**Episode #9**

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

**Speaker 2** [00:00:07] You ready for this? Nope. OK. We did a podcast a while ago on up thinking. Yes. In that podcast, we talked about all kinds of thinking. And one of the ones that we mentioned, one of types of thinking that we talked about a little bit was critical thinking, which has gotten some response and some comments about critical thinking versus up thinking, what is critical thinking? What are our thoughts on it that are more, they want us to have our deeper insights into critical thinking in relation to itself and then also the wider topic of thinking. So, let's start slow. I guess we should talk about what it is, what it's widely thought of, and maybe some of its merits and some of its weaknesses as a thinking framework.

**Speaker 1** [00:00:58] I think in the last podcast, or the one that you're speaking of, I think we mentioned that there were, you know, 33 or so different types of thinking that that that people talk about. all our variations on a theme of thinking. So there's really one thinking and then there's all these other types of thinking some of them, you know, more useful than others, some of the more specialized than others. Some of them highlighting certain things and low lighting others tends to be the main thing that they do is they tend to highlight certain aspects and low light other aspects, right? Yes. And that in and of itself, if your goal, the goal of the kind of thinking that we, uh... research and and deal with is is just thinking and the goal of that is to better align with reality right that's the stated goal right so anytime you highlight certain things and low-light certain other things you're like that detective that comes onto the crime scene and already has in mind what they're going to highlight and what they are going to lowlight. That, by definition, is called a bias. Yes. If you're gonna highlight something and lowlight something else, that by definition is a bias

**Speaker 2** [00:02:33] Meaning we start with a preconceived notion, and because of that, we only see certain things and don't see others because it's a preconcived idea of, so when you say critical thinking, you mean that just that qualifier of critical has with it an inherent meaning or bias or.

**Speaker 1** [00:02:56] Yeah, so there's the term, the words, right, we do have to take this slow because it's pretty nuanced. So there's a term, critical thinking, right? So you're modifying thinking with criticality. His critical thinking has been around for a long time, but that term has has historically been used in critical theory, critical race theory, all kinds of different critical theories that are out there that are part of the, for most people's world, they're not familiar with those things. But in science, we call those epistemologies or epistemological approaches and criticality is one of those. epistemological approaches, which is kind of epistemology is a big word that just kind of means like, how you approach knowledge, how are you kind of the way we know things? Yeah.

**Speaker 2** [00:03:51] Ways of knowing.

**Speaker 1** [00:03:52] Ways of knowing. Yeah. And it reduces down to how do we approach the creation of knowledge, right? Do we have a particular bent? Do have a particularly, I would say, bias? Because a bent is a bias by definition, right? So, you know, and sometimes those biases get us to certain places where we want to get to. To be clear, the kinds of thinking that we research and the kinds that we study really has to do with thinking is a way of creating models of reality and the single litmus test of that model. to what degree does it represent reality? Right. And if it represents reality better, then it's a better mental model, it's better thinking. And if doesn't, then it is.

**Speaker 2** [00:04:54] So let's interact what you just said. So you said thinking, no qualifier, is building a mental model, and then the degree to which that mental model aligns with reality is better thinking, leveling up your thinking, good thinking. So bump that up against the idea of critical thinking and tell me how that interacts.

**Speaker 1** [00:05:16] Yeah, so again, we can look at it kind of from a perspective of like the linguistics of it, the terminology, the word critical and modifying thinking. We just talked about that a little bit. We can also look at historically and what has kind of been put into the suitcase of critical thinking. So historically, I mean, critical thinking is very important. I hope nobody gets me wrong that I'm saying critical thinking isn't important. It's absolutely massively important. the basic ideas to kind of reduce bias. The problem is, historically, there's a lot of things that are put into the suitcase of critical thinking that actually increase bias, that get us further away from mental models that represent reality. One of those, the chief among them, number one, the number one perpetrator,

**Speaker 2** [00:06:12] Number one.

**Speaker 1** [00:06:13] of that's in the suitcase of that has been packed into critical thinking, goes back to a guy named Aristotle, kind of founded, you know, Western civilization. Aristotelian logic, so Aristotle's logic is the logic of the excluded middle, which means a two-valued logic, meaning he takes a continuum and he kind of says, let's exclude the middle and we got this value or this value. So it's a true or false, one or zero, black or white logic. And a huge amount of the critical thinking that is done today and taught today is predicated on that logic. Now, that logic couldn't be further away from the logic of nature. The logic of nature is multivalent.

**Speaker 2** [00:07:11] So meaning that way of thinking doesn't match with the reality of the way things actually are.

**Speaker 1** [00:07:16] Yeah, not that way of thinking, but if your critical thinking is predicated, meaning if it's been influenced by, see, that's the problem. Critical thinking isn't critical thinking isn' critical thinking, right? Different people are using different approaches. So when you hear the term critical thinking it's hard to know, well, are we using kind of a basic Aristotelian logic, Aristotle's logic, that is bivalent. And folks maybe don't even know who Aristotle is or that he had a logic or, you know, Aristotelian sounds like a really huge word, but all it means is that you have a true or false value. Guilty, not guilty, one, zero, black, white.

**Speaker 2** [00:08:01] I see. So what you're saying is, if critical thinking has underneath it the bivalency, the one or the other...

**Speaker 3** [00:08:09] Yep, by means two.

**Speaker 2** [00:08:12] that is a problem because the world or the reality of things we're thinking about doesn't exist in bivalency.

**Speaker 1** [00:08:19] So we got to slow down there too, because that's a really important point. So it's not that the nature or the universe or reality, whatever word you want to use, it's that there isn't bivalency in reality. There is. It's just that that logic doesn't cover all the different things that are in reality, multivalency, which just means Logic that's more than two values. or sometimes called fuzzy logic. There's a lot of different types of logic, but multivalent logic, logic that can have more than two values. is capable of doing bivalent logic, but bivalant logic is not capable of doing multivalent logics. So nature is multivalant. It doesn't mean that nature can't sometimes be bivalet. Right? I mean, it's bivalient when a tiger kills a zebra, right? Like that's pretty bivalently for the zebra.

**Speaker 3** [00:09:18] Right.

**Speaker 1** [00:09:20] or a lion, I guess. So, you know, so there is bivalency in nature. We're not saying that there's no bivalence. We were just saying that if you approach the world with this only two option logic, you're going to run into a lot, a lot of situations where that doesn't work with the world's logic.

**Speaker 2** [00:09:45] But what you're also saying is in reality, every once in a while, there's a situation where a bivé on C is perfectly adequate or, or work.

**Speaker 1** [00:09:53] Not even every once in a while, a lot, you know, like, I mean, just think of all the times where you've got to choose something, right? Coffee or tea. Coffee or Tea. And you know a lot of times we can take a bunch of choices and we can get down to the, to the final choice by setting up bivalencies, right. So, again, it's not that bivalent logic isn't incredibly useful. I just would choose a logic that can include that, but isn't limited to that, right? We want to include bivalent logic, but not be limited by that bivalant logic.

**Speaker 2** [00:10:32] I like that. That makes sense.

**Speaker 1** [00:10:33] So a lot, aka, you know, all of the critical thinking that I've seen in practice. is almost entirely based on Aristotle, well, Aristotelian. I hate saying that word, because it's such a big word, but.

**Speaker 2** [00:10:56] Bye, Vail Unlocked.

**Speaker 1** [00:10:57] It's bivalent logic, like two-based logic.

**Speaker 2** [00:11:01] OK, I get that. But critical thinking, even when you just Google thinking, critical thinking is by far the most popular type of thinking out there, which means downstream, everybody wants to be a critical thinker. Everybody wants to create trainings in critical thinking. Colleges have the, Cornell has a critical thinking test. So it's very popular. But I guess... what is its shortcomings, what are its merits, what are it's strengths, you know, from your perspective.

**Speaker 1** [00:11:37] You know, its basic premise is its strength, which is, but that premise gets kind of like lost. But it's basic to be fair to it. Its basic premise, which let's try to get things right, is very similar to let's get aligned to reality. Its basic promise, let's not try to be biased, is similar to, let us get in alignment with the reality to. metacognition and all that kind of stuff. The problem is it says that and then does bivalency. It says that, and then, does the bias of criticality. It's says that and then does even cultural types of bias.

**Speaker 3** [00:12:23] Yeah

**Speaker 1** [00:12:23] are embedded or packed into its suitcase. And so in spirit and in intention most of the time, I think it's why it's so popular and why it so desired. In practice, it kind of makes a lot of mistakes.

**Speaker 2** [00:12:44] And I think what's important is what you're saying is, yes, as a general idea, we want to have the skill of being able to be critical thinkers. But maybe over time, its adoption or the way that it's practiced or framed out for people tends to take us off course of its original intent.

**Speaker 1** [00:13:05] Yeah, I would say I would do the great the great saying caveat emptor right to buyer beware like buyer beware because what you don't want to do is say, Oh, yeah. Oh, like I love those intentions. I'm going to go get some of that and then get taken down the Aristotelian bivalent logic, sort of culturally misappropriated logic, the critical nature of critical thinking. Right. That's baked into it, that has become baked into, you know, those are pitfalls, those are traps that you want to avoid. Reducing your bias, awesome. Wanting to be more in alignment with reality, which it doesn't really talk as much about, but that's really important. Being more aware, which we call in science metacognition, being more aware of not only your thinking, but your emotion, your conation, your motivations. Being more of aware of how much of those and your experience. how much those things influence your thinking, those are critically important to... No pun. No pun intended. Yeah, that's a different use of the word critical.

**Speaker 2** [00:14:27] So we've talked about sort of what it is generally, what its strengths and weaknesses are, that it's very popular. I wonder if we should get into sort of the nitty gritty of a little bit, right? So I knew we were talking about this today, so I did a little of background research, and what's interesting is, like many things, there seem to be many interpretations of what it means, which means... we're all saying the same word and doing different things or meaning different things when we're critically thinking. So that's the first problem, right? We don't have a real widespread common understanding. What I did understand though over all of that is there are steps. Yes. Some people have three steps, some people have seven or nine steps, but there are sets to critical thinking. There are things like observing, analyzing, evaluating, inferring. Some of them add making judgments. So what do you see as the sort of the strengths or the pitfalls of taking these sort of stepwise approaches to these things?

**Speaker 1** [00:15:36] Yeah, good question. So the way that I would think about it is use that old model SOT, strategic, operational, and tactical, right? So think of that as like if you took a balloon up in the air at the 100,000 foot level, looking down, seeing the big picture, you'd be at the kind of strategic level. And then if you kind of took that down to 20,000 feet, you would be at operational level, let's say. and then if you took that all the way down to the ground, you'd be at the tactical level. So let's think about these things at these levels. We just talked about kind of the big, deep issues, the big patterns like bivalency versus multivalency, the focus on criticality, those kinds of things. Those are kind of strategic level buyer bewares, right? At the operational level is what you're referring to, right? Which is at the operational level, it's hard to know like which critical thinking is the critical thinking. There's so many of them. There's so many different versions of critical thinking, and they're all they all seem to be, you know, different.

**Speaker 2** [00:16:48] Just enough.

**Speaker 1** [00:16:48] Yeah, just enough different that it's hard to make any coherence out of them. So at the operational level, there's all those problems, right? And, um, one never knows is, is this one, the one because it's popular or because it is promising or, uh, or both. Um, now if we go down to the tactical level, that means we, let's just say we take one of them and then we say, okay, at the tactical level, we're going to be. using this particular stepwise process. At that level, it turns out, at the tactical level, we're supposed to get to some real detail. At that little critical thinking is incredibly generic and general. So think about some of the things that you just said. Identifying the problem. Really? That's incredibly general. Like, how do you do that? Yeah. How do you identify the problem? We have whole courses on problem definition and problem identification. You could spend an entire semester on understanding how to identify and define problems.

**Speaker 2** [00:18:02] There's actually a great book just on problem definition.

**Speaker 1** [00:18:04] than in grad school. Oh, yeah.

**Speaker 2** [00:18:06] It's an entire book.

**Speaker 1** [00:18:07] Yeah, exactly. There's a whole field on it. Whole field on, right? Or, you know, analyze it. Really? That's like a pretty big, big thing. What do I actually do inside of analyze or evaluate it, right. There is a whole field called evaluation, right, that's all about what it means to evaluate, right

**Speaker 2** [00:18:30] Right, and there's different. But also, there's overlap probably between the two. What do you mean? Analyze and evaluate. Sure. In a lot of ways, analysis is part of evaluation.

**Speaker 1** [00:18:42] And analysis is part of problem definition and problem solving. So I think when you get into some of these steps, it's sort of like saying, how do I play basketball? Oh, dribble. Thanks for watching!

**Speaker 3** [00:19:02] Right.

**Speaker 1** [00:19:04] Nobody's showing you like, okay, how do I actually go about doing that or how do I play lacrosse? Oh, you know, catch the ball with the stick and throw the ball with the stick. Okay. That sounds easy.

**Speaker 2** [00:19:17] It's not quite enough information.

**Speaker 1** [00:19:19] So at the tactical level, we want to be a little bit more specific, right? And I find that these different critical thinking models, even if you were to accept one, even if you where to say, hey, let's utilize this one, right, at the tactic level. Because at the operational level, you're debating which one is better and blah, blah, But at the tactical level, if you've decided on one, you are still so general, you almost up at 20,000 feet. And we've got to do stuff on the ground.

**Speaker 2** [00:19:51] Right, so what's the fix to that?

**Speaker 1** [00:19:54] Well, I think the fix is things like DSRP theory, which is multivalent that tells you exactly what to do. Like as an example, one of the steps in the most popular critical thinking world, the first step is observation. boy, observation is a really general term, right? How do I do observation? I mean, there's a whole fields of research on just observational methods, right. So observing something isn't as simple as you might think. How do observe something and not impose my own bias on it?

**Speaker 2** [00:20:39] That's the trick.

**Speaker 1** [00:20:39] In order to do that, for example, DSRP would say you have to understand your perspective. It has to be very clear what your perspective, what your point is and the view and how you interact with the view. And then you would have to try to do things to ensure that whatever feedback you're getting from the system isn't confirmation bias, confirming your own biased perspective.

**Speaker 2** [00:21:04] That's very important.

**Speaker 1** [00:21:05] That's very important. So how would we do that? And there's lots of different ways to do that. So observing, how do we know, for example, that when we observe, or another one, collect data, which is a form of observation, right? So when we collect data how do we know we're not cherry picking the data? Right. Which is a distinction problem and a perspective problem at once.

**Speaker 2** [00:21:30] Well, or if it's the right data in the first place. Yeah, exactly. There's a lot of nuance to it. Right, so it sounds like what you're alluding to, and maybe we should be more specific, is that, so there's this thinking. There's this type of thinking called critical thinking. And there's the critical part and there's the thinking part, right? And it sounds, like, what you are saying is, there are steps to what we call critical thinking, but underneath those steps. what gives them teeth, those steps, is this whole idea of what it means to think in the first.

**Speaker 1** [00:22:04] The thinking part.

**Speaker 2** [00:22:06] Observation is what you just said is like, what is observation? How do we remove our perspective from that? Well, that's all coming straight from just the underlying patterns of how we think across the frameworks or underneath all of the frameworks.

**Speaker 1** [00:22:23] Yeah, I think that's actually a brilliant way to think about it, is they, when we look at critical thinking, they kind of packed the suitcase of the critical part, and then they left the suitcase, of the thinking part is empty, right? And so when you get into, okay, I've got my Aristotelian logic, I got my critical set on. I'm gonna I'm going to have some cynicism about, you know, about the truth variables and things like that. I'm going to try to figure out what's true and what's false because it's binary. And okay, I got that part. Now all I got to do is figure out this thinking thing. Right. Which is infinitely more complex and harder to do than this. And in fact, if you do this well, the thinking part, you don't need this. You don't We need this suitcase. In fact, what you'll find is that suitcase is a bias-producing suitcase.

**Speaker 2** [00:23:25] just by the critical piece of it. Critical is actually a perspective that's gonna bias in many ways or shape what you're gonna be looking for and what you see and what don't see in any problem set or thing that you're thinking about.

**Speaker 1** [00:23:42] Yeah, it's actually a set of perspectives. It's a system of part, whole system of perspective. So it not only has the critical nature to it, right? I'm gonna sort of be a cynical or skeptical or whatever word you wanna use, right. I'm going to be skeptical, right, that's inherent in there. I'm, right so that's a bias. I'm not against skepticism. I'm simply saying that if I arrive on the scene, a skeptic. I arrive on the scene, biased.

**Speaker 2** [00:24:15] Right, but what if somebody said to you that's on purpose and they think it's valuable?

**Speaker 1** [00:24:21] then that's their metacognitive choice to be that way. I do not find that, I think if you come to the scene, sort of an empty vessel willing to take in information and let the scene tell you what's going on in all of its reality and all of it's different informational communication points, I think you get a better view of things. And I think that's true in Thanks for watching, and I'll see you in the next one. basic human everyday examples, and it's also true when you're doing incredibly difficult, sensitive, and complex research. You're essentially trying to reduce or control for any of the possible biases that could happen. Right. And so injecting a bias in.

**Speaker 2** [00:25:16] It could be purposeful but not necessarily have good utility.

**Speaker 1** [00:25:23] Yeah. In practice, it would be really... Yeah. I mean, just think about if you were doing research interviews and you had a team of researchers that you were training to pull these interviews off, right? And you're doing scientific research. And right before you had all this protocol and all this kind of stuff on how to do the interviews, and right before they went in, And you said, now remember... Be skeptical.

**Speaker 2** [00:25:54] and we change everything.

**Speaker 1** [00:25:55] It would change everything about how those interviewers interviewed, and it would flavor everything. It would be like putting rose-colored lenses on them or some colored lens, and would change all the things that they ask, all the thing that they see, all of the things they observe. It would have a significant impact on the research. and it would be bad research. It would be biased. It would be biased, which is by definition not.

**Speaker 2** [00:26:26] Interesting.

**Speaker 1** [00:26:27] So I think even if you want to do that and if that's the way that you've chosen to go about it and you're aware of it, it's a free country. Go do whatever you want. I personally would try to avoid those kinds of biases. And that doesn't even get at, that's not the most significant problem. The most significant is that bivalency. That's the most signficant problem.

**Speaker 2** [00:26:56] From earlier, yes.

**Speaker 1** [00:26:57] So you're already walking in with the mother, or should I say the father, because of Aristotle, of all biases. Yes. I mean, it is a huge bias to be bivalent, and you're walking in with that.

**Speaker 2** [00:27:12] which has a huge impact on everything you do.

**Speaker 1** [00:27:15] Bonkers impact it has a bonkers impact. That's it. You know like it

**Speaker 3** [00:27:20] Won't go.

**Speaker 1** [00:27:21] An absolutely bonkers impact on what you observe, what you analyze, how you analyze how you evaluate what you value.

**Speaker 2** [00:27:32] Yeah, we're in fur.

**Speaker 1** [00:27:33] what you infer, right?

**Speaker 2** [00:27:35] Let's say I'm listening to this conversation, and I say to myself, okay, I grok the conversation so far, but I believe that critical thinking is a skill I want to develop. Yes. And maybe what you're saying is the existing frameworks come short of actually developing what we would call a valuable skill of being able to be critical when necessary. So the question that I would imagine people who are watching and say, well, OK. I want to be good at this. I buy into the fact that maybe some of the existing frameworks aren't quite there. But how do I develop that skill? Just like how did it become creative? How did it became critical? How do I become more scientific? How do we develop those skills in and of itself?

**Speaker 1** [00:28:24] Yeah, I think, generally speaking, I would say... Absolutely thinking is one of the most important skills you can train yourself in and train your team in and you train your kids in and training whoever in. I would just focus on the thinking part. The thinking part is where all the action is happening, right? The thinking is where the good or the not so great behaviors and techniques are occurring. So... I would just focus on the thinking part. And if you want to call that critical thinking, that's fine, I don't care what you call it. But I would focus on the thinking.

**Speaker 2** [00:29:12] What you're saying is if you focus on the thinking part all of those types of thinking You get them all kind of for free because they're all based on thinking. Yes, so Critical thinking has a lot to do with the perspectives. You're taking the distinctions. You are making Whether or not you're seeing relationships all of that just as creativity Has those same things?

**Speaker 1** [00:29:36] Yes, so what some some of the critical thinking things believe it or not some of that some of the critical-thinking models literally will have one of the steps is think creatively

**Speaker 2** [00:29:46] Yeah, I saw that.

**Speaker 1** [00:29:46] Like what is that?

**Speaker 2** [00:29:48] And then you're like, well, what does that mean to me?

**Speaker 1** [00:29:49] You know, that's a whole world of general.

**Speaker 2** [00:29:53] It's like a matryoshka doll of confusion, right? You do one thing, and then you're like, wait, what does that mean? And then you do the next thing, and you're, like, wait, what does THAT mean?

**Speaker 1** [00:30:01] Yeah, I just don't, I think at the end of the day, here's what thinking is. You're distinguishing things from each other. You're deciding what those distinctions are. You're doing all of this from a perspective that you should definitely be aware of as much as is humanly possible. And you're making distinctions between this and that constantly. you're relating these different distinctions that you're making. You're grouping or part-holing the different distictions that you are making. And you're generating those distinctions, altering those distictions, alter those relationships and those groupings based on different perspectives. That is what you're doing when you're thinking. And if... If you said to me, well, what am I doing when I'm evaluating? Well, you're doing all that, but you're deciding first a singular perspective, which could be made up of several things, several parts. So it's a part-whole grouped perspective that you're going to use as the lens to determine the value or non-value of something. That's what evaluation means. So when somebody says evaluate it, who knows what that means? Oh, we do know what that...

**Speaker 2** [00:31:23] It's setting some criteria to make a decision.

**Speaker 1** [00:31:24] Setting a set of criteria to make a value judgment on some other set of things. Right. So that's a part-whole perspective, looking at a part whole system. Yes. That's the thinking that's going on. Now, if we want to label that evaluation, fine. It's called evaluation. What's more important than the label evaluation is how do I know which things to move around and change? And how do know if I've done it right? Yes. Right? Analytical thinking, so analysis, which there's two things and we call it zoom in, zoom out or part whole, right? Yeah. Analysis tends to be breaking things down into parts. Yes. Synthesis tends to See you next time. going up, right, this thing's a part of this larger whole, this larger hole, this larger context. Well, so do we only want to do analysis? Don't we want to analysis and synthesis? And when we say we want do analysis and synthesize, isn't that just literally part whole?

**Speaker 2** [00:32:31] I mean, that's interesting.

**Speaker 1** [00:32:33] And then if we have relationships between the parts and relationships between holes, and we have this nested system of interrelated parts that goes up and down in the world, synthetically and analytically, that is thinking. Right. And no matter what you're thinking about, you're gonna be doing these things that I'm talking about, these DSRNP things, Distinction Systems Relationships and Perspectives. That's the suitcase of thinking. And that suitcase describes all of these modifier suitcases. Whether it's critical or systems or, you know, creative thinking or all the modifier to thinking. This thinking suitcase invented those things. Yeah, that's right. So the thinking suitcase can model those things So if this suitcase can model these suitcases, then you don't need these suit cases because you can you just need this one because you build whatever you want and you can build combinations of them or you can leave them behind and just take this on your trip.

**Speaker 2** [00:33:39] when you can take this one anywhere.

**Speaker 1** [00:33:40] You can take it anywhere, because it's packaged right here.

**Speaker 2** [00:33:43] When we were working in schools, I used to say it's like a backpack that every student can have with them as a toolkit, whether they're in English, they're math, kindergarten, sixth grade, high school. If they have that, they can do anything.

**Speaker 1** [00:33:57] It's the best tool kit we have. This little three pound mass of cells in our skull is the best suitcase we got, the best tool we have, and what does it do? It thinks. It organizes information for meaning. That's what it does all day long. it's gonna do all the different types of thinking to figure things out. And it created all the different types to thinking. That's true. So, you know, it's like you can learn 33 things or you can one thing well and get the 33 things for free.

**Speaker 2** [00:34:42] Yeah, that sounds like a good deal.

**Speaker 1** [00:34:42] To me, that sounds like a better deal.

**Speaker 2** [00:34:44] Great deal.

**Speaker 1** [00:34:45] Yeah.

**Speaker 2** [00:34:46] What would we want? What would you want the takeaway to be from this conversation for people? Given that we had so many comments on the last one.

**Speaker 1** [00:34:55] I guess the takeaway is like... Let's say, I don't know which metaphor to use, but let's say basketball works. I don' know why I always use basketball because I didn't play basketball in any kind of formal way. Let's say you have basketball and you have, you know, and you have all these people arguing about should is women's basketball better than men's basketball is 12 year old basketball better then 14 year old basketball is dog basketball better, then you know cat basketball is outdoor basketball better the indoor basketball like they're all slightly different, but they're all basketball. Right. So, if I said I like... playing outdoor basketball better than indoor basketball, like that's not saying indoor basketball's bad. It's just saying, you know, whatever, there's preferences. But at the end of the day, you're gonna have to learn to play basketball. Right. Right? You're gonna to have to play learn to basketball. And you can't keep talking around it because it's outdoor or indoor or men's or women's. At the end the day you gotta get good at basketball. And I The criticism is not to critical thinking. The criticism is we need to unpack the thinking part. Yeah. I mean, we're birds of a feather. Anybody who's promoting thinking is a friend of mine. You know, like, you know, I think thinking is the most important thing. I think the research tells us that thinking is the important thing we can be doing for our kids and for our work and for personal life in all kinds of ways, right? Metacognition and all this kind of stuff. we lost or we never found what's inside the thinking box, what's the inside the Thinking Suitcase. And we got to unpack that suitcase and help people with that suitcase because that's the suitcase that matters. Of all the suitcases. Of all of the suit cases and. I think when we talk about things like evaluate, or infer, or observe, or communicate, or be creative, or be analytical, or solve the problem, I mean, imagine if I was a consultant and I came in and you're like, hey, we got this problem, and I go, oh, just solve the problem. And they're like... Yeah. Why didn't we think of that? Yeah. Solve the problem. That's a great idea. I'm glad we hired you, you know? Like you're like, what does that do for me, right? All right, or if I just said well, you gotta you gotta evaluate that

**Speaker 2** [00:37:43] Meaning there's something always underneath that.

**Speaker 1** [00:37:46] You gotta get analytical. Right, right. I mean, those are such general terms that don't tell me what to do and how to know if I did it wrong. And if I didn't wrong or if I got results that weren't the results I expected or wanted, how do I go back and what do I change? Right. Right? None of those terms tell me that. That's right. DSRP tells me that

**Speaker 2** [00:38:11] So you've got to go underneath. Once you go underneath, then all of it starts to have tactical, practical things you can do. And that will make you better at any of those other things that you're trying to do.

**Speaker 1** [00:38:23] And so if we go back to that SOT, strategic operational tactical, I think at the strategic level, we got to make sure that it's not bivalent and that it doesn't have so much of this influence of the skeptical criticality because that's a bias. So we want to avoid bias and especially avoid the bivalency bias. At the operational level, You know, that's really for the field of critical thinking to sort of say, why do we have so many models? How come we can't get any empirical, you know, basis for this, for the, what the steps of this thing are. I mean, that that's an indication that we don't really.

**Speaker 2** [00:38:57] Just some widespread agreement.

**Speaker 1** [00:38:58] You have a lot of validity in the thing. And then at the tactical level, even if you chose which model you wanted to use, it's still so generalized. There's not very much you can do with it, right? You know? So you gotta go beneath. So you got to go beneath?

**Speaker 2** [00:39:16] and think about the thinking part.

**Speaker 1** [00:39:18] So I'm a big proponent, big supporter of critical thinking, because it's thinking. And hopefully, nobody hears anything different than that. Thinking is wildly important, and we need to make it more important. I just think we can unpack it a little bit better, and we can use the research that we know today. Right. I think we're using a 70-year-old model for thinking. You know, like your grandpa called and he wants his thinking model back.

**Speaker 2** [00:39:51] Yes, but you're saying focusing on the thinking part we can get better at all of all of it. Yes That that's the key. The key is to focus on that

**Speaker 1** [00:40:03] So specific things that you're doing when you're thinking and the things that you can do differently when your thinking doesn't work out the way you intended. Right. Or doesn't the results that you expect, you don't get the results that you expected. You think one thing is gonna happen a certain way. You think you're gonna get XYZ results and you get PDQ results. Yeah. When that happens, that's reality giving you feedback that your thinking was wrong. Okay, I need a model or I need knowledge that helps me know, okay, so this was how I approached it. I was looking at it from these perspectives, I made these distinctions, I saw these relationships, this part, whole structure, and I got the wrong result. So what can I do differently? Well, I could change the perspectives. I can add perspectives. I could the distinctions that I'm making. That's often the case. Right, the distinctions I'm making are off. I could find more relationships in the system that I didn't see. Some other relationships are causing things to happen. I could group things differently. I could see them as being structurally grouped differently. And believe it or not, those are the tactical things that are gonna change your thinking. I believe it. Well, yeah, I believe we should. I believe.

**Speaker 2** [00:41:28] That was a great conversation. Cleared up a lot of stuff for me. With that, we're gonna say.

**Speaker 1** [00:41:36] That's a wrap. The Dirt Chee.

**Speaker 2** [00:41:38] Arrivederci, that's a wrap.

**Speaker 1** [00:41:39] That's a wrap.

**Speaker 2** [00:41:40] We've been thinking about critical thinking, and that's a wrap.