**Episode #37**

**Speaker 1** [00:00:01] Welcome to the Cabrera Lab Podcast.

**Speaker 2** [00:00:05] Hey. Hey. How you doing?

**Speaker 3** [00:00:07] I'm doing super good. Super good. Super stupendous.

**Speaker 2** [00:00:14] All right, I have a fun thing I was thinking about today. Oh yeah? Yep. What is it? And I'm gonna talk to my residence system scientist expert type. All right are you ready for it? Drum roll is? Yep. Networks. Oh. They're everywhere.

**Speaker 3** [00:00:29] Now we're theory.

**Speaker 2** [00:00:30] I was thinking about it, thinking about social networks, terrorist networks, ecological networks. There's just networks.

**Speaker 1** [00:00:39] There's a lot of them.

**Speaker 2** [00:00:39] A lot of networks. Yeah. And I think it's important that we understand that there are networks all around us, what they are, why they're important, how they relate to systems thinking.

**Speaker 1** [00:00:49] Yeah, so just go on, just riff on networks.

**Speaker 2** [00:00:53] I think a lot of people know the English word network. They don't know like the theory behind networks and what networks, why they're meaningful to our daily life and our thinking.

**Speaker 1** [00:01:03] Yeah, I think most people know what networking is, right? Like, you know, and they know why it's important. I think people understand the internet work, right, the world wide webs. And you know they understand like are you in network with your health provider or care provider. There's friendship networks, like you said, there's terrorist networks, there's your family is a network of interconnections, seer. You know, there's all ecologies, ecological systems, our networks, there are molecular networks, there's...

**Speaker 2** [00:01:42] Yeah, but at their base.

**Speaker 1** [00:01:44] or just.

**Speaker 2** [00:01:45] A network of things that are connected.

**Speaker 1** [00:01:48] Yeah, at its base, a network is made up of two things, sometimes called nodes and edges, but you could just think of them as dots and connections, like little dots and little lines, connections. That's basically what it was. A network theory is the underlying sort of theoretical structure, or sometimes in mathematics it's called graph theory, but it was actually Created I think in the 16th century or 18th century. I'm getting the century wrong, but by a guy named Leonid Euler who in in Konigsberg, Prussia. Yeah. So in Konigberg there was a river and it kind of went like this and then like this. So that's the river. and the city was perched alongside the river. So you can imagine that this is kind of the city. All this stuff is the buildings and stuff like that and more buildings over here, right? And like, you know, stores and houses and then some buildings here and some buildings here, Right? Right. So you could imagine this is a big river. It's kind of much bigger than that.

**Speaker 2** [00:03:10] But it's broken land up into a bunch of kind of pieces.

**Speaker 1** [00:03:14] Yeah, and this is like a, you know, a thick river, not like a straight, a significant river, right? Yeah. There were bridges, right, there is a bridge here, so here's a bridge, and here's the bridge, and here is the bridge and here a bridge. And then there was like a bridge here and then a bridge I think here. Yeah, and what people wondered at the time, you know, because they had a lot of time on their hands, was could you kind of get to all the land masses, so one, two, three, four land masses basically, by only crossing each bridge once? I mean, you didn't have to overlap the going back on the bridge, right? And people just wondered that because they were walking around.

**Speaker 2** [00:04:08] Only a time-runner had it a while, don't they?

**Speaker 1** [00:04:08] They have to wonder about those things. And Euler basically sat down, and he's a mathematician and kind of a system-y guy. And he sat down to figure out whether that was true or false, whether you could do it or couldn't. It turns out you can't, but you cannot. You cannot. You can't hit all the landmasses without crossing a bridge more than once.

**Speaker 2** [00:04:35] Interesting.

**Speaker 1** [00:04:35] So, but in the process, this is the amazing part. In the process of him figuring out this little riddle, he invented network theory.

**Speaker 2** [00:04:47] invented it.

**Speaker 1** [00:04:47] Yep, he invented network theory. And the way he did it was he just did this ingenious little abstraction, in a sense, right? So what he did was he said, if we make the landmasses a node or a dot, and then we make The Bridge's relationships, you basically can figure out the problem. because he just abstracted the problem. So he basically would, with essentially just dots and lines or connections, he discovered network theory, which is one of the most powerful theories we have. It's at the base of like every single thing that you use on here and our phones.

**Speaker 2** [00:05:37] Meaning you can take a whole bunch of complexity and reduce it to what you're calling nodes and edges or dots and lines. And when you make that abstraction, then you can see it differently.

**Speaker 1** [00:05:49] Yeah, really important.

**Speaker 2** [00:05:51] Why is it important?

**Speaker 1** [00:05:52] Well, the first thing that's important about it is all the wildly important applications of it, right? Like, I mean, it captures reality, right, when we do these things, it capture reality, it solves problems in reality, right, so the pragmatic application of it is very important. The other thing that I think is deeply important, and probably one of the things that people... Surprisingly, one of the things that I've found in the last 30 years is the most difficult thing that people have in navigating complexity, which is surprising. Like I would never, if you had asked me 30 years ago, is that the thing that's gonna get in people's way? I never would have said it.

**Speaker 4** [00:06:40] Interesting.

**Speaker 1** [00:06:41] It's the idea that when we're dealing with really, really complex and overwhelming situations or stuff, that the solution to it could be simple.

**Speaker 2** [00:06:52] I see.

**Speaker 1** [00:06:52] because we just do not, we think of simple and complex as opposites. Right. If something is complex, we don't think, oh, you know, I've got to see the simplicity that underlies it.

**Speaker 2** [00:07:06] Yeah, I understand.

**Speaker 1** [00:07:06] So we don't see simplicity and complexity as being like two sides of the same coin or sister acts in a process. We just don't the connection. But ironically, the study of complexity, which started with people like Prigogine, but was pioneered at places like the Santa Fe Institute. The study of complexity. really is about both simplicity and complexity, which again, when people first hear that, they're gonna be like, what, why is that? But Murray Gellman, who was at the Santa Fe Institute and who won the Nobel Prize for his work in quantum physics and things like that, he discovered the quark. Wrote a great book called...

**Speaker 2** [00:08:03] work in the gym.

**Speaker 1** [00:08:04] He wrote a paper that was like two pages long. It's a great paper. It is one of my favorite papers.

**Speaker 2** [00:08:11] hard to write a short paper.

**Speaker 1** [00:08:12] In that paper, the name of the paper was, let's call it plectics. And what he meant was, let's called the field, this emerging field of complexity, which has overtaken most of science, I would say. It's influenced science just dramatically. What he meant, was let's the field of complexity, plectic. Let's not call it complexity theory or complexity. uh, let's call it Plectics. And, um, he was lamenting about how probably it would not be picked up as the name, uh, and it wasn't, it was, it's a paper that's been mostly lost to history, but it, but, uh it's, a brilliant paper. It's two pages long. Anybody could read it. You can just search, let us call it plectics, um but it was about the fact that the, the, uh the, portion of the word complexity, the plex. portion of the word pl-, in simple, simple, and if we think of the words simple as simplex, right? If you have simplex and complex, that part of the Word is actually the same. So even in the word simple and complex they have a common part, which is this root. which is P-L-E-K, and plaque literally means kind of once or multi-braided. So it can be part of simplex, which is just the one like braid, or complex, which is like the tapestry of braids, right? And you realize, oh, well, yeah, that one weave over here is just multiplied to get the tapestry, some beautiful carpet or something like that.

**Speaker 2** [00:10:10] seeing the simple inside of the complex, like the relationship between them.

**Speaker 1** [00:10:15] Yes. Seeing that underneath complexity is simplicity, that complex adaptive systems have simple rules underneath. And that's just bewildering to a lot of folks. Like, why would something that's complex be simple underneath? But what Murray Galman was saying was that these two things are like sister acts. They're like two sides of the same coin. and that even in our language, they are. actually deeply related. That complexity and simplicity have this really remarkable relationship. And then nature finds a way of making things, you know, simple underneath.

**Speaker 2** [00:10:57] Yes, but I think maybe what you're implying from the paper is that by naming it complexity, we're missing the richness of the idea of complexity and simple underneath. Here was complexity for Euler, but like he's risen the simple.

**Speaker 1** [00:11:16] He saw the simplicity underneath, and that made all the difference. And he saw underneath, it's almost like, think about it like an iceberg, you know. We see just the top of the iceberg, but underneath is something much more important are bigger and if we look at the underlying structure, so that was another reason why it's so powerful, is think about all those networks that we listed at the beginning of this, you know, terrorist network, family, you now, friendship networks, you, know. Ecologies. Ecologies, and you just keep going. Internets, computers, the electrical grid, you know airline traffic. You name it, at every level of scale, we have networks, right? And yet... And so all the content, all the informational content of those networks couldn't be more different, right? I mean, terrorists are not your family, right. Those are totally different content, informational content. An ecological network, the content of that network is not the same as a computer network. And yet they have the same underlying structure.

**Speaker 2** [00:12:32] Yes, you're saying they're all made up of dots and lines, nodes and edges. And I think part of what you're talking about, why we need to know this or how that's useful, is you imagine you've seen on TV shows and stuff the huge boards of this is connected to that, is connected that. And then you have to almost not see the informational content and just see this structure. to see, well, where's a relationship I could leverage in order to this? Like you were saying a while ago, terrorist networks, sometimes it's where there's not a connection between that you can exploit.

**Speaker 1** [00:13:11] Absolutely

**Speaker 2** [00:13:11] But there's not a connection between two things rather than just that there is.

**Speaker 1** [00:13:15] That's right. Yeah, so if we think about the pattern of organization, the DSRP, you know, is, is not, what is and is not something. Well, you can apply that to the pattern of relationships, of action-reaction. So we can put those two together and we can say what is, and is, not related. Right. It turns out that in networks what is not related. is as important as how things are related, right? How things are not related is as important as they are related. And in the case of terrorist networks, that's really important because you could leverage that non-relationship. You know, you can think of it this way. Like if a kid knows that mom and dad haven't taught, Mm-hmm. Well, he can manipulate. Mom and manipulate dad for, to get something, you know, because he owes, he knows that connection didn't exist.

**Speaker 2** [00:14:17] Well, it's the classic dad said I could or mom already gave me permission to write so

**Speaker 1** [00:14:22] So it's relationship with mom, relationship with dad, and then like who'd make it happen before they get to talking, right? So that's just manipulating non-relationships.

**Speaker 2** [00:14:34] That's right, that's right. You were talking about the surface level and that we get bogged down by the complexity of all the stuff at the surface, the informational content. And I wonder if one of the pitfalls, when we say networks in sort of just popular language, I think people think of a bunch of stuff that's connected, but they mostly think about the stuff. Right, they don't think about the connections as much.

**Speaker 1** [00:15:00] Yeah, I think when we think about, if we, if we, so if we think, if we reduce this network or any network, any, any level of complexity, it could be as complex as you want it to be. But if we can reduce it down to, you know, dots and, and connections, right? So you've got dots and you've got connections. And when we say the term connect the dots, right? Connect the dots. What we're talking about fundamentally is seeing the connections between the dots and I would say a huge part of almost all the problems that we're having today writ large is because we're not connecting the dots And that doesn't just mean making the connections. It also means understanding the dots, right? So you have to understand the dots at a deep level and you have understand the connections at a deeper level. And you have make sure that all the dots are connected. I think this is one of the biggest problems in science writ large. I think it's one of biggest problems in society writ large is that we're not helping, we're seeing that these systems are connected And we're seeing that. A drug, you take a drug, a pharmaceutical drug, and it does in fact cure this thing or it does, in fact, decrease this thing or increase this thing, right? But what we don't do is realize that when it's decreasing or increasing that thing, it's also doing 10 other things that we didn't test. And some of those things can be quite negative. Right, so that's an example of not connecting the dots. And then we have to recall that drug or something like that because we realize, oh yeah, this does decrease pain, but it also creates decades of addiction.

**Speaker 2** [00:17:09] Well, and it doesn't reflect reality if you don't include the relationships between and among things. You think about things like your own personal health and well-being, it's the connection between your sleep, your hydration, your exercise, your stress level, right? So it's not, and you can say, if you remove any one of those dots, the others are going to notice. There's going to be an effect to other things. But we don't always focus on making sure that we have accounted for that connection in the system. So you're seeing the actual reality of it is, which is there are many things that are parts of a problem. If you just see the things and not the connections among them or the dynamics, you're going to miss a lot.

**Speaker 1** [00:18:01] And that's often what we do. We see the things. For example, in science, and this is why things like interdisciplinarity, and this is why complexity as a science has emerged as very important, and why networks is so important is because it allows us to take these disciplines, which are like departments. The disciplines are like the departments of a company. So if you think of a a company breaks things down into departments, the parts. And so that breaks things down into departments. Well, we break knowledge of the universe down into disciplines. And when we break the organization down into parts, departments, and when we break the universe down into Disciplines. Parts. Discipline. We break. What are we breaking? We're breaking the relationships. We're breaking the relationships. and we forget... to rebuild the relationships between the parts, between the departments, right? Yeah. Between the disciplines. And then we teach the young, for example, in school, we break the disciplines into periods and the kids learn math and they learn English and they learned, you know. And they all seem separate. And they are all separate, right. And so then when we say, you know, oh, well, you know math is important. Well, what's it important for? It's important for everything. It's for, you now, it's important for PE, it is important for English, it's for all kinds of things. And English is important to history and whatever, right? All these different topics feed on each other in reality, but we're not teaching them in that way. We're not connecting the dots, right. And when in science, the reason science sometimes fails is because we're not connecting the dots and in organizations, the reason we get silos is because we're not connecting the dots.

**Speaker 2** [00:20:06] You think about what you were saying about science. I remember going through the doctoral research process. It was all about the variables. Like what are the variables? And then the crux of the research was testing the relationship between and among some subset of the variables and how they had an effect.

**Speaker 4** [00:20:23] That's right.

**Speaker 2** [00:20:24] But you can imagine if you just thought about the variables and not how they all interacted.

**Speaker 1** [00:20:28] Yeah, that would be bad.

**Speaker 2** [00:20:29] You would get nowhere with it.

**Speaker 1** [00:20:31] Yeah, and the world's in a very interconnected place. It's not that everything is connected to everything else. That's, those people say that a lot, like everything's connected. Everything is not connected. Everything is eventually interconnected, but everything is not connected, there are lots of connections that don't exist between.

**Speaker 4** [00:20:51] Really?

**Speaker 1** [00:20:51] Yeah, it's kind of like a wives' tale that people use all the time. I hear it all the the time, like, oh, well, everything's connected. No, everything is definitely not connected. And nor would you want it to be. I mean, for example, if every neuron in your brain was connected to every other neuron in the brain, if there was a direct connection between every neuron in your to every neuron, you'd be instantly insane.

**Speaker 2** [00:21:16] Yeah, you'd be overwhelmed.

**Speaker 1** [00:21:17] Yeah, so we don't want that. We don't, in fact, there's tremendous efficiencies in networks because everything is not perfectly connected to everything else. There's real value in that. So we don' want every single thing to be connected to every single else. And the universe doesn't make everything connected. Now, that's different than. this thing might be seen far away from that other thing, but within five hops, I could be there. I could get from this thing to that thing. Yes, everything's interconnected in that way. The difference, yeah. But it's not literally that everything's connected. It's not a wine or wine connection.

**Speaker 2** [00:22:02] And it's not a one-to-one connection between every single thing and every other thing.

**Speaker 1** [00:22:05] Yeah, that would be tremendously ineffective and inefficient, yeah.

**Speaker 2** [00:22:12] be over.

**Speaker 1** [00:22:13] Be overwhelming.

**Speaker 2** [00:22:14] you wouldn't be able to process it all. That would be too much. Well, so what's interesting is we have talked many times about one of our, I guess I'll say weaknesses, in how we think is that we don't see the connections. We're not really good at thinking about the relationships between and among things, right? And I guess what I'm wondering is, are you saying that Euler, in creating network theory, is sort of the first person to say, hey, you should focus on both or. How would you contextualize them?

**Speaker 1** [00:22:46] Well, he was certainly kind of a system-y guy. I don't think they had terms like systems thinking or systems science then. You know, he was thinking systemically. And like we were saying, there's tremendous value in what he did because of the application, because of connecting the dots, because of the universal sort of structures that underlie an infinite variety of things, because of that connection between complexity complexity and simplicity. Those are all values of what he did. And network theory is just remarkably powerful and useful today in every field. Yeah. Because of what Euler got right. Yes. But there's a couple things he got wrong. Yeah, that's right. Or didn't see. Yeah, there's few things he didn't see that, you know, in the same way that. Network theory is literally at the cutting edge of where we are today. I mean, it's driving AI. It's driving all kinds of the most advanced cutting, bleeding edge kind of things. So kudos to Hoyler. I mean just a total stud, right? So.

**Speaker 2** [00:24:08] Interesting.

**Speaker 1** [00:24:09] Yeah, just amazing. But the future, I think, beyond where we are at today, beyond the bleeding edge is going to be informed by some of the things that I think he missed about this abstraction. Every one of these dots in a network is capable of not just being a dot, but being a whole. which means that it can have a whole network inside of it. Okay. Right, so every one of these dots can be its own network, right? Yeah. That's kind of cool. Yeah. Meaning every one of those dots can be a whole that has many, many interconnected parts, right. This episode is sponsored by Training Camp. the ultimate online spot for building the mental fitness that drives personal and professional change and success. At training camp, you'll have access to the science and practice of thinking with personalized thinking assessments, tiered training, and best of all, practice that improves skill. Go to CabreraLab.org to learn more. And now, back to the episode. Also, Euler kind of abstracted the relationship as being a thing that is of the two things it's relating. Yes. Right? So the relationship without those two things that it's related is effectively non-existent. But if we actually kind of zoom into what the real world reality situation on the ground was, those relationships are bridges. Yes. All right, well, a bridge, you know, like, let's say. there's a bridge, and it's got this little railing, and, you know, it's a nice little bridge, tread and, you know, thickness and stuff like that, right? And it's got water flowing underneath it. Yep. And then it's these land masses. This is a landmass and this is a landmass, right? Yeah. So it's connecting the, the, the landmasses, but imagine we could, you know, not in this century, but in the, in the current century, we could come down and hook it up to a helicopter and we could take this bridge with cables and we could remove it in that moment. That bridge is a thing. Yes. In other words, it's a, it's a dot. Yes. And we could, we could fly it over and stick it in a parking lot. And it could just sit in a parking lot and it could exist without connecting anything. It could just exist as a bridge. Yes. And, by the way, you know, that bridge is made up of parts. So it's a whole system, a networked system in and of itself, which means that even these relationships could be thought of as nodes and those nodes, like these nodes, can be whole part, whole systems.

**Speaker 2** [00:27:13] Because there's parts to a bridge, there's the railing, there's tread, there is the angle, there's all kinds of things.

**Speaker 1** [00:27:19] and relationships between all those parts that hold the bridge together.

**Speaker 2** [00:27:22] Right, so you're doing a whole fractal level across scales. So these things have material weight because they're the things. But then you're saying the relationships have that same material weight.

**Speaker 1** [00:27:34] The relationships are essentially

**Speaker 2** [00:27:36] Even if it wasn't a physical bread.

**Speaker 1** [00:27:37] Even if it wasn't a physical bridge. And in fact, remarkably, the bridge is connected. There needs to be a connection here and here between the land and the bridge. So there's even the bridge, is connected to the land. And each side of the bridge has connection. So if you zoomed in, you would see another whole connected network that connects the bridge to the the land, like big bolts or big cables or a whole system connecting that. And no matter how far you zoom in, you would have material structure that is connective and connecting. Yes, yes. So that's another thing that we have to look at is that these networks, the relationships, aren't just these, they can be distinctly different things that are whole systems.

**Speaker 2** [00:28:28] Interesting

**Speaker 1** [00:28:29] The other thing that we have to look at is that each one of the dots, which includes these dots now, plus all the dots that could be the relationships, right? Yeah. Not only are those park hole systems that you could zoom into, those dots are places or points of view that you can view the network. So we could look at the network from this dot's perspective. Or we could at the net network from this dot perspective.

**Speaker 2** [00:29:00] and they see.

**Speaker 1** [00:29:01] And you would see different stuff. What that means is that this dot is the looker, like what we call the point, and at that moment all these dots are the view, let's say, and then when we shift the point then now this dot is looker and all these dot are the views. So all the dots and relationships, the connections, are both point and view.

**Speaker 2** [00:29:26] So what you're basically saying is that DSRP is an extension of network theory, or I guess extension is the best word. It is, it's sort of adding, it's taking network theory and adding on to it.

**Speaker 1** [00:29:40] So he came up with some simple rules for what led to the complexity that emerges from those simple rules. And what DSRP does is just add some of the simple rules that account for the actual complexity that we see. Interesting. Right, so when we see the complexity of conflict and things like that, well, that has to do with, you know, different perspectives on the network, right? That's so one group is seeing. things one way, seeing the network one way and another group is seeing the network the other way. And so there's more than just dots and connections. There's that these dots and connections are looking at each other in different ways and again the connections are not just formed as a result of being They're things in and of themselves.

**Speaker 2** [00:30:35] And so when you, I mean, it's a saying people say, oh, you got to connect the dots. I mean that has more meaning really than it sounds when people say.

**Speaker 1** [00:30:44] Or sure. Yeah, it's not just literally see the connections. I think it's see the connection. It's see that the connections are material things that we can zoom into. It's zooming into the dots. So we want to zoom into the dot. We want to assume into the connections, we want see the connections, we want to see that connections are dots. We want to see that every dot. which includes dots and connections, is both a point and a view. So in other words, it's a point that you can look from, but it's also a view that multiple points are looking at. It's part of the view that multiply points are looking at, so it's very much like what we do in social dynamics, right? If we're sitting at a table and I that she's looking at her. when she's looking at me and he's looking at her and you're like, oh, she's noticing her, right? You're taking account of the point and the view. Oh, but she's not noticing this, right. That's not in her view. She's not aware of that, right, so you're sort of building that node's point of view on the system, even at the same time that you're building your own point of you. which is unaware of other certain parts of the system, right? And so we're doing this constantly. We're doing level of networking, network theory, right, DSRPing, all the time. We're just not aware of it. And the more aware of that we are, the more of nature doing it we can be. The more aware the dynamics, the more we're of what's going on, the complexity.

**Speaker 2** [00:32:38] Well, and that awareness matters in terms of what we always talked about, seeing reality, loving reality. I mean, the reality is this is how things exist, right? It's not just a bunch of stuff that's not related. It's, not that everything's related, but there are salient relationships that impact, you know, what's happening in the real world that you need to be paying attention to, right. And obviously perspectives inside and sort of on the systems that you're thinking about.

**Speaker 3** [00:33:04] Absolutely.

**Speaker 2** [00:33:05] So I think this has been really interesting and you've drawn these cool graphics and you talked a lot about sort of the theory and Euler and the science behind it. I guess I would be wondering, well, how does this really impact me in my day-to-day life? Why would I, I mean, it's interesting to listen to, but how is it useful to me in my day-today life as I go about everything I'm doing? Like, why would I be paying attention to it?

**Speaker 1** [00:33:36] When you understand DSRP and networks, the DSRP-like networks that we're surrounded by, it allows you to embrace the actual complexity that is in front of you, whether that complexity is in... you know, a situation that your children are in or your family is in or a situation that you're experiencing at work or you're concerned for the politics of the country or you know you're trying to think about why is there so much homelessness or why is so much, you know. mental health issues, or why are there some wires, you know, like take any problem that you're concerned about, whether it be a very small problem, like in your family, but a big and important one, or whether it'd be at work, whether be personal or professional, whether it would be kind of an everyday problem, a local problem, or a global, big problem, it doesn't really matter what problem it is. It's complex. A problem is complex, you know? If it involves people, it for sure is complex. And if it involves, people, and machines, and society, and all kinds of other things that people interact with, it's for sure complex. Or maybe you're not trying to solve a problem. Maybe you're trying to understand sports. Yeah. Or maybe, you're try to understand a the different points somebody's making in a book you're reading. Like it doesn't have to be like a problem or issue. Like anything that you're trying to suss out, that's complex. And most of the things that we're dealing with are complex. Most of the thing we care about are complex, most of things we are dealing with are complex and a lot of times that complexity can feel overwhelming. it can feel like, I don't know which way's up, I don' know how to fix this, I don''t know how understand this, I wish I understood that, whatever your reaction is to it. These tools and understanding DSRP and networks and being able to visualize them and draw them out and things like that, they allow you to cut through that complexity without losing the richness of it, right? Einstein said everything should be as simple as possible, but not simpler. And so we don't want to take a complex system and make it oversimplified, right? That's different than there are simple rules that, when multiplied, lead to this thing being the way it is. That's difference than I'm going to take something really complex and create this straw man version of it that is oversimplefied. Yeah. So I think what it does is it gives you tools to adapt and learn and be not overwhelmed by the complexity that's in front of you, regardless of what that complexity is.

**Speaker 2** [00:36:55] Yeah, and I think one of the things you said earlier that I think is a good way to think about it is, when you have the ability to think about the underlying structure, you're not as distracted by the content. You can get to sort of the nature of the problem differently. And then that gives you some footing into understanding the complexity of all of the and the variables and all.

**Speaker 1** [00:37:19] Yeah, I'm glad you brought that point up because I probably would have forgotten that. But it's actually probably one of the most important points is that when we deal with people that are, when we're helping people deal with the complexity that they deal with in their work lives or their businesses or their organizations or their lives, I would say that one of number one things that they get stuck by is the information. They get stuck in the sheer overwhelming amount of information, and they can't sort of see the underlying structure, right? The underlying structure. The information is important. I'm not saying the information isn't important, but the information is not the only thing. Underneath the information, is the structure, and the structure can tell you a lot about the system. And so if you can't see that underlying structure, the underlying DSRP structure of the underlying dots and lines and dot lines and perspective dots and view dots and, you know, zooming into the dots to see more dots of connected nature, then then you miss, you just get overwhelmed by the information. You just, you are indecisive, you don't know what to do, you don' know what decision to make. Yeah. So I mean, all of this comes down to like, either you wanna understand something, you wanna make a decision, you wanna be successful, you wanna have some change occur. All of that depends on what your mental model is of the reality of the situation. Yeah. And the reality the situation is often complex. And so this helps you cut through the complexity and find the underlying sort of structure so that you can understand why things are complex the way they are.

**Speaker 2** [00:39:22] I mean, I know that when I'm overwhelmed and I've had, you know, I'm in the area of policy with you at Cornell and somebody said to me literally the other day, how are we gonna solve housing policy? And I thought, well, gee, I don't know. Like, that's a lot. So then when you map out all of the information involved in housing policy. It's a lot, and then you have to step back and say, okay, well, how is this organized? What's the structure? Like, where are the distinctions that matter? Where are the relationships that we're not seeing or we are seeing? And to me, that this seeing the underlying structure gives you that, it's like a footing into not only seeing the way it's structured in reality, but it gives you a way to better understand and overwhelmingly a large amount of information because you can organize it based on the structures. and then you get out.

**Speaker 1** [00:40:12] Yeah, and where are the incentives that are altering different perspectives on the system, right? Exactly. So, you know, I'm going to behave a certain way as an agent in the system. As one of the nodes in the systems. I'm gonna behave a way based on certain incentives or anti-incentives, you know, or something like that. And then we multiply that times everybody in the system, and you get, oh, wow, that's interesting that we're seeing these macro-level behaviors because of these micro level. interactions, right? So we start to see that the macro, I think one of the things that people really confuse a lot with complex adaptive systems, which are the ones that we all live in and care about. is a lot of times the macro behavior of the system, like that we don't like some behavior of the systems that we're dealing with. And when I say system, I don't mean like, you know, the system could be your marriage, the system can be your friendship with somebody, the system it could be.

**Speaker 2** [00:41:13] how we take the trash out.

**Speaker 1** [00:41:14] How you take the trash out of the system could be whether or not your customers are pleased or not. Yeah. Well, if you realize, oh, my, our customers are not happy with something, well, that's an outcome, right? You can't, you don't want to work directly on the outcome. You want to, work on the, on what are the, what are the rules that are bringing about that emergent property? Yes. That thing's already done. They're already unhappy. Thanks for watching, and I'll see you next week. And sure, you can maybe go back and reactively fix some things for customers, right? But that's not fixing the system. That's fixing that one problem, right. So when people say they're putting out fires all the time, that's putting out fires. Right. But if you want fires not to keep continually starting in multiple places at once, you've got to change the way the system is structured. And for that, you have to understand the structure of the system and you have to understand that. that this system is actually creating unhappy customers. In other words, this isn't a by-product, a mistake. This is a result of the way the system is structured.

**Speaker 2** [00:42:27] Yes, meaning the outcome is, the outcome of the system is the result of all the interactions of the stuff inside the system. So in order to change the outcome, you have to change the stuff in the system

**Speaker 1** [00:42:40] Yeah, there's a term in systems called possewood, which is just a big term, it's an acronym. For the purpose of a system is what it does. And basically what that means is, if you have an educational system that isn't engaging, you might say, well, that's not the purpose the system. The purpose of the system is to be not engaging. But the way the system is structured is it's not engaging. It's causing that outcome. It's causing that outcome, right? The system is bringing about that emergent property of lack of engagement. Right. So there's something about the system that is, in a way, purposefully creating lack of engagement as a system. I'm not saying anybody in the system has the dastardly notion of let's run engagement into the floor and have all children be bored by school. No No, but no individual in the system is saying that, but the collective system is bringing about the emergent property of lack of engagement. Or the collective is bringing about the emerging property of customer dissatisfaction or whatever. Employee dissatisfactions. And so what you have to do is say, well, what is it about the structure of the system that's leading to that? that's bringing that immersion property out. and let's change that structure, change some of the relationships, change some the nodes, change some things that are inside the nodes. You know, change some perspectives, change some mental models that are driving those perspectives.

**Speaker 2** [00:44:19] and then you'll get a different result.

**Speaker 1** [00:44:21] and you'll get a different result.

**Speaker 2** [00:44:22] because you've changed what's happening inside.

**Speaker 1** [00:44:23] And you're just not afraid of that level of complexity. That's what these tools give you, is that you don't have to be afraid of that of level of complex. I was talking to one of our grad students the other day, and he's out in the world doing his thing, and he is doing great. Tim, you know who I'm talking about. Shout out to Tim, I know who you are. And he said, it just gives me, it's like a super power, because I just can go into any room and I just. You know no problem. I'm not afraid of anything. I am not afraid at any level of complexity I'm, not afraid to things they don't know I'm not afraid a really really complex topics that I don't know I just can go into any room and I know I have the tools to kind of navigate the unknown navigate Complexity and it was it was great to hear that he's you know having that experience in the world But that's what we want for every everybody for everybody for every kid is In you know every person that they can just have that confidence of like, doesn't really matter how complex it is, I can navigate it. I've got the tools to navigate it Think about it.

**Speaker 2** [00:45:32] I know how to think it through and yes, I can see the underlying structure I can get.

**Speaker 1** [00:45:36] So that's what it gives you. That's all it gives. It gives you the confidence and the tools to just kind of, you know, you can imagine if a plumber comes to your house, you're sitting there going, oh my God, this is a mess. I don't know what's going on. Everything's clogged and blah, blah, and there's, you know smells and different things and total chaos. And you know the plumber's like, okay, well, you now he's got the tools and he's the awareness of how to. fix that problem. So he's not walking in going, oh, I'm terrified of this problem. He's walking in and going, this is fixable. Well, this giving you the tools and in many ways the confidence, the skills, the techniques to navigate any level of complexity, any problem, any issue, any understanding.

**Speaker 2** [00:46:26] That's good.

**Speaker 1** [00:46:26] That's pretty cool.

**Speaker 2** [00:46:27] and import.

**Speaker 1** [00:46:28] Does that answer the call?

**Speaker 2** [00:46:34] You did me proud, my systems expert.

**Speaker 1** [00:46:37] Networks. Yes. Yeah, I guess that's a wrap then. That's a wrap. Oh, wait, we're back. What are you wearing?

**Speaker 2** [00:46:49] What do you mean? What am I wearing? That's my special holiday crown.

**Speaker 1** [00:46:54] holiday crown

**Speaker 2** [00:46:55] Well, it's time to be festive, it is time to start thinking about celebrating the end of the year. Nice. And the holidays. And so I've dressed for it, as always, I do this for everyone.

**Speaker 3** [00:47:07] I love it.

**Speaker 2** [00:47:07] You know what it means.

**Speaker 3** [00:47:08] What does it mean?

**Speaker 2** [00:47:10] We really need to thank, from the bottom of our hearts, all of the people who have been listening and commenting to the podcast. So we have a gift for them. We want to give them the gift of thinking.

**Speaker 3** [00:47:28] The gift of think.

**Speaker 2** [00:47:29] which means there will be a special QR code and a discount code available to podcast viewers only, which gives them a significant discount off of the Blue Belt course, which is a big course.

**Speaker 1** [00:47:43] Yeah, that is a bit-

**Speaker 2** [00:47:44] So they're going to save a lot of money.

**Speaker 1** [00:47:47] And that's a great course that really, you'll develop really top-notch skills in that course. So they can give it as a gift to anybody.

**Speaker 2** [00:47:58] You can share the discount code, share the QR code. We want to spread the love of faking.

**Speaker 4** [00:48:12] You