**Episode #53.wav**

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

**Speaker 2** [00:00:01] to the Cabrera Lab podcast. and validated, and we've also had a lot of people asking about, what is systems thinking? Is it thinking about systems? Is it thinking systemically? Is it about data? So I think there's an interesting bit of things we can talk about around, one, defining what we mean by systems thinking, and then talking about in the wider field. It's so other people's ideas and how we know what's validated and what's not and all of that fun stuff.

**Speaker 1** [00:00:52] That's a pretty meaty topic.

**Speaker 2** [00:00:53] It is.

**Speaker 1** [00:00:54] Yeah. So, I mean, what I mean by systems thinking is pretty simple. Thinking is the, is, well, let's, let's start from the beginning. Adaptivity is the thing that allows us to, you know, change our behavior, our action, our whatever, in given situations or environments. Right? So it's like the crux of everything, adaptivity. and thinking came along in the, you know, universe and the animal kingdom and things like that. gave us a unique ability for adaptation. So like thinking in and of itself were it not for the fact that it gave us tremendous adaptive abilities would be irrelevant. But it just so happens that thinking has given us this amazing adaptive ability because it allows us to sort of look at the situation, figure it out, get better at figuring it out, and then change our behavior, change our, you know, emotions, change our, you know... problem solving, you know, all of it is driven by this thinking thing. And as we've talked about before, there's really just one kind of thinking. There's not 38 types of thinking. There's one kind of thinking and DSRP or the patterns of thinking that underlie or the patterns of how we organize information to make meaning or mental models. So that's what I mean by the thinking part of systems thinking.

**Speaker 2** [00:02:28] Just as a point of clarification on that, when you look and you Google thinking, there's 38 widely known types of thinking, critical, creative, scientific, design thinking, any of those. Blah, blah, blah. Any, any of those. What you're saying is, if you're in a critical thinking mode, which we just didn't have some critical thinking, you're going to be making distinctions, organizing ideas, and this in the - You're gonna do all these

**Speaker 1** [00:02:50] You're going to do all DSRP except you're going to do it from a skeptical evaluation or judgmental perspective. That's what critical thinking is.

**Speaker 3** [00:02:57] Right.

**Speaker 1** [00:02:58] Which is fine. That's a great perspective to take if if that's what's necessary for the situation, but it's not a it's not Like we said in the last podcast. It's not something you should apply universally

**Speaker 2** [00:03:10] Right. And so just contrast that to creative thinking. Creative thinking, you're also going to be making distinctions, seeing relationships, but you're taking a different kind of a perspective.

**Speaker 1** [00:03:19] You're taking the perspective of creation.

**Speaker 2** [00:03:21] Yeah, right. Creativity is.

**Speaker 1** [00:03:21] Creativity is you want to create something new, you want to make a new thing. So I can be creative by taking two things, a giraffe and a rhinoceros that exist, right? And I can be like, oh, put them together and I have a rhino with a giraffe head. That's quote unquote creative because it's a new thing. So creativity isn't some mysterious magical landscape of whatever. or it's just. combining, distinguishing, perspectivizing, relating things in ways that they haven't been created before.

**Speaker 2** [00:03:59] Before right. So then what you're saying is that's the thinking part of systems thinking is that organization of stuff in the way we

**Speaker 1** [00:04:07] The way we organize information to make meaning or mental models is the thinking part. The systems part, and this is where it gets real complicated for folks, it doesn't get complicated for me because I don't think it's that complicated. But people make it complicated, sometimes I think to make it so that they can make a livelihood or something. The systems part of systems thinking is simply that the real world operates in systems. Okay, many different kinds of systems, but it operates in systems. So the systems thinking is saying, we need to do the thinking. But we need to do it in such a way that it aligns with the systems that we're actually a part of, right, the systems that are IRL in real life, right? That's the love reality loop. So systems thinking is just thinking in such a way that it aligns with reality, that it loves reality over loving the thinking. Because we can think in all kinds of ways that are just celebratory of our own thinking. We do that every day.

**Speaker 3** [00:05:16] We do that every day. Yes, we do.

**Speaker 1** [00:05:18] But systems thinking is really thinking in such a way that it aligns and is celebratory of reality.

**Speaker 2** [00:05:27] Right, meaning the way you're thinking about things is aligning with the way things are actually happening in real life. Yes.

**Speaker 1** [00:05:32] And in that sense, it is a very uncommon common sense because it's thinking in ways that the systems around you are actually working, which isn't always abundantly obvious to us. And we have a lot of biases in our brain and the way we think about things that make it less obvious and less visible how those systems are working. And that's why, for example, science is so important, because science is one of our greatest inventions, innovations and tools that we've come up with for ascertaining reality, you know, and so when we get into the concept of validity or reliability or, you know, empirical data or whatever, proof, as it were, truthiness, as it were, something like that, any of those terms. or something like. then science plays a huge part in that, and not just science in the academic sense, because science and academia are totally different, but science in the everyday sense, in the sense that we want to do things every day that work out. Yes. That's systems thinking. It's that we're doing thinking in systems, and fitness is really important here. because the definition of fitness is the ability to adapt to your environment or your situation. While thinking is the driver of that adaptation, the driver of that fitness is practicing thinking. So fitness is building the ability, practicing and training the ability to adapt to your situation or environment. Well, in the real world, your situation environment, generically speaking, abstractly speaking, is systems. All of us are in systems. So the system could be your family, the system could be your job, the company that you work for, the economy that you're in, the countries that are interacting to create global geopolitics, the molecular structure, you know, it doesn't matter what the system is. It matters that it's a system. Yes. And we want to understand the system so that we can interact and adapt to it.

**Speaker 2** [00:07:51] Right. Adapt.

**Speaker 1** [00:07:52] Adapt our thinking, adapt our behavior, adapt our action.

**Speaker 2** [00:07:57] Well, so that's interesting because I, when I meet people, when they learn that, you know, we sort of, we work and have written a book and systems thinking like, oh, I know systems thinking, I, you know, I use system dynamics for my dissertation. Yes. I really like critical systems theory or socio -technical systems. So I guess what I'm getting at is when you say systems thinking, everybody has a different mental model of what systems thinking is.

**Speaker 1** [00:08:25] Yeah, I don't think of systems thinking as a framework. I think of it as a set of... the definition of systems thinking is simply derived from the two words systems and thinking. I don't think of it as systems thinking the framework. I think of it as a scientific and real -world reality that thinking is the way that we understand the systems that we're a part of. And if we don't think in a way that's in alignment with those systems, things are going to go badly.

**Speaker 2** [00:09:00] Okay, yeah.

**Speaker 1** [00:09:01] And I mean that in the most basic ways, like the classic examples that most adults have dealt with is we all know that finding the right person in your life is a huge benefit, right? That marrying or finding people that really work with who you are and all that kind of stuff.

**Speaker 3** [00:09:28] Yes, like us.

**Speaker 1** [00:09:28] like us, you know, is just a massive part of success. Yes. And is success broadly defined, right? Yes. Well, that's systems thinking, right? If you're constantly attracting people that are negative and drawing on you and, you know, you're constantly getting into crappy situations, that's the system's reality, giving you feedback that your thinking sucks.

**Speaker 2** [00:09:58] I see I like that.

**Speaker 1** [00:09:59] Right? That's the systems, the systems of systems thinking are giving you feedback that your thinking sucks because you keep doing the same thing over and over again and it keeps leading you to situations that you don't want to be in. Right. So to me, that's the systems giving your thinking feedback that you should change your thinking. That the way you're thinking, right? And when I say thinking, it could be subconscious and conscious. It's a very small portion of our thinking is conscious. And then there's all this thinking that's subconscious. You're thinking. That DSRP gives you access to a lot of that subconscious, what's going on subconsciously so that you can really see how you're thinking that gets you in these terrible situations.

**Speaker 2** [00:10:41] Yeah, and that stands in contrast to, I think a lot of times when people get into situations or outcomes they don't like or something pops up, they blame parts of the system and they don't backtrack to, oh, maybe. Don't backtrack. It's the way I was thinking about it that's caused this problem down the road. complete

**Speaker 1** [00:10:59] 100 % and and I it just gave you the example of like dating the wrong person five times, right? But that person has a different name all five times. So we don't see the pattern because they're different individuals, right? Same thing with businesses. We do the same thing. It's like well this This pattern keeps reoccurring and we keep firing a new person every time. We keep blaming a new person every time but actually it's a pattern and so A pattern means it doesn't matter if the things are named differently, right? It's their similar, their structural similarity or dynamical similarity to these apparently different instantiations, right? So yes, you might've dated Bob first and then Frank and then, you know, Billy and Bob is not Frank is not Billy.

**Speaker 2** [00:11:48] but structurally.

**Speaker 1** [00:11:49] but structurally Bob and Frank and Billy are the same dude, you know, and you just keep attracting the same dude in your life. You keep attracting the same person in your life, right? You know, and you just. And same with businesses, same with organizations, same with governments, you know, we keep doing the same thing and getting the same results that are, from our perspective, negative. And then we keep firing a different person, and we don't see that these are systemic structural issues.

**Speaker 2** [00:12:17] Right, because we're not thinking about the underlying thinking that led to that thing in the first place, and also the conscious -unconscious thing is important.

**Speaker 1** [00:12:25] Really important. I've heard the number of people defining thinking as like just the conscious bit and you're like that just makes zero sense. That's like so arbitrarily defined. So much of what you're operating on every day, every single behavior you do, every single emotion you have, every single action you take, all of the problems you perceive are mental models. They're your thinking driving those things. Your thinking is driving all of those things, right?

**Speaker 2** [00:12:53] Actually, all of them. All of them.

**Speaker 1** [00:12:54] all of them. Now, not all of that thinking is in your conscious awareness. So if you don't make the distinction that, hey, there's some of some of my thinking is conscious, but some of it isn't. And if I were to apply a metacognitive lens, meaning a lens of awareness, to that unconscious bit, I can learn a little bit more about how I'm thinking, so that I can change it to adapt to the feedback that systems in reality are giving me.

**Speaker 2** [00:13:24] people say systems thinking, systems thinking, systems thinking, and nobody's taking the time to say, here's what systems thinking actually is, and separate thinking and systems and the interaction between your thinking and systems from all of the various methods or frameworks that people ascribe to the whole concept of systems thinking.

**Speaker 1** [00:13:46] That, ironically, is exactly what I did in my doctoral thesis. I thought when I got to academia, being a high school dropout and not knowing my ass from a hole in the ground, I came with the assumption that people were talking about this thing called systems thinking and therefore they must know. Yes. And it turns out the emperor has no clothes, is a reoccurring theme in my life. that you get to the. top of the mountain and you think the people there are going to really know what's going on and you get there and you're like, oh, nobody here knows what's going on, right? They're just talking. So I went around the world and interviewed some of the top people in systems thinking.

**Speaker 2** [00:14:33] As part of your doctoral.

**Speaker 1** [00:14:34] as part of my doctoral research and did, you know, extensive literature review and then empirical studies and things like that. But I just asked the question. It was a very simple question. And I really believe that the answer would be totally readily available. And then I would move on to something else. I wasn't actually, I had no intention of staying there. But what I realized was nobody had an answer. Every time I got an answer from one person, I'd go to the next person, and they'd give me a different answer. And then I'd go to the next person, they'd give me a different answer. And then not only that, but their answers were conflicting. And not only that, but none of their answers had any empirical evidence to them. So in other words, their answers were all just their opinion. And I was shocked. I literally was shocked as a doctoral student to learn this. All this fanfare was based on a bunch of people's opinion. And so I set to work trying to discover empirically what is systems thinking, observationally, meaning like Jane Goodall, empirical, like I'm going to watch the monkeys, and I'm going to look at what they do, and we're going to get empirical observational data Yes. Of what? systems thinking is. Which means we have to understand the structure of the systems, and we have to understand the structure of the thinking, and we have to understand how do we bring those together. But I was shocked, I will tell you I was shocked at how little empirical evidence there was in the entire field.

**Speaker 2** [00:16:13] Okay, so let's take a minute, because we have had questions before in our Ask Me Anything, Ask Us Anything episodes about the difference between scientific, empirical, validated, evidence -based. So maybe let's set those distinctions, make those distinctions clear. So when you just said not a lot of empirical... Yeah.

**Speaker 1** [00:16:33] Yeah, so I think the first distinction that we must make, and all of society has to make this distinction because it's really so critically important, and by distinction, I mean like separate them, like purposefully separate these two terms. One is academic and one is science. These two things are not the same thing, but they pose. This one likes to pose as this one. academic likes to pose as science. It's not. Academia. academics and academic is a social club it's it's like a social club it's a grouping it's a grouping of people who have jobs and interests and you know they're they're human beings and they do human shit

**Speaker 2** [00:17:25] Yes, and they teach.

**Speaker 1** [00:17:27] Yeah, I mean, you know, I guess all I'm saying is there's nothing about humans, good or negative, that isn't in here.

**Speaker 2** [00:17:38] Meaning, this is made up of a bunch of people who have...

**Speaker 1** [00:17:40] It's made up of a bunch of people.

**Speaker 2** [00:17:42] I don't want to know, but I want to see.

**Speaker 1** [00:17:42] who are playing silly human games. Just like every other bunch of people who are playing silly human games.

**Speaker 2** [00:17:49] Right, and this line is socially constructed. Socially constructed. I don't want to say arbitrary. Would you say arbitrary? socially -constructed. No. No.

**Speaker 1** [00:17:56] It's very much for a purpose, but it's not for the same purpose as this. And this is the, whatever the purposes are over here, I'm not necessarily saying that they're all negative. Some of them are quite positive. People want to make livelihoods. People want to, you know, be a part of groups that have similar people in them and all kinds of other things. But they also do the human thing of gaming the system over here. Yes. And science is is a It's a process, it's not a strict process. There is no literal scientific method that you could say is the same for out. There's some principles behind it. Things like transparency, observation, empiricism, you know, those kinds of things. You know, part of the transparency, part of the different scientists doing peer review on other things. When that gets over here, it gets manipulated. So for example, the peer review process. In spirit, in scientific spirit, is a great process. In academic practice, not so much. It's highly flawed. Highly flawed. So do papers get through the academic peer review process that shouldn't get through? Absolutely. Do papers get through that aren't even empirical, but they are posing as empirical papers? Absolutely. That happens all the time. what we call an op -ed in society makes up a huge amount of papers that are in academic journals.

**Speaker 2** [00:19:31] meaning they lack scientific rigor.

**Speaker 1** [00:19:33] They're just op -eds. I mean, you don't even have to say anything negative about it. Like if I say an op -ed in a newspaper, it's an op -ed. It's neither negative nor positive. It's just describing what it is. It's an opinion.

**Speaker 2** [00:19:45] And it's an opinion based on one's thoughts and experiences without necessarily having tested the veracity of that opinion in any way.

**Speaker 1** [00:19:52] Right, and because we read it in that context, we go, oh, that's an interesting opinion. But when we read it in this academic context as a part of the larger context of a peer -reviewed journal that's been, you know, peer -reviewed by other peers, and we make all assumptions about how that process works, and then we assume that that means that that opinion somehow has gotten elevated.

**Speaker 2** [00:20:19] Well, yeah.

**Speaker 1** [00:20:20] to empiricism or to something more than an opinion? Not so much. That's not science. That's not the same as science and that's why it's so critical to make this distinction. And it's a hard distinction to make because inside of academia there's science going on. Yes. A lot of it.

**Speaker 2** [00:20:38] Actual science.

**Speaker 1** [00:20:39] But not everything inside of academia is science, and what I think is very dangerous, especially for people that are inside of academia, is letting the general public conflate these two things, and in many ways, being part of them conflating these two things. Yes, because when they do the negative things that are happening here are going to get in the way of the remarkable things that are happening here.

**Speaker 2** [00:21:10] Right, and some of the negative things in here are going to be ascribed to this.

**Speaker 1** [00:21:13] Yes, and then people will give up on science.

**Speaker 2** [00:21:17] which is

**Speaker 1** [00:21:17] which is one of the most powerful things we've ever invented.

**Speaker 2** [00:21:20] Yes, and I think you've seen a trend in the last five years or so where science, science is widely misunderstood.

**Speaker 1** [00:21:28] widely misunderstood.

**Speaker 2** [00:21:29] And in a weird way, up for debate. Yes. And it's up for debate.

**Speaker 1** [00:21:33] And it's up for debate because people go, wait a minute, that just sounds like an opinion. And that's what I'm saying. Is like, there's a lot of science that not very many scientists are debating. Real scientists aren't debating that science because it's pretty, it's very clear. The empirical evidence is very clear. But then it gets over, you know, then we conflate it with this and we go, oh, that's debatable. And you're like, not really. I mean, everything's debatable. And everything is questionable. That's like one of the principles of science, is that anybody can question anything. That's the beauty of the equity that's in science, is you don't have to be a pope or a king to question something. Anybody can question something. Anybody can run an experiment. Anybody can sit in the bush and watch apes.

**Speaker 2** [00:22:24] Yeah, I read somewhere, I can't remember where it was. It was something that I deemed somewhat credible, which is hard to find.

**Speaker 1** [00:22:32] It is hard to find.

**Speaker 2** [00:22:33] that one of the biggest dangers to us these days is the lack of understanding and trust of the idea of science in and of itself.

**Speaker 1** [00:22:41] And that's the thing, that's this distinction. Don't make that mistake because you can trust science and you can trust academia like you can trust politics and like you can trust, you know, the NHL and the NFL and Apple and, you know, Google and. anybody else right because it's Again, I'm not saying this is all negative. I'm just saying it's it's it's like a human social club it's a human social organization and it has all the follies and and Downfalls downfalls of any human organization or set of organizations, right? Yeah, that's very different from science

**Speaker 2** [00:23:26] Yes, and so you keep going back to empiricism and empirical, and you also started earlier with there's a bunch of frameworks in systems thinking, but they lack empiricism or any empirical evidence.

**Speaker 1** [00:23:40] Yes. And that's one of the things that I was shocked by. I thought that all these different frameworks that people have, you know, a framework is like, you know, critical systems thinking, viable systems method, critical systems heuristics.

**Speaker 2** [00:24:00] SSM.

**Speaker 1** [00:24:01] So soft systems methodology, you know. This is Soft Systems Methodology. System dynamics and these are all frameworks

**Speaker 2** [00:24:07] Yeah, that people mistake as being systems thinking.

**Speaker 1** [00:24:10] And there's many more. There's hundreds of them, but those are the big popular ones, right? You know, very little empirical evidence. Very little. When I say very little, I mean, like in most of the cases of the ones I just mentioned, none. 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.

**Speaker 2** [00:24:55] And when you say empirical, you mean something that's been tested, observed, whether it involves some sort of a sample, an intervention, a research?

**Speaker 1** [00:25:04] Yes, observational, right? We're doing some kind of observation. Now observation in the scientific context could mean a lot of things. It could mean literally you're sitting in a bush like Jane Goodall and you're watching, you're observing and you're taking notes and you're writing up the notes and things like that, it could mean. a survey, it could mean quasi -experimental design, which means that there's no control group, but you're doing an experimental design. It could mean an experimental design, which means that you're adding a control group. It could mean a randomized control group.

**Speaker 3** [00:25:42] and our

**Speaker 1** [00:25:43] An RCT. It could mean, were you randomizing the sample into controls? Or it could mean meta -analysis, where you're taking lots of different... So it can take many methodological forms, but it has the similarity across it of being that you're observing reality. That's the important part, that thing we talked about, the systems part. You're observing reality. And so that typically has to do with, well, which part of reality are you observing? That's your sample, right? So it typically has some sample. It typically has some method of observation. It typically has maybe statistical analysis and statistical findings, right? I'm being very broad about what I mean by empirical here. I'm a lot of science. There's some scientists. that would say I'm being way too forgiving of that spectrum.

**Speaker 2** [00:26:48] Well, a lot of people in the public, and a lot of times scientists, I think it's believed that empirical means an experiment with a control.

**Speaker 1** [00:26:55] can experiment with a control. Yes, absolutely.

**Speaker 2** [00:26:57] Which is not really, it's not reality.

**Speaker 1** [00:26:59] It's not reality. I mean, if that were the case, then Einstein would be thrown out as a scientist.

**Speaker 2** [00:27:06] Jane Goodall.

**Speaker 1** [00:27:06] Jane Goodall would be thrown out as a scientist a lot of what Darwin did would be thrown out as a scientist Those are the three of the top poster children for science that we've ever had So if that's the case, then we would throw them out. Yeah, I don't throw those people out I think those that's all science But when we're talking about empiricism, we're talking about it's not just my anecdotal opinion, right? Right. It's not just my anecdotal opinion now. I have no problem with opinions I just don't put a lot of value in them until that opinion gets some kind of empirical evidence to support it. As soon as that opinion, opinions are very important as again, little seedlings. Oh, I, you know, I'm noticing something. Okay. Like I noticed systems thinking had no empirical evidence and nobody knew what it was. That's a really important opinion. But over time that opinion grows into a little sapling. As it gets larger, we need to test it, right? We need to test whether or not that opinion has any validity, any reliability. Does it apply in many places? How many places does it apply? How often does it apply the way that it applies? I am not a fan of criticizing new things because we don't want to criticize the creative process. We want to let it grow. So I'm all for opinion because opinion is where creativity starts, a new opinion. But once something has gotten time to grow and gotten time to start influencing, then we need to, you know, expose it to more and more empirical light. So when something has been around for 50 years and is having a lot of influence, It's pretty fair game. to go at that thing and say, where's the evidence?

**Speaker 2** [00:29:07] Yeah

**Speaker 1** [00:29:08] Where's the beef, as the old Wendy's commercial?

**Speaker 2** [00:29:11] Oh my god, do you remember that? Old woman? Which campaign was that for? Remember that, old woman? Which campaign was that part of?

**Speaker 1** [00:29:14] That was one of the greatest marketing campaigns of, uh... the greatest marketing. Georgia Plus.

**Speaker 2** [00:29:18] He used to, somebody, one of the candidates, I thought it was George Bush, the first George Bush, would always say, where's the beef?

**Speaker 1** [00:29:24] No, it was a Wendy's commercial.

**Speaker 2** [00:29:26] I know it was, and he borrowed it from the Wendy School as part of his actual political platform. as part of his actual political platform.

**Speaker 1** [00:29:32] So that's, I don't know if I answered your question.

**Speaker 2** [00:29:35] You did, but I think one of the things that's in there that I want to pull back out is part of the problem is you were talking about this thing that's been around for 50 years and it's influential in a field, but nobody's gone back to test its veracity sort of in terms of empirical. Well, that's where it's a problem because people inside of academia who have opinions, other people believe that's fact.

**Speaker 1** [00:29:57] Yeah. And so this is why we have, you know, it's like you have to understand how the sausage is made, right? Sometimes to understand whether you should eat the sausage. And so like there's this, so there's this thing that I call circular or circularity or circular citation networks. Yes. And another thing I call crony peer review.

**Speaker 2** [00:30:23] I know where you're going.

**Speaker 1** [00:30:24] So instead of just peer, because peer makes it sound like we're just peers, but there's a cronyism to it, right? And what people don't understand is because the peer review process happens behind the scenes, there's a lot of stuff that happens back there that I think originally had good intentions but today doesn't play out very well. This is why I think there's a new. form of publication called PPPR, which is Post -Publication Peer Review, and it just essentially means transparency, total transparency of the whole process.

**Speaker 2** [00:31:05] Wait, wait, wait, so you mean of the review and who the reviewer is?

**Speaker 1** [00:31:08] Yeah, you publish the paper, and everybody knows that the paper's just published, and then peer review happens in the light of day. And so you know what they said and you know who said it, and that's all there is to it. I'll give you an example. If you're in a field, like systems thinking, and you get a paper, it might not say who the author is, right? So it's blind peer review. But within the first four sentences, if you're in that field, you know who the authorize.

**Speaker 3** [00:31:35] Right, right.

**Speaker 1** [00:31:37] and you know if it's one of your cronies, you know if it's one of your buddies. And so, are you gonna be as harsh on that? Are you gonna be, you know, it's...

**Speaker 2** [00:31:47] Well, I think it just brings in bias.

**Speaker 1** [00:31:48] It just brings in bias right and it ends up being that there's a small number of people that are publishing in that particular world

**Speaker 2** [00:31:54] But it goes both ways. You could be biased in a good way, and you could also be like, oh, I don't like this person, or I don't agree with their ideas that contradict mine, so I'm going to try not to publish. or So there's a lot of play there.

**Speaker 1** [00:32:08] And then what happens, and this actually happens in the news cycle as well. This isn't just, this is just, this is an innovation or an invention that humans have created in multiple places. You create, you take an opinion, you make a news article about it. It's new and now it's news because somebody had the opinion. Somebody said it. Then another news station cites that news station. So at this point, it's never been sourced, right? Then another news station cites the news station that cited the news station and pretty soon everybody's citing this totally unsourced news Yeah, and that's how it happens. That's how misinformation happens and people do it on purpose people do it by mistake Whatever the intentions are it's happening globally. Yes. Well, that's happening in academia The same exact thing is happening somebody writes a paper. It's basically all opinion. There's no methods and things like that It gets in there somebody Cites it then somebody cites that somebody cites it more Etc and then pretty soon it is assumed That this is scientific

**Speaker 2** [00:33:24] Right, because people look at how many times things have been cited and they assign a certain level of credibility based on that number.

**Speaker 1** [00:33:30] Right. And there's nothing scientific about it. If you literally get back to that paper and you go, Oh, this is just like some, some guy's opinion. Like there's no, there's no methods. There's no sample. There's no statistics. There's nothing. There's no findings. There's just, there's just opinion. It's literally an op ed.

**Speaker 2** [00:33:49] Right, but it's an op -ed that's been cited 400 times. 4 ,000 times! No, it's still... So you're like...

**Speaker 1** [00:33:52] Four thousand times, so you're like and then and then we just build off of it and build off of it and build off of it And pretty soon You have this framework that everybody says is a thing, but it isn't a thing. It's just an opinion

**Speaker 2** [00:34:07] For you, that's why the Emperor had no clothes, because you went to all of the experts, the experts in the field. You asked them, what is systems thinking? And you asked them about their own stuff. And I reviewed the literature. Reviewed their literature.

**Speaker 1** [00:34:17] And I reviewed the literature and I mean, by the way, you can do this on the internet. You can do this on chat, GPT, or whatever, whatever chat you use. You know, you can find out whether there's empirical data. Sometimes chat doesn't, it doesn't always get it quite right. But if you press it and say, okay, I asked you, is there empirical data? Yes. Yes, there's empirical data. It'll almost always say that. Okay, can you show me that? And then it's like, actually, I couldn't find anything. And then, and you go, or it shows you that, and you go, you know, look at what it is. Tell me what the findings of this paper are. Tell me the sample size. Tell me the, what statistics were run. You know, was there a service, is there any data? that the findings led to conclusions. Is there anything observational happening in this paper or is it mostly or entirely opinion? So if you drill down like two to three prompts deep, you can find it out for yourself. What I'm saying is not, it's not difficult to find out. So you look at these frameworks, there's not a single framework that I know of in systems thinking other than. DSRP and system dynamics has some effect and some relatively good studies. Nothing about that it exists, you know, empirically in the world other than feedback. But like the model itself, there's nothing that says this particular set of things is always universally the case.

**Speaker 2** [00:35:57] But in the appropriate context. In the appropriate context.

**Speaker 1** [00:35:58] In the appropriate context, yes, SD, as they call it, system dynamics is a great method in the appropriate context, but it's not universalizable. But if you take critical systems thinking, critical systems heuristics, Kinefin, VSM, all these different ones, to my knowledge, and there's an easy way to refute here just send me the send me the empirical different ones. paper that I've somehow missed.

**Speaker 2** [00:36:26] That'll be fun.

**Speaker 1** [00:36:27] And I'll, I'll do a podcast on it.

**Speaker 2** [00:36:29] I like that

**Speaker 1** [00:36:31] I'll correct it. So there's an easy way, if you disagree with me, you can get all up in arms and get all upset about it, but I think, you know, I'm pretty sure what I'm saying is true. And I've done a lot of research on it. And if I'm by chance wrong, just send, there's an easy way to solve it, right? What we tend to do is we get real mad and then we start attacking the person ad hominem attacks and all this kind of hand -waving, and that's just more evidence that the statement's true. There's an easy way to disagree, which is send me even a single paper. Send me even a single paper. And I've defined empiricism very broadly, very kindly, compared to a lot of scientists. I'm very broad about the definition there. So. Yes, exactly. If you talk to, you know, physicists or chemists or something like that, they would be like, you're crazy. You know, you've got to narrow that down. I'm defining it very broadly.

**Speaker 2** [00:37:40] There's a wide set of possibilities there.

**Speaker 1** [00:37:44] I'm being as kind as possible as you can possibly be in the definition of these things like empirical and that type of thing.

**Speaker 2** [00:37:55] So I wonder, is it safe to say that all of those various frameworks and methods that people have come across or have known are useful? They're just not representative of what we mean by systems thinking as a wider concept.

**Speaker 1** [00:38:10] Well, no, it's not fair to say that.

**Speaker 2** [00:38:12] It's not fair because I don't I don't know

**Speaker 1** [00:38:13] because I don't I don't know if you can say that they're useful. That's the whole point. If they if you could say that they were useful there would be a study and there's people with vested interest in saying that they're useful so why haven't they done a study? So the the question is is it useful is a great question that's called an effect study yeah right effectiveness study whatever you want to call it. So yes I I agree I would love to if they're useful. Show me! study, tell me what the sample size is, tell me what the findings were, tell me what the data was, that qualitative or quantitative, show me a study that it was useful.

**Speaker 2** [00:38:53] You can't, you don't

**Speaker 1** [00:38:53] You can't you don't just get to say my opinion is useful in science. You get to say this is my opinion great I heard your opinion. Is it real? Meaning is it existentially real? Can we prove it that it exists? Is it effective meaning maybe it's not real but knowing it helps in some way, right? Is it effective? That would be a study Any of those studies would be great And those are, and those all start with opinions, so I'm not against the opinion. I'm just saying, if your opinion's been around for 50 years, and it's influencing lots of people, at some point, you gotta show me the money. Where's the beef? At some point, you gotta show your cards. You gotta say, hey, we did some studies, and they say this. It doesn't have to be the... end -all, be -all, proven beyond a shadow of a doubt, science never proves really anything. But it does have to sort of point in the vector of truth -e -ism.

**Speaker 2** [00:39:58] Yes.

**Speaker 1** [00:39:59] Truthiness or whatever. Whatever. It has to point in the vector of something that we can rely on that has validity.

**Speaker 2** [00:40:09] and can be observed in reality.

**Speaker 1** [00:40:10] can be observed, right?

**Speaker 2** [00:40:12] Well I think it's interesting. I don't think a lot of people understand what peer review even means.

**Speaker 1** [00:40:16] Yeah, and that's why I think PPPR, or post -publication peer review, is the future, right? Is just like, let it be out in the open. Let everything be out in the open. You publish it, now it's published, you get to see it, you get to see what people say about it, you get to say who said what about it. The other piece there, again, another little somewhat dirty secret, not always intentional, but just bad training. peer review, which I think is deeply, deeply problematic, is that the it could be handled by training doctoral students better. Yeah, frankly, the purpose of a peer reviewer is not to be a check on whether they agree or disagree with what the paper says. Right. That is one of the great misunderstandings about being a peer reviewer. Right. The The purpose of a peer reviewer is to Apply a scientific lens on the paper. Yes. So in other words I shouldn't care if what you're saying in your paper disagrees with what I think I shouldn't care if your findings in your paper disagree with what I think. It's not about your opinion or your uh Or your findings or your right what it is is about your methods what I'm critiquing, what I'm reviewing, what I'm skeptical of, and this is an appropriate place to use skepticism and critical thinking, but only in the peer review process. You just can't let it go. What I wanna critique there is what are your methods? How did you find these findings? What is your sample? Did you do anything weird in your sample discovery? Yeah. statistical analysis did you run? Did you run them correctly? Did you run the appropriate ones? Are there any issues with those? What were your findings? Oh, interesting. Are those findings valid and reliable?

**Speaker 2** [00:42:26] Yeah, valid and reliable.

**Speaker 1** [00:42:28] and your interpretation of those findings. Is there something askew about your interpretation of those findings? So what I'm critiquing is not necessarily what the paper found, right? What I'm critiquing is how the paper found it.

**Speaker 2** [00:42:45] Right, because the critique of what it found comes out in some sort of academic debate that's later, like it's not part of the

**Speaker 1** [00:42:51] No. No, I don't think so. The debate is whether the findings are reliable and valid.

**Speaker 2** [00:43:00] Right, that's what's inside a peer review.

**Speaker 1** [00:43:01] Yes.

**Speaker 2** [00:43:02] But I'm saying if you, if I as another, if I'm a scientist and you're a scientist and I don't agree with you, then that's a public, I can come out and say, hey, let's debate that idea. But that's not part of peer review. That's a totally separate thing.

**Speaker 1** [00:43:17] That's not part of the peer review, and maybe this is my autism showing through, but I just find that to be not scientific at all. I know that scientists have debate, but what are you debating? If the findings are accurate, if the methods were accurate, and reality revealed itself, then there's nothing to debate. It doesn't matter if I agree with it. Reality doesn't give a shit whether you agree with it.

**Speaker 2** [00:43:45] Yeah, no, that's interesting.

**Speaker 1** [00:43:46] There's nothing to debate if I agree with your methods and I agree with your findings and I agree with your analysis and I even agree with your interpretation of that analysis. If I agree that you did all that right, what is there to debate?

**Speaker 2** [00:44:00] No, I think that's interesting. I think I'm thinking about some of the more widely known sort of debates.

**Speaker 1** [00:44:06] Right, though that's philosophy.

**Speaker 2** [00:44:07] That's philosophy.

**Speaker 1** [00:44:08] And philosophy can drive science in the same way that art can drive science. That's why every campus in America has an arts and science quad, right? They go together. The arts and philosophy are drivers. They're creators, right? They're opinioners. Thank you very much. Mm -hmm. Right there. And they create the little opinions that are so important, right? But then when they grow, the scientific process is really looking at, do we have a criticism of the methods? Right? That's the peer, that's not the scientific process. That's the peer review process, the peer review processes. Is there something wrong with the methods? And there's almost always something a little askew about the methods, right? I mean, like nobody's, nobody's methods are perfect. They can always get better. They can always get more systemic. You can always take more into account larger, larger sample size. You could, you know, there's always something, but you just acknowledge it. You just go like, you know, Oh, this is, this was a sample that was this big and we found these things and we interpreted it this way. You know, there's always something. With these methods, the sample isn't as big as we'd like it to be, but that doesn't take away from what we found. It just means maybe it's not as generalizable as we'd like it to be. Or we did these methods because we couldn't do other methods, because it's illegal or Some other.

**Speaker 2** [00:45:30] Right, and we can only get a sample of these kinds of people because that's where we had access. Exactly. Legal limitation.

**Speaker 1** [00:45:35] I mean, those are just the realities of doing science. I think a lot of people, when they do peer review, and I think the general public, it's important to understand the difference, is what they do is they go, do I agree with this paper? And that is...

**Speaker 2** [00:45:51] Not the point.

**Speaker 1** [00:45:51] That's like, please remove yourself.

**Speaker 2** [00:45:55] recuse yourself from the review panel.

**Speaker 1** [00:45:56] recuse yourself from any kind of review if your approach to reviewing is do I agree with the paper?

**Speaker 2** [00:46:04] No, I think that's fair.

**Speaker 1** [00:46:05] Then then it just becomes a popularity contest if you if you multiply that agent behavior times You know all the people that are doing it then basically what you're saying is Is it part of my echo chamber if so? peer reviewed And then science and academia is no different than social media.

**Speaker 2** [00:46:31] Yeah, and that's not good.

**Speaker 1** [00:46:32] And that's, but notice we have these patterns in social systems, the social media system, the news system, the academic publishing system. These are very similar structural patterns. They look different because it's academia and peer review, it's news, it's social media, but they all have the same patterns, which is they kind of move towards echo chambers. cronyism, echo chambers, circularity and we want to undo that or we will end up in a place where where it becomes incredibly difficult to know what is real and that is the systems in systems thinking. What is real? IRL, love reality, systems. We want to get our thinking to be as close to an alignment. with what is real as possible.

**Speaker 2** [00:47:33] You could brought it all the way back to the beginning. Well, you have answered my questions and more. I don't know. This has been great, actually.

**Speaker 1** [00:47:40] I think that's a wrap. Yeah.