated system, you can develop both command control economy or problem kind two, which is that as you build your command and control economy, you begin to notice that it becomes more and more and more complicated as it tries to actually continue to keep pace with the complex environment and you run into a Tainter style collapse. So... There you go.

Tom Pegram 55:45
Okay, great. Well as I say, I think it's very helpful getting right down to the foundational tectonic plates, if you will, of the challenges that we confront. And I'm wondering, then, I suppose the obvious question is, what are we going to do? And obviously, we see I think, a lot of denial in, at least in Western culture around the gravity of the situation. Most of the time we see a lot of young people mobilising, we see efforts towards empowerment, I think with, say, Extinction Rebellion and other organisations. What does a transition towards an effective governance response to this situation look like?

Jordan Hall 56:32
Well, interestingly enough, we can actually state the what, somewhat simply, but the how's a bit more challenging.

Tom Pegram 56:40
Okay.

Jordan Hall 56:42
The what is that we must, in fact, dispense more or less entirely, with endeavouring to manage complex systems, with fundamentally, with complicated approaches, still actually use complicated approaches quite a bit, but they have to be not the highest level in the stack. We have to actually find some way as humans to manage our complex environment and our complex humanity in a truly complex way, not in a complicated way. Now, this is one of those classic scenarios in science where the problem is actually well stated. The solution is a big fat question mark. So, remember, at the very beginning, I made the proposition. I'll say it again, now that we've got a lot of water under the bridge, that the totality of the human toolkit, every single thing that we have done deliberately, since the first tool, and certainly since the agricultural revolution, the dawn of agriculture and religion, until now have been from the game A toolkit, we should just say from the toolkit based on the use of complicated systems to manage complex environments. So literally everything that we know on how to go about responding to problems that are

beyond the human scale won't work. So this is kind of like the Arthur Conan Doyle scenario. Okay, fair enough. Now, I'll bow back up in a bit and kind of examine that spot. But let's assume for the moment that you're able to look nod and say, "Okay, fair enough. We've eliminated all the things that can't possibly work. So we're left with something which, although very challenging, it's the place we have to focus our time and energy."

Tom Pegram 58:36
Yes.

Jordan Hall 58:39
So what I noticed when I've had this conversation, and by the way, I've noticed it changing. So I actually, more or less was beginning to have this conversation on the order of about what it is this 2019? Seven years ago.

Tom Pegram 58:54
Yes. I've seen some of your earlier videos on YouTube. Fascinating yeah, on governance design.

Jordan Hall 59:00
Yeah. So more or less everything that I'm saying to you was at least somewhat clear seven years ago. And what I found was that. Hmm, yeah, let me actually say there's three, three general responses. As you can imagine, the most common response was "I don't understand." And that's a very large amount of abstraction and conceptualization, necessary to be able to tell the story that I just told you and I don't know whether or not even yet it's particularly clearly presented, the people who are listening are actually able to grasp at a level that is, it feels quite real. Not just sort of intriguing, but quite real, in the sense of, you know, the law of gravity has a nice, quite realness to it and so that you're not likely to jump off a building. This is that sort of thing with the proposition is we have to actually dispense with literally everything we've ever used in the- since the dawn of civilization to solve our problems, then the argument needs to actually feel quite, quite, quite real to you. So the first problem is that very, very, very few people were receiving the argument and holding the complexity of the argument enough to be able to say, "Yep, that is, right, that is a good description of reality, and therefore, the conclusion follows." So most people just sort of said, some variation of "Eh maybe. And I'd actually rather not deal with this, I'm going to go do other stuff."

Tom Pegram 1:00:46
Okay.

Jordan Hall 1:00:47
And this is, of course, it's common in almost every circumstance. I mean if you're- the conservative response of do what more or less has worked in the past, it's a very good rule of thumb. And so when somebody comes to you with something that's really hard to understand, and it implies that you definitely have to put down the tool that's worked very well for you in the past, as long as that tool is even vaguely likely to continue working, you'll just tell them to piss off.

Tom Pegram 1:01:12
Yes, but of course, at some point, I suppose the risk of business as usual, may actually outweigh the risk of radical transformative change.

Jordan Hall 1:01:23
And this is what I've noticed over the past seven years is that more and more people have noticed that the tools that they've been using aren't working. And if the tools that they look to use not only aren't working, but are in fact making things worse, and so their willingness to pursue, just the embodied sense of wisdom in it. Yeah, you know, what I've actually been able to feel myself how this Tainter thing has been showing up over the past seven years, or how this Arc-Hideysmith thing has been shown over the past seven years, that's, there's almost more of a concrete embodied development. So I'd say that, where maybe 1 person in 10,000, 7 years ago would nod their head. Now it's like 1 person in 100, are more or less nodding their head.

Tom Pegram 1:02:05
But I would imagine that anyone who's reading the headlines in The Guardian on, you know, biodiversity collapse, sixth mass extinction. I mean, this is now penetrating the mainstream, would you agree?

Jordan Hall 1:02:15
Yes, and let's get back to that in a second. Let me get through the other two, and then we'll get and that's a good place to go. And I think we may be able to actually move the state of the art of the mainstream meaningfully forward on this point. So then you've got the second, which was almost everybody else. So the people who actually were able to hold all the complexity of the story, which by the way, was very poorly told seven years ago. And it's relatively poorly told still now because it's a hard thing to do, they would then realise the magnitude of what we're facing as a human family. And their capacity to process grief became the gating item. So they would either literally just go offline, like, "Oh, shit, like this thing is not, there's no chance we have got no chance. I'm, you know, devastated and no longer capable of participating." For some people, like some people just went offline. Other people went into delusion, meaning, you could actually see it, I got quite good at noticing how it happens at a physiological level, like I could see the pupils dilate, when they got, when it really, like if they can understand what was happening, their body would actually go into a fight or flight response, and their prefrontal cortex would tell a soothing story that allowed them to move forward day to day. And this, by the way, is very commonplace among more or less anybody who's at the edge of one of the primary risk areas. So, you know, the, and I think this is actually becoming much more mainstream the story of if you truly, truly believe that we're on the precipice of catastrophic biosphere collapse. How exactly do you go to your job in the morning as an air traffic controller?

Tom Pegram 1:04:01
Absolutely.

Jordan Hall 1:04:02
Right. And of course, the problem is, Well, shit, what else are you going to do? What exactly can you do? So the only thing you can do is you go into denial, you don't actually fully live, the thing that you

see, because well, that's the only choice you got, you've got no other way to go. And this makes sense, right? When our actuation capacity is so vastly overwhelmed by the scope of what it is that we perceive must be done. We effectively put our head in the sand and this is an adaptive response that is not unreasonable.

Tom Pegram 1:04:35
I'm reminded of many conversations I have with colleagues very much along these lines.

Jordan Hall 1:04:41
Sure, absolutely. No question. I mean, it's actually doesn't have to be, even be that enormous, you know, if you're having in academia, for example, because the emotional resilience of academics tend to be quite low. If it's merely a threat, if the proposition is literally only that, well, it seems like your department may in fact have to go away. That is enough to cause them a fight or flight response that goes into those, what's called the freeze response, you familiar with that construction?

Tom Pegram 1:05:10
Yes, yeah.

Jordan Hall 1:05:12
Which is to say they go to freeze, which at a cognitive level becomes delusional. And they'll just their body will tell them "Sorry, that's an unacceptable conclusion. And I will simply go on believing otherwise, regardless of what reason has to say." So this is a major issue with academics, is that academics, broadly speaking, don't have a lot of embodied experience with shift being real and harmful and scary.

Tom Pegram 1:05:36
So intelligence is, intelligence is no match for the limbic system.

Jordan Hall 1:05:41
More or less, right? So what we need to do is we need to get a whole bunch of intelligent academics and put them through Navy SEAL training.

Tom Pegram 1:05:48
Yeah.

Jordan Hall 1:05:49
And then we'll actually be okay. And I'm not being the least bit facetious. This is most exactly what I've been doing with a wide variety of different people. So then the third was that small, narrow, tiny group of people who help were able to perceive the story as it was being told, process their grief and showed up, and then more or less participated in refining the story, because what we discovered was that we couldn't do anything about it. But we could try to tell the story better, we could actually get - and by tell the story better I don't mean merely at the level of narrative, I mean, really refined down to rigorous precision. A lot of the things that seven years ago was being pointed at, but wasn't being able to be modelled. So like the Arc-Hideysmith model, came out of that work. And some very specific refinements

to the Tainter model, refinements to relationship between complicated and complex, I mean a lot of work has actually happened from this relatively small group of people, right? To make the story or make the, the science more and more precise, and more and more, simply put. So that's where we are. So let's get back to the notion of the mainstream. So here's the here's the place that I think is like the wind that we could really have that would be wonderful. So I'm, I'm a member of extinction rebellion. And I am perceiving the imminence of biosphere collapse. And I'm feeling it. And I've moved to action. In fact, I've moved to action so heavily that I'm willing to do what it takes. So that's, that's move one. Here's the other side of the equation. Nothing contained within any of the institutional structures that we currently have could possibly solve the problem. Oh, shit. Because look what happens, I'm willing to do what it takes. What does that actually show up as well, broadly speaking, I'm going to protest and try to get the government to do something. Wow, I've got bad news for you. Even assuming they care, right. So we're under the capture corruption problem, right, so some, some fraction of the folks who are in charge aren't necessarily acting in good faith, but let's assume that we're dealing with people who are acting in good faith, and it aint up to the task. The governance structures that we built coming out of World War Two, are up to the task of getting us to the moon and back, they can't get us to Mars and back. There's no chance they can get us to Mars and back. In fact, nowadays, they can't get us to the moon and back. They never ever had the operating capacity to manage the complexity of biosphere collapse, full stop. It was just not in the cards. And they suck compared to where they were in the 70s. So because of the Tainter, and the Arc-Hideysmith problems, right they become very, very complicated. They become... They have entropy all over the place. They're bloated all over the place. And they're subject to a fractal defection that makes it almost a latticework of fragility. And so here I, I just point to Brexit. And I don't mean Brexit in the sense of oh my gosh, other people voted to leave, to leave the European Union. I mean, the Heathrow level of incompetence in just processing the question, that even put forward a proposal to muster a vote, to get a person to even step into the breach to be able to hold even the least bit of consensus. The governance system can't handle that question. Can't handle. Why do we think that it can handle something that is 1x10 to the 12th more complicated question of managing bias for collapse. And when I, when I say that, and I'm not being facetious because managing bias for collapse includes Brexit, includes the European Union, includes the totality of the entire global economy. It is not just "How do we keep the old 1980s/1990s ecology of how do we save the whales?" We're talking about something where it's a big deal. I mean, it's...

Tom Pegram 1:10:10
You're suggesting. I mean, it's a global ontology, and it goes far beyond the old constructs of nation states, for example.

Jordan Hall 1:10:17
You got it. Yeah. I mean, it's, it's as simple as that. And then it's, if we use the computational model as an example. You know, it's like trying to think of something that people are familiar with. Yeah, remember downloading with a modem, with like an old 28, 8 modem?

Tom Pegram 1:10:41
Yeah, I remember. Yeah.

Jordan Hall 1:10:42

Yeah. It's like time tried to download every single video on YouTube with a dial up modem.

Tom Pegram 1:10:50
Yeah, okay. Yeah I got the point, yeah.

Tom Pegram 1:10:51
I mean, you're almost talking about, in a sense, trying to close all of these open feedback loops within the global commons. And, of course, we do have technology coming online, which allows us, I mean, it's sort of a very information rich ecology, which might allow us to begin thinking about how to monitor, report, verify, attribute responsibility, and so on. But it's very emergent technology. And we need to scale it up. And I mean,

Jordan Hall 1:10:51
It's, it's not that hard. If you really, really can make it, it's simple. The computational capacity of the complicated systems that we have access to right now, are roughly equivalent to a dial up modem in the amount of bandwidth that they can process at their best, by the way, at their best. And the complexity of the problem domain that we need to deal with is roughly equivalent to every video on YouTube. And, okay, that's it. Like if you can really grasp that and understand it and hold it and say, okay, and by the way, check them out and have a minute. It's, the point is, is this, is the asymmetry, not the specifics, but then you're able to say, okay, great Extinction Rebellion. But now I have to really take responsibility, all the way down, and be able to hold the fact that we don't actually know how to solve the problem, not only that, we don't even know how to how to build something that knows how to solve a problem.

Jordan Hall 1:12:21
Here's the very, very good news. We haven't actually been idle for the past century and a half.

Jordan Hall 1:12:29
If you imagine a circle, and said, that circle be the stuff that humanity knows how to do well. And you take a, like the way that a root structure like a tree root, and projected on that circle, so what you have is a kind of a fixed centre that is very much connected. And then or if you'd like vascular like veins, either one, you've got this series that gets narrower or narrower as you get to the edge, okay? That actually is a pretty good representation of what we're currently able to use, using the institutional structure that we have. The gaps in between those capillaries of capacity that are currently deployed are actually very, very large, we're probably tapping into something like somewhere between 7% and 15% of the potential that currently actually already exists, both in terms of knowledge, and in terms of creativity and doing more or less, we actually know what to do, if we just got our shit together, the problem is more about building a new form of collective intelligence that has the capacity to actually deploy something more like 75% of human capacity functionally, we don't actually have to figure out a lot of physical stuff like we don't have to do a lot of science, we don't have to do a lot of engineering, we do but most of it's well within the zone of something that we can do or know how to do. The hardest, hardest part is to innovate, a new form of how do we go about collaborating that doesn't fall into the pitfalls that we just described.

Tom Pegram 1:14:13
And I think you've, you in a way have answered a question, which was in the back of my mind, which is, it seems as if there's a bit of a paradox here in the sense that we do need institutional apparatus, but we can't put our faith in transcendent institutions. We do need some kind of global response, some kind of infrastructure, but at the same time, you know, change has to come from the very local level. I mean, it almost reminds me of say, what Bertrand Russell said in the late 50s. That so much at stake and so much rests on the moral constitution of modern man. So it's about doing that in a work, which is required by each and every individual but how then to scale it up to a global response to what is a global existential risks situation?

Jordan Hall 1:15:04
Yeah, well, there's a couple of rules of thumb that have emerged in the work that we've been engaging in that are at least helpful. One is fluid is smooth, smooth is fast. And this has to do with the notion of let me think if I can put the metaphor well so its lands nicely, it's...

Jordan Hall 1:15:30
You, you can't give birth to a baby any faster than nine months. More or less, certainly not any faster than seven months. There's something about the thing that we're doing where it's really, really important to get the basic stuff a lot right. It's kind of like, if you're trying to put a spot on the moon with a laser, you have to be very precise with where the laser is here on earth. And if you try to put a spot on Mars, it's even more precise. Well, okay, that means in the beginning, the things that you're doing at the most basic level, have to be taken as slowly as they must be taken to make sure the right stuff is laid down well, solid foundations, if you're going to try to build something like what we're talking about, it has to be very precise, it has to be done with the level of care that. Do you remember the, have you ever seen the picture of the stones of Machu Picchu? It's like that. So yes, we are going to be moving 100 ton blocks, we're going to have to actually fit within a millimetre precision to be able to build the kinds of institutional structure that we're talking about. So. Slow is fast, slow is smooth, smooth is fast. And generally speaking, we find ourselves caught in an urgency trap, which is cutting corners, because we believe we're running out of time. We are running out of time. But if you, if you use the example of James Bond, trying to defuse the bomb, if you cut the wrong wire you've blown up. So even if you could, even if the clock is running out, you really do have to cut the right wire. And so this is important, super, super, super important, like, in the story that I've told there's conclusions that follow in terms of choices that can't work and choices that, the places where our choices must be. Many people will sort of rush past that and say, Well, we've got to solve the problem. And you are you familiar with the story of Einstein when he was asked, like, how would you solve a really hard problem?

Tom Pegram 1:17:39
No.

Jordan Hall 1:17:40
I would spend, if I had, you know, a day to solve a problem, I would spend 23 hours thinking about the problem very hard. And then one hour solving it, it's like that, you know, we're doing something that requires that level of like the patience of a neurosurgeon. You're doing something that is very delicate, and very precise and errors. We don't have time for errors is a good way of putting it. And so

Tom Pegram 1:18:07
How can we know that we're making errors in real time? And how can we correct that direction?

Jordan Hall 1:18:15
Very nice. Okay, so let's see if we can get it, get something on that. Okay, if there's anything, a way of saying this. I don't have a good way of saying it. The principle is actually called a principle of continuity. But maybe it will come up later in the conversation. Let me think of a good example. Yeah, that's actually super, super hard to say easily.

Tom Pegram 1:18:54
Okay.

Jordan Hall 1:18:57
Well, it's gonna be something like clarity. So and maybe another good word is integrity. Yeah, this is good. Let me see if this works. There's a an experience I think almost everybody has. And our current world reinforces this. of glossing over things, of waving hands or at skipping. Often, oftentimes, actually, even things where you have a felt sense that something is awry. So let's say that you're like, somebody is- If somebody wrote an email, and asked you to check over the email that they're going to send to a third person and you read through it, and some tiny, tiny portion of you says, "Hmm" but you can't be bothered. It's not too much. So you let it go. It's something like that it's something like having, an enormous, such a high level of integrity, that you don't do anything until you really have clarity, and a high enough level of embodied practice of what clarity actually feels like. And this is crucial that you can actually notice when you've got clarity and this is more like art than it is like science. This is more like complexity than it is like complicatedness. If you imagine a really- skilled artists whether playing music or doing sculpture or painting whatever it happens to be, particularly, if you happen to be a really skilled artist, you'll notice that there is actually a very distinct way of knowing when a particular piece of expression has actually landed, the thing is right, the tone has been hit, song is correct. And you become, as you become a master of the art, you have the ability to master that level of clarity of expression, that you can feel in yourself, all the different ways that you have of perceiving your kinaesthetic sense, your spatial sense your- the way that you're actually able to model how other human beings will respond to, to manage shame in a social environment, all these different ways that your human instinct is tuned to make sense of its environment or being deployed in harmony with each other to try to get this thing in the right way, in the right place.

Tom Pegram 1:21:39
I'm almost, I'm reminded of say, the Buddhist teaching on right intention to ensure that you have clarity on your intention to ensure your intention is ultimately compassionate. Act on that intention, but act without expectation.

Jordan Hall 1:21:55
Yeah, that's very nice like that, those kinds of, that level of embodied ethics, of lived ethics is actually at the centre, this is crucial. So remember, I mentioned the thing, where we're no longer in a situation where we can be outside of the system? A lot of our intentions will be to try to create, to imagine that

we could create a control structure, let's say like, for example, a mathematical model that we could use to measure the thing that we're doing from the outside. Does that makes sense? Like, a kind of a steely eyed new atheist would look at this and say, "Well, what we're going to do is we're going to need to be able to measure the system that we're designing and make sure that it's not making any errors." Well, I've got news for you bucko. You're part of the system that you're designing, and your control system is also part of the system, there's no outside observer available. So we're actually talking about something where the interior you have, you have to think about this as the way that a dancer dances, the way that a musician plays music, not the way that an engineer designs. And also, by the way, including the engineer, and the scientists, and the mathematician inside that dancer's, an integrated capacity, with the totality of all of our hard earned capabilities, as complicated designers are brought to bear, but they're brought to bear in a larger context that brings our capacity to be in integrity as individuals and as a group all the way up and down. That's a very poetic way of putting it. But until I have a better way of putting it a bit about, it's about as good as I could do right now.

Tom Pegram 1:23:31
No that, I think that, that made a lot of sense. And I suppose as, as we draw to a close, I mean, the idea of integrated capacity is not something that's well understood in the academy at the moment. You know, myself, many of my colleagues we're very specialised within our own disciplinary silos.

Jordan Hall 1:23:50
Yeah, that's good. So thank you. That's, that's a good opening. So let's use this as a very, very nice concrete example and I witnessed this at the Santa Fe Institute, so I can speak to it quite clearly. Imagine if scientists, academics, were upgraded in their capacity in three ways. First, they went through Navy SEAL training. So their limbic system didn't jack their prefrontal cortex they could actually deal with, with things that felt bad and still actually stay very, very clear. So that's one. The second is they really seriously went through a Buddhist training, so that they could actually act in a non-egoic, non-attached way, so that truly, I mean imagine that, imagine if you had a group of scientists, who without losing even an iota of their acumen or expertise, upgraded their neuro emotional capacity and upgraded their ability to interact with each other non egoically. And then they began to collaborate on constructing better frameworks than they're holding as individuals in a truly trans-disciplinary way. Imagine what they could do that is currently utterly impossible. In the context of scientists who have the emotional resilience of baby deer, have the egos of, I guess scientists, I don't really have anything more superlative than that. And who, as a consequence, are unreasonably wedded to the cognitive frameworks that are useful tools, they're definitely not the whole story. That's actually not a bad way of sort of beginning the journey. Now, of course, just extend that to include everybody, and you're getting the beginning of the how.

Tom Pegram 1:25:53
But of course, in particular, young, young people, students, schoolchildren, they need to be- have that capacity to perceive the world in a much more sophisticated and integrated fashion. And I suppose we all have a role to play there.

Jordan Hall 1:26:10
And, and by the way, I guess we've got just a few more minutes, you know five, it's perfect. My experience of education, the educational system, is that it's almost entirely not just a waste, but destructive. So we've got a lot of room to manoeuvre. The amount of time that young people are putting into learning stuff that not only does not serve them, but actually gets in the way of things that would serve them, could be put to better, could be put to better ends. And so I would imagine, for example, that you could create a different educational regime, that where young people could learn the thing they need to learn, I'm quite confident that you could get a PhD level of academic capacity, somewhere around your sophomore level of high school, if you were actually in a place that wasn't wasting your time. If by the way, that was your calling it very well may not be, but just at the level of sort of, the amount of knowledge or more importantly, the capacity to learn more, much more to the point. And also be able to develop these other capacities at the level of emotion and ego. So a pivot, a pivot in an educational domain, where we focused on kids ages, say, 14 to 22. And just use their time well. To build the capacity to learn up to a much sharper, much, much sharper level. And again, from my point of view, that's actually trivial, because the current system is operating in the exact opposite direction.

Tom Pegram 1:27:44
Yes.

Jordan Hall 1:27:45
And use the time savings to simultaneously upgrade their emotional, physical capacities, their self-awareness, mindfulness, egoic capacities. And while we're at it, the relational capacities so that they can become really good friends and mates to each other. This would be, like that's extremely doable. And it's like the pointy end of the spear in terms of getting things done. And they're smart, I mean these kids these days can grab, can move fast.

Tom Pegram 1:28:19
Absolutely, yes. Yeah, I will. I think you've certainly given me some time work. I'll have to sign up for that SEAL training.

Jordan Hall 1:28:26
Yeah.

Tom Pegram 1:28:27
I was just curious to ask Jordan. I mean, would you have any particular readings that you would suggest for my students, undergraduates, graduates?

Jordan Hall 1:28:37
Well it's funny. My sense. My sense is they've been reading too damn much. Almost certainly reading is getting in the way, I would recommend boxing I would definitely recommend a course of getting punched in the face until you're no longer worried about getting punched in the face, then think about what it is you might want to read.

Tom Pegram 1:28:59
Brilliant. Well, look, thank you so much. I really have enjoyed engaging with you in person, I've been following your writing and your YouTube videos and goodness it's really been very stimulating and inspirational for me. Where can we find more on your current thinking? Are you still blogging? Or?

Jordan Hall 1:29:20
No, I am entirely focused on the on the project in a sort of practical sense, like the theory is more or less done. And while you know when good people like yourself, come and ask questions, I am willing to share. But I'm not engaging in any action on my part to produce broadcast material. Perhaps at some point in the future that will turn back on but at least now, almost all of my time is spent actually collaborating on trying to figure out how to really deliver on that new form of collective intelligence, that new form of collaboration.

Tom Pegram 1:29:59
Well, Godspeed in that work, Jordan, and I hope that we will have an opportunity to continue this conversation at some point. And really, it's been a real pleasure.

Jordan Hall 1:30:08
Beautiful. It's been a pleasure for me as well. I'm really delighted by how much ground we were able to cover in this time.

Tom Pegram 1:30:15
Thanks for tuning into 'Imperfect Utopias' to get access to all of our content, and to stay up to date with future zoom calls, workshops and events and more. Check us out at ucl.ac.uk/global-governance. If you liked this content, please do leave us a comment and subscribe. Until next time!