**Episode #50**

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

**Speaker 2** [00:00:07] How are ya? What's that mean? Shaka. What's shaka mean?

**Speaker 1** [00:00:11] I don't know.

**Speaker 2** [00:00:12] Is that like a surfer thing?

**Speaker 1** [00:00:14] I think so. We're done with the organization month, so we're back to I don't know what we're talking about.

**Speaker 2** [00:00:21] Yes, that's true. Although I would not say we're done with the organization.

**Speaker 1** [00:00:25] Well, we're done with, like, the piece.

**Speaker 2** [00:00:25] We've done a series of things that get the basics down.

**Speaker 1** [00:00:28] vision, mission, culture, or capacity learning culture.

**Speaker 2** [00:00:32] Yeah, and so I would say we're going to keep having organizational stuff and focus inside of existing podcasts and maybe some new ones as things come up, because we're actually teaching that class this semester, so things might pop up.

**Speaker 1** [00:00:43] Yeah, but systems and systems thinking, you know, applies to people at the psychological level and human development, but it also applies to when people get together, which is organizations, what's sometimes thought of as the sociological. So the psychological is like the individual and down, right? And then sociological is like the dyad, which is two people and up. Right. So when you introduce dyads, which are two, two of something interacting and greater, you get much more complexity to systems applies to both those worlds that I was on a call the other day with somebody on training camp and And they were saying, you know, do you focus more on Oregon organizations or more on people in human development, self-development, you know, that kind of stuff. And I was saying the same thing, like, it really is applied to both psychological and sociological phenomena.

**Speaker 2** [00:01:53] Yes, I think also, I'm not sure if this has been obvious to people as they've been listening across both the sort of psychological and sociological, the individual topics and the organizational topics. The important thing is that they both deal with complexity and that there are simple things underneath that complexity, both for the individual DSRP and for the organization VMCL, that there are. know, there's a parallel structure in that there's four natural things underlying both that we can

**Speaker 1** [00:02:25] Yeah, in fact there's a law, you know, so we can think of it like we can do little stick figure drawings. You know, this is a dyad, right, and then obviously dyads turn into groups, right? he could have three people and more, and this is a group. And so psychologically, they're dealing with complexity in this brain of theirs and their relationship with themselves and all kinds of stuff. And so we're dealing mental models, which are critically important, M equals IO. But then when you get into a dyad, then things get kind of infinitely more complex right, because you have an M equals I O here. m equals i o here and then you have m equals io here and and then we're trying to you know communicate to commune to come commune together around a concept and maybe share and there's listening and talking and communicating and all that stuff so it gets and then you add you know three people and it just gets even more and more and more. You know, in all these situations, mental models are super important and understanding them and being able to communicate them even inside yourself. Because in this case, you have kind of a relationship with yourself going on, right? So in many cases, the things that work at this level, because there's this relationship with self going around like that. It's basically the same kind of things, right? Because you have your conscious thought and then you have an unconscious thought. People make a huge mistake with thought, right. I was having a conversation with people the other day. One of my pet peeves is people talking about how thinking and emotion are in this loop and neither one comes first, not true. Thinking. Leads to a motion a motion can affect thinking for sure there's a feedback loop for sure yeah thinking is always driving a motion knows they'll site things like well then the amygdala when you see a snake you immediately have an a motion like fear right that's true yeah but. So recognize the snake is making a distinction you're distinguishing a snake.

**Speaker 2** [00:04:55] Right, so there's thought that's perceiving that here. So there's thought.

**Speaker 1** [00:04:57] Well, people will argue, well, that's not conscious thought. Well, yeah, there's so much of your thought is unconscious, right? There's so many going on. Your conscious thought is the tip of an iceberg, right, it's like this little tiny tip of an iceberg is conscious and then you have all this other stuff going on which includes thought and emotion and all kinds of other things. You know, if we just define thought as the conscious part, that's sort of a silly arbitrary distinction. There's so much more thought going on, like the recognition that there's a snake. And by the way, you could be wrong that there is a snake

**Speaker 3** [00:05:31] Yeah, it could be a stick.

**Speaker 1** [00:05:32] You could be a stick that looks like this, right? A squiggly stick, you know, a danger stick. And then you have the emotion anyway, even though your mental model about it being a snake is wrong. And that happens all the time when you're hiking. You immediately are like, oh, and then you're like, Oh, that's just a squiggly stick. But you're still afraid. But you still were like, you jumped or what you had a reaction emotional and otherwise.

**Speaker 2** [00:05:56] I'd be the kind of person that would be scared of most sticks. Jump off the trail, right? So correct me if I'm wrong. This is like where you want to know how you're building your mental models. This is where you're, how do I share mine and understand other people's mental models? And then this, I think, more at the group or organizational level, like we've been talking about, is more about how do we not just share them, but also evolve them together, which is organizational learning. So I always think of there's sort of the skill of knowing how you build them. figure out how to share them, which means you're also understanding how to understand others, and then evolve them over time to adapt to whatever you need to adapt to.

**Speaker 1** [00:06:34] And yeah, and you're evolving them here too, right? So all the same things that are going on here, I sort of think of it like, you know, here is not psychology like psychologists, but psychological phenomena, right, because sometimes people think psychology or whatever. But psychological phenomena exist in this realm, right. And sociological phenomena exist on this realm. You know for the same reason that when you when you study chemistry you inevitably have to study physics because all the molecules are made up of atoms, right? So physics is studying kind of at the atomic level and below and then social or chemistry is studying at the sort of molecular level and up and then you get biology and so in that same way, in order to be good at this stuff, you gotta understand this stuff. And vice versa, right? Because this person isn't living in a vacuum, right. They're not living in like confinement. No. Where they're only having this feedback relationship with themselves. They're going out in the world and interacting and then they're having this and then, you know, so you're simultaneously living in a psychological and sociological domain. And so to me, when people say, well, is it about organizations, or is it about people and human development? I'm like, what's the difference? Like, is that personal? Is it professional? I'm, like, who makes, like those are weird distinctions. You know, do you, do leave your personhood at the door when you walk in your organization? If so, like quit, you know, that's not a good job for you. Um, you, so I, that why I kind of coined the term professional. you know, which is a portmanteau between professional and personal. Yes. So making these distinctions are helpful for understanding, oh, psychology is kind of happening at the person and inward, sociology is happening at that person outward at the dyadic and up level, at the group level. All of the things that we talk about in terms of organizations, well, yeah, that's sociological and sociotechnical, but you're not going to get very far. In this world, if you don't understand this world and vice versa, right. So it applies to all of it, because all of these things are systems. This guy named Stephen Wolfram came up with a thing called the law of computational equivalence, which talks about the idea that these even that even though this is a lesser level, it might be equally computationally equivalent in complexity to this level. So you might think, oh, this is more complex than this. Well, not really. They're kind of computationally equivalent.

**Speaker 2** [00:09:31] How is that even possible if there's three of these and one of those, how are they computationally the same? Are you saying at the very base level?

**Speaker 1** [00:09:38] When you get into this thing, you think, well, there's only one of these, right? One person. But there's not. There's your conscious thought, there is your unconscious thought, your self, and there's your aspirational self. So this could end up being four things that are interacting. So it really is about kind of the number of things, like the N involved. Thank you very much for your time, and I'll see you next time. is what makes something complex, the N involved, the N meaning like the sample or whatever that you're dealing with. When, as soon as the N gets above three, things get crazy complex. And that, it doesn't really matter what the N is. The N could be mental models, the end could be people, the end can be organizations, right? So if you're looking at three organizations that are interacting or three countries that are interact, yeah, that's wildly complex. But so is three organizations, so is three people. Yes. Right. So it's three concepts. The underlying structure, yeah, it's all roughly the same.

**Speaker 2** [00:10:45] You know, I was thinking the other day, I was reading something, I was getting ready for something for work. And I actually, do you know that there are something like 89 different fields that have systems? I do. Like systems engineering, systems thinking, systems science, systems this, there are so many, I didn't realize this until I read it. Yeah, there's a lot. I just, I don't even know what that means, that there's so many different fields that start with the word systems.

**Speaker 1** [00:11:15] That's a big question, but it means two things. One is, and this can get real like a sticky wicket. So a what? A sticky wick. In a very simple sense, you could think about this idea called reductionism. Well what is reductionism? Reductionism is zooming in and looking at the parts. So it's taking a thing and kind of breaking it down into parts. Holism is the idea that you kind of start with the parts and then think and zoom out and think about the holes that it's part of, right? And there's this tendency, because people love bivalency or black and white, to sort of pit holism against reductionism. Right. Of course, they're not they're they're like twin sister acts and they're They're actually in many ways the same action. They're just, you know, reversals of the same action, which is part, it's the relationships between parts and wholes. So rather than going from whole to part, you're going from part to whole.

**Speaker 2** [00:12:22] So it's just the directionality.

**Speaker 1** [00:12:23] And people get very confused by, you know, emergence and whether the parts are equal to the whole or whether the sum whole is greater than the parts and all that. We did a whole podcast on that, I think. So if you want to understand emergence and whether or not the whole is greater than some or greater than parts, which it isn't ever. But it is true. so so so don't don't get hung up in this false dichotomy that people make between, well, you know, systems thinking is holistic, not true. Systems thinking is both. Yes. Or this false dichotymy of, you know, we're not reductionists, we are holists, or we're holists we're reductionists or whatever. You need both. You need Both.

**Speaker 2** [00:13:10] Because reality is both.

**Speaker 1** [00:13:10] Because reality's both, right? Yep. So you need both. There is some truth to the idea that in the way that science has evolved, not fundamentally in the principles of science itself, but the way that science as evolved as a human flawed edifice of academia, let's say. So differentiating between. science as a principle or a set of principles, and academia, the practice of science, just like we see in democracy has all these principles. But in practice, there's corruption and all kinds of things, or communism and practices, whatever. But, in principle, we see what it looks like. So same thing goes with these things. There is some truth to the actionistic way at the exclusion of more systemic or holistic kinds of things. There's some truth to that. I wouldn't say it as like it's black and white. I would say it is like if you had, if you looked at the edifice of scientific practice today as a scale, it would lean a little reductionist and a little disconnected, right? where disciplines are studying things in disconnected silos and. There's less connectivity, there's less connecting the dots than there are zooming into the dots and those kinds of things. Yes. Right? Yes. If you take all those disciplines, I think at last, I think Burke counted something like over 20,000 disciplines. In the world. Yeah. 20,00 disciplines in fields and subfields and stuff like that, so that's a lot. But if you take like the major ones, like when you go to college, but you can pick what your major is. Yeah. What is that? Like maybe 20, 12, something like that. Yeah. Well, if you take the major ones, the 89 major disciplines. in a sense, realize this imbalance, that this thing can be imbalanced to this side. And what they've done is they've just appended the word systems. whatever it is, systems blank, systems engineering, systems science, systems this, systems that, right? Does that make sense? Yeah. And what that's trying to do is kind of balance and be both, connect the dots more, so it's focused more on connecting the dots, it's focus more on being both holistic or systemic and reductionistic, right. Yeah. That's the app, the appendage of systems onto these different.

**Speaker 2** [00:16:09] Yes, that's why they're doing it.

**Speaker 4** [00:16:11] 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** [00:16:40] When you append the word systems to something, my thought was, because I did a little bit of reading on this, is sometimes it means they're teaching systems techniques or systems tools, not necessarily, I mean, I guess I think of systems thinking as a core set of skills or principles, systems thinking. So I guess, can you assume that when there's a systems qualifier, that it means they are thinking systemically about that topic?

**Speaker 1** [00:17:07] you can definitely not assume that you can you can assume that there's an intention to do that

**Speaker 2** [00:17:14] I see.

**Speaker 1** [00:17:15] So if you take something like systems engineering, right? So this is the systems blank, fill it in with whatever one you want. So systems engineering. Yeah. Systems science, systems, biology, systems.

**Speaker 2** [00:17:30] sustainability.

**Speaker 1** [00:17:31] sustainability, systems innovation, systems leadership, system, you know, like you name it, you take your field and add systems to it. It's a little bit like, you know, does adding the word systems really change it? Does it change the culture of this thing? Well, it could, but it tends not to. It tends to, for example, in systems engineering, a lot of times what they do is they just take the basic engineering print the basic engineering disciplines like electrical engineering, mechanical engineering, structural engineering, etc. And they, you know, think of those things, and they and they relate them. So that you know, that that might be systems engineering. So it's like a T model, where they have, you now that each each one of these things is a depth, a depth level thing. So this is like, if you're doing E, electrical engineering or you're an Emmy. mechanical engineering or structural engineering or whatever, then you might zoom down, down in the T. But systems engineering becomes kind of like that across the T

**Speaker 3** [00:18:36] Yes, yes, yes.

**Speaker 1** [00:18:37] That's one way that it plays out. The other way is that, well, it's just these kinds of things applied to systems, right? So if I'm doing a sociotechnical system of some policy or if I am doing a socio-technical system of a bridge, instead of just designing the bridge, I'm also thinking about the people who are using the bridge. The wider system. The wider systems, and so it's like, we're applying these things to this system, and that's kind of how they do it. But the bigger issue, I think, is much deeper. The issue that these 89 and more disciplines are having.

**Speaker 3** [00:19:20] How so? How's it deeper?

**Speaker 1** [00:19:21] I'll tell you a story.

**Speaker 3** [00:19:22] Oh, I like stories. OK.

**Speaker 1** [00:19:24] So, when I was a grad student, I worked with an amazing man who has since passed, Dr. Will Provine, and he was my advisor, one of my advisors. And he was an evolutionary biologist. He trained at the University of Chicago, which is one of the great evolutionary biology. He has a Ph.D. in, I think, the 50s or 60s. And he an expert in Darwin. He was also a historian of Darwin and also an evolutionary biology student. remarkable mentor to me. He taught a class, a big lecture hall for freshmen. So imagine a huge lecture hall, Will Promine at the front, I'm standing off to the side as I teach one of the sections of students. All these brand new students, so these are pretty fresh-eyed freshmen. Yeah. They come to Cornell and they come to this class and Will Promines at the content. He proceeds to go through, for 50 minutes, some of the most difficult concepts in evolution, one by one, without stopping, no pausing, just, I mean, like almost PhD level kind of review of the whole field of all these different concepts and theories and research and blah, blah, blah, right, 50 minutes. So these students, I'm watching the students, and they're... Just frantically scribbling notes.

**Speaker 2** [00:20:52] Yeah, I would imagine.

**Speaker 1** [00:20:53] I mean, they're freaking out. They're like, what have I gotten myself into? This is way above my head. I don't even understand half the sentences. Just trying to make sense of anything, right? 50 minutes, it's like a gauntlet.

**Speaker 2** [00:21:07] Yeah, it sounds a little painful. It's a little painfull to watch.

**Speaker 1** [00:21:11] Around about the 55th minute of the of the class, he's a few minutes left in the class. He puts up a slide He says everything that I've been talking about for the last 50 minutes is Everything that I learned At one of the best evo evolutionary biology programs at the doctoral level in the 50s and 60s or whatever it was at University of Chicago And he makes a list of everything he just talked about on the left, on one slide. And then he says, now I'm going to show you how many of them we think are true today. And it's just red X's all the way down. No green check marks. They're all- The whole list. The whole. The whole is no longer- None of it is no long- It's all no longer valid. So then they're like, why did you just go through all this? He goes. In the last minute of the class, he goes, so the question is, if this is what I learned at one of the greatest EvoBio programs in the country at the doctoral level in the 60s or 50s, and it's all wrong today, then what exactly did I learn? Nobody answers, nobody knows what he's talking about. And he says, what I learnt was how to think like an evolutionary biologist. And that's what I'm gonna teach you in this course. I love that. Yeah, it was pretty cool, pretty cool. Just like experientially, yeah, like mind blown, just master class. I mean, it gives me chills. Master class, to make this point, he had to make it like experiential. There had to be struggle to get them to understand the profundity of this point that he's making, which is. Learning to think like an evolutionary biologist is is the real the real stuff right and there's a basho says Seek what the great ones thought sought not what they found

**Speaker 3** [00:23:19] Yes, I love that quote.

**Speaker 1** [00:23:20] seek what they sought, not what they found. What they found is the knowledge, but what they sought, you know, some particular little piece of knowledge. But what they saw it was bigger than that. Yeah. And so what I worry about with these 89 disciplines that have gratefully chosen to be, you know to explicitly attempt to be more systemic, is that we can give people the tools, the systemic tools. We can give them systemic techniques. We can them systemic software. We can all these systemic tools, like a tool belt, a whole studio of tools that are systemic. But put in the hands of a non-systemic thinker. Yes. Somebody that doesn't think systemically, all of those tools will be for naught.

**Speaker 2** [00:24:15] Right, because they can actually use them not.

**Speaker 1** [00:24:17] They'll use them in linear, non-systemic, you know, ways, right? They won't be a... So what we have to do is focus on, yeah, we got to teach them all these tools in some of these disciplines, very technical things, and we have teach them them all that. That's absolutely the case. But if we forget to teach them how to think systemically, systems thinking, DSRP thinking, you can learn all these tools. and use them in very unsystemic ways.

**Speaker 2** [00:24:50] There's a big difference between thinking systemically and thinking about systems, right? That systems thinking is literally, like you said, thinking like a science. It's a mindset. It's an approach to how you think things through. It's not just, oh, I'm thinking about this system, and therefore I'm a systems thinker. No, you're thinking about a system, but you're not being a systems-thinker. Yes. Now you could be a systems thinker thinking about a system.

**Speaker 1** [00:25:18] That's what we want. Which is what you want. That's right. That's why we want it.

**Speaker 2** [00:25:21] in some cases for these different disciplines, it's almost cosmetic.

**Speaker 1** [00:25:28] Yes. Well, that's the danger. The danger is that this is just a cosmetic add-on and or that we just kind of like take the disciplines and like connect the dots between the disciplines, which is good. I mean, that one step in the right direction or that we just, you know, use the discipline as it is to think about systems, Which is also, you know, a positive, but it's... But it really kind of misses the bigger, most important point, which is if we just learn all these systemic tools and we don't change the user of those tools to be a systemic thinker, right? So we got to put the systems thinking in systems engineering, in systems science, in systems whatever.

**Speaker 2** [00:26:24] I think what you're getting at is this word should actually have the same meaning across them, which is

**Speaker 1** [00:26:30] Systemic thinking.

**Speaker 2** [00:26:32] Systems thinking in engineering systems thinking and that's

**Speaker 1** [00:26:35] And that's what that's, what DSRP does is it puts the systems thinking in the engineering or the systems thinking in, you know, thank you, didn't you have some of the other fields there? I mean, there's so many of them.

**Speaker 2** [00:26:49] Oh, I have them in a blog that we wrote actually.

**Speaker 1** [00:26:52] systems robotics, systems control engineering, systems informatics, systems computing, systems medicine, systems geology, systems physics, chemistry, neuroscience, systems ecology, systems anthropology.

**Speaker 2** [00:27:07] Well, so maybe we should applaud that people are getting the word systems in there and many of them are probably doing what you're saying.

**Speaker 1** [00:27:14] Systems education, systems pedagogy, systems entrepreneurship, you know, it's a great thing that we're getting the word in there. It's a good trend. It's good trend!

**Speaker 2** [00:27:23] We like it.

**Speaker 1** [00:27:24] Yeah, it's a good trend. It demonstrates the importance of systems thinking and the universality of it. But I want to push people to like, you know, let's not just append the name. Let's really make deep change in these disciplines because society needs it. Society needs us to make these disciplines more systemic.

**Speaker 2** [00:27:47] So then, OK, so then what does a person do? If I say, oh, I'm head of x department at x university, and I want to make sure that this means what it should mean, what's the question I should ask myself? What's the answer?

**Speaker 1** [00:28:01] train, train the students or train the whatever you're training, whatever the people that are with it's a department in a company or whether it's department in a university or whatever, train them in in the tactical, technical DSRP, the moves, you know, the most important moves train them and those things. Like if you train them, and the five most important moves, for example, is, is not list, zoom in, zoom out, move, park, party, RDS, barbell, and P circle. That will be like exponentially better than what we're doing today. Like just that alone, just train them in those five moves. And then there's some other stuff like the DSRP 483, kind of like what we Alton. if you train them in that, they will use those tools differently. They will use whatever tools they're using or learning just fundamentally differently. Because getting to Will Provine's point, you'll be changing the way they think. Not just what they think about. The way they will change.

**Speaker 2** [00:29:14] that the disciplinary information is going to constantly be changing. Totally. Even in a single person's lifetime like Will Provine. Like Will Provign. Right. So then the question is, yes, they need to be thinking about this content, but they need to learn how to think about it more robustly, more systemically, so that when all of this changes or parts and pieces of it change it, they can adapt to that. That's right. Because they know how to thing it through in a very sort of regimented and robust way.

**Speaker 1** [00:29:44] And I would say, you know, like, no matter what you're doing, like Michael, who works on cybersecurity and, you, know, the so many different people that are working on so many cool different things, you system cybersecurity, like whatever you're working on, it should be appended with systems so that we remind ourselves to be systemic. And then we should utilize these skills of systems thinking to, to look at this problem, cybersecurity. To look at the problem of pedagogy, to look at the problem with education, to look at a problem of policy. Even we've applied it to literature reviews and research methodology. So we now have system literature reviews. So we've changed the way we do literature reviews to be more systemic and more empirical, right? So even small things, it doesn't have to be a whole discipline. It could be the way that you do anything, Systems X. That is really bringing the system's thinking to the X, whatever the X is that you're turned on about or that you are excited about.

**Speaker 2** [00:30:51] system cyber security is unique. Yes. And actually, Michael will be presenting that at the conference.

**Speaker 1** [00:30:58] Michael Collins. Yeah. Yeah, he does a lot of

**Speaker 2** [00:31:01] Annual Cornell System Syncing Conference, which is May.

**Speaker 1** [00:31:04] May 1st and 2nd.

**Speaker 2** [00:31:06] I think this is fascinating. I think it's interesting because so many times we take things just at face value and we don't really think about, well, what does this really mean to do this? And not only what does it mean, but what's the likelihood that it means the same thing across the 89 or however many fields that are doing it?

**Speaker 1** [00:31:27] Well, that's what we spent 30 years determining, is what does that thing mean? What does that appendage mean for the discipline, and it means a lot. It's fundamentally the direction of the future of science, all the different sciences.

**Speaker 2** [00:31:46] I feel like you could just say it's the direction of the future, because things are more and more complex, interconnected.

**Speaker 1** [00:31:53] personal development, you know, we have to be more systemic in the way we think about ourselves at the psychological level. ourselves at the socialize it's weird that it started off that way because I was just I was just kind of going on on about that stuff not related to the topic but yeah that seems like a

**Speaker 2** [00:32:14] You did a great connect, you just connected the dots from the end to the beginning, that was good.

**Speaker 1** [00:32:19] Yeah, I think the callback is a good indication that that is a wrap.