**Episode #13**

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

**Speaker 2** [00:00:05] What's up? Nada. Today's an exciting day. Why? We are answering one of our viewers' questions as today's podcast topic.

**Speaker 1** [00:00:12] I didn't know we did that.

**Speaker 2** [00:00:14] Yes, a lovely viewer named Michelle sent us a really interesting question, one of those questions that I think most people think doesn't have an answer, so we're going to give it a shot. She asked literally the question, how do we know what is real? It's like, philosophy 101, that's me.

**Speaker 1** [00:00:36] Yeah. Well, hopefully it won't be philosophy 101. No. I think there's a less philosophical answer to that question that will be more practical and pragmatic to people.

**Speaker 2** [00:00:50] That's good. I imagine that's why the question was asked.

**Speaker 1** [00:00:53] To answer that question, one needs to understand the entirety of science.

**Speaker 2** [00:01:00] the entirety, like all of it.

**Speaker 1** [00:01:01] I'm just kidding

**Speaker 2** [00:01:04] But we might need a little more time today.

**Speaker 1** [00:01:08] one needs to understand a very important by none other than Albert Einstein. I'm feeling very, like a lot of flair today. I'm not sure why.

**Speaker 2** [00:01:20] The player's good.

**Speaker 1** [00:01:21] Albert Einstein, of the Einsteins, he said, the whole of science is nothing more than a refinement of everyday thinking. And in that statement is so much wisdom and so much complexity around all of that. Because the whole science, first of all, is a really big thing covering a lot of Thanks for watching, and I'll see you in the next one. But underneath all those topics that are covered and all the things that people are discovering and all that kind of stuff, there's a basic algorithm to science. And that is science is constantly learning, it's observing, it's looking for observable phenomena. There's things like transparency and other things that have to do with the socio-cultural aspect of science, but generally speaking, science is looking for observeable phenomena and it's adapting its mental models to come up with the best mental model that we know of around that particular topic that is closest in alignment with reality. Well, if you think about it, if you have to walk up a flight of stairs and let's say you have a blindfold on, Limits your ability to sort of see reality. So you're going to have a much more stumbling time getting up the stairs, right? so because your mental model that you're building isn't Alignment as as much an alignment with reality

**Speaker 2** [00:02:51] Right, because you have one less sensory input of data.

**Speaker 1** [00:02:55] So that's everyday thinking. Everyday thinking is we've gotta be in alignment with reality, otherwise we're gonna get our ass handed to us. It is a very pragmatic thing to understand reality. That's not philosophy, that's science. And by the way, science isn't what esoteric academics are doing in labs with white lab coats. Science is knowing reality. That's all science does. It just tries to get good. at knowing reality. So that's about as pragmatic as it gets. That's not a Parisian coffee shop philosophical conversation with the beret and smoking cigarettes. That's like the most pragmatic thing in the whole world is science. Right. It is the most pragmat- In fact, I'm going to go all over the place here, but Ker and said, there's nothing more practical than a good theory. And when he meant by that is when we have a theory like the theory of evolution or the theory of relativity or, you know, Newton's theories or whatever, those are theories that are proven by, we don't say proven too much, but for the general public, they're effectively proven. They're factual. A theory isn't a hypothesis to a scientist. A theory is something that is absolutely empirically derived. that's empirically supported. Empirical meaning there's research, there's studies after study after study that proves this thing is, you know, for all intents and purposes to the general public, factual.

**Speaker 2** [00:04:39] Interesting.

**Speaker 1** [00:04:40] For all intents and purposes, for the general public, prove it.

**Speaker 2** [00:04:43] Right, but to most people, theory means like a guess. Yeah, that's not... Theory and hypothesis are almost synonymous to most.

**Speaker 1** [00:04:49] To the general public, I think that's true. Theory and hypothesis are the same thing. You know, they go, well, that's just your theory. No, the theory in science is the end all be all of science. A theory in Science is empirically supported to the point of being like there's almost no doubt. To a scientist, you know, we'll always leave open a window of doubt because we're always open to learning more stuff. Yeah, theory is like there's a hand in front of my face. That's a theory.

**Speaker 2** [00:05:25] Right, right, and there's observable evidence.

**Speaker 1** [00:05:29] There's observable evidence, and not just one observation. There's many observations that lead to something being called a theory, right? Interesting. So what Karl Lewin was saying is there's nothing more practical, more pragmatic, than a good theory. Yeah, because you can bet your bottom dollar that a theory is going to work.

**Speaker 2** [00:05:52] Meaning you can act upon it. You can act on it as if it's true. All day. Act upon it until it's disproven later.

**Speaker 1** [00:05:58] Yeah, and the probability is it's not going to get disproven. It might get adjusted at the edges with tiny little adjustments, but the core of that thing, if it's actually a theory, it would be a huge deal for a theory to be replaced. That's a big deal.

**Speaker 3** [00:06:19] Yeah.

**Speaker 1** [00:06:19] So we've kind of gone off a little bit to the question, but it's a really deep question and it's also not a deep question. It's very pragmatic every day, but its also like based on some really deep stuff. So here's the thing. If Einstein was right, which he is, that all of science, the whole of science is nothing more than a refinement of everyday thinking, then all of us are scientists. then all of us are doing science every day, because what else is there? Are you trying to live your life out of sync with reality? Like, are you trying to guide your kids in a way that's not gonna work? Are you tryin' to get your business to make money in a that's gonna make money? Are you tryin' to, you know, have a marriage that sucks? Like, is it, are trying to do that? Because why would you not wanna be in alignment with reality, right? So all of every day. is science, and science is everyday thinking. We are scientists. We're going through the world like scientists. Children are born scientists. They're curious. They observe the world, and they try to figure it out.

**Speaker 2** [00:07:32] Right, so when you say scientists, what I think you mean is we are going through the world and we are literally taking in data, we're making assessments and decisions and acting on certain ways every moment of every day to make decisions at the micro. And so when somebody says, when you said science is trying to get closer and closer to reality, science is. an approximation of reality, just like mental models are approximation of realities.

**Speaker 1** [00:08:06] Science is just mental models. That's all science is, is mental models that we have found are in alignment with reality. The most, the most aligned mental models in reality. Our science. Our science

**Speaker 2** [00:08:19] That makes sense. So if you look at Michelle's question, which is, what's real, how do I know what's real, that would get back to what you were saying about. personally trying to refine my thinking, like you were saying the Einstein quote, over and over to try to get better and better at being in alignment with things as they are. That's how you know they're real, I think is what you're getting at.

**Speaker 1** [00:08:46] We're gonna take what we know. Well, in science, that's called the literature review, right? A literature, a review of the literature on the topic. Well, every day thinking, that what do I know? Like, what do know about my kid? What do I about my wife? What do know my business? What do about my health? What do like I'm gonna take that into account, my experience and all the things I know, right. Well, science, we call that a literature review.

**Speaker 2** [00:09:12] Yeah, you're just getting the lay of the land.

**Speaker 1** [00:09:14] You're getting the lay of the land. What do all the scientists who have ever studied this, what have they concluded right or wrong? What have they said? What do they found? All that kind of stuff. So we're going to take our past experience and what we know today, and we're gonna use that. That's what Einstein was saying, right? In science, we call that a literature review. In everyday thinking, we called that what we what we Right or what we think we know right? So we're going to take that. We might, we might read. In science, we call that, you know, reviewing the literature. Yes, in everyday practice, we call that reading.

**Speaker 2** [00:09:57] Like, just to get information.

**Speaker 1** [00:09:58] Yeah, get information. What do other people say about how to do sit-ups, you know? I'm going to Google how to sit-up, you now? Some people are saying we shouldn't do sit ups the way we used to do them, all that kind of stuff, right? So what do we know? So you could do reading, you could go on your past experience, that kind stuff, right? Then you're going to have, you're gonna observe, right. Well, you might not have... the time and the techniques and the methods of Jane Goodall, who was one of the great observers of history, studied primates, did it for years. That's science. You can observe your kids, you can observe your wife, you could observe your customer, you can pay attention.

**Speaker 2** [00:10:50] Right, and everything that you observe is actually data. Yes. So I don't know if people always correlate observation with data, but observational data is a real thing. I can sit and watch 10 people do the same process over and over again, and that's data, because 10 out of 10 did it the same way, versus 8 out of 10 did it one way, and 2 did the other. Well, that means my data is 80% or similar, and 20 are different. It's a whole lot.

**Speaker 1** [00:11:15] and you can ask questions. Yes. And those questions are based on, you know, what you observed and what you read or what you knew from experience, right? So you can asked questions. Well, in science, we call that hypotheses. Yes. Right? But in everyday, you can asks questions. That's cheap. Yeah. Cheap to ask questions, learning how to ask good questions. is a real talent, right? And we're seeing that in AI today, where just the skill of prompting is essentially like question asking in a prompty kind of way. So asking questions is a really powerful thing that we do in the everyday. And then getting answers through observation, through reading, through those kinds of things, right. And then, of course, you can set up experiments. In science, we call them experiments, and they have controls, and there's all kinds of validity and reliability, all this kind of stuff, and the independent variable and dependent variable. But in everyday life, you can set up experiments. You can say, hey, I think this person's mad at me. I always use mad at people in the AED, but Joe's mad a me. Well, how would I know if Joe's Mad at me? I could ask a question, but maybe Joe will lie to me. He might go, no, no. So then I'll do an experiment. Like, you know, okay, let's ask Joe out to lunch.

**Speaker 2** [00:12:46] Oh, yeah.

**Speaker 1** [00:12:46] And Joe says, no, I can't do it today. And then I ask him the next day, oh, no. And then, I look at, oh three days in a row, Joe said no to lunch. And prior to this, we went to lunch every day.

**Speaker 2** [00:13:01] So that's your data.

**Speaker 1** [00:13:02] That's my data.

**Speaker 2** [00:13:03] your data.

**Speaker 1** [00:13:03] Right? I'm doing a little experiment.

**Speaker 2** [00:13:06] Because you're hypo...

**Speaker 1** [00:13:07] Because I asked him and I couldn't get the answer from him. So if I can just be direct and say, hey, Joe, are you mad at me, whatever. Whatever it is that I'm trying to figure out. So you might not have the sophistication of an experimental design, but you can do tons of experiments. You can, for example, take a dirty sock and put it in your kitchen and see how how long it takes your kids to pick it up.

**Speaker 2** [00:13:36] a long time.

**Speaker 1** [00:13:37] It'll take a long time. That's an experiment, right?

**Speaker 2** [00:13:40] That's true. That's right.

**Speaker 1** [00:13:42] You can do all kinds of experiments. You can do little thought experiments, right? Like Einstein did, Einstein actually did what are called Gadenkin experiments, which are thought in German thought experiment. And so you kind of think through a little experimental design, you know, in your head. Yeah, so you can do that.

**Speaker 2** [00:14:01] And you can do that anywhere, about anything.

**Speaker 1** [00:14:03] Finally, you can do, in science, what we call a meta-analysis, which is you take all these different pieces of data and you bring them together into a meta analysis, right? Yeah. Well, you could do that with all the things I just mentioned. You can say, well, I did this little experiment. I asked a question. I did some observation. I read. And all of these things point to the same thing. Right. The same conclusion. My reading points to that conclusion. My questions that got answers point to that conclusion. My observations of people point to the conclusion. My little experiments that I did point to that conclusion, right? And therefore. And so my meta-analysis is, yeah, that's about as close to reality. Now all of that that I just described over the last five minutes, that could happen in 10 seconds. It could happen 10 minutes. It could happen in... 10 hours, it could happen in 10 days, or it could have it in 10 years. And that's what Einstein's talking about. It's just like, to what degree are you going to have controls? To what degree of validity do you need? Right? So if you have a year and a million dollar budget and a team of people, well then all of those things that you're doing to figure out reality are going to be slightly more sophisticated. They're going to be slightly more refined because you got a million bucks and you got a team of people and you've got a year to do it. But what if you only have 10 minutes and no budget and it's just you? Well, you can still do all those things.

**Speaker 2** [00:15:41] Yeah, I mean, I guess what I'm taking out of this from what you're saying is that it's a state of mind to be scientific is a state of mind, to be curious to be questioning to be testing to observe to slow yourself down, ask the questions, test the assumptions, see if there's data observer observable data or other types of data, before you make a conclusion about what is the reality of the situation.

**Speaker 1** [00:16:11] Yeah, and to what a meta-analysis essentially does is kind of triangulate, like when you do map and compass in the woods or in the mountains, you always take a triangulation to figure out where you are, because if you just take one azimuth, you could be a pretty big distance on that line, but if three lines cross, that puts you in a little triangle that's pretty small. and you're in that triangle. And even Da Vinci said when he was doing his anatomical drawings, he would slice the organ in at least three different ways and draw it in three different way. So he was essentially triangulating the drawings of these organs, right? And so there's nothing magical about it. Three is a triangle, so it kind of zeroes in. So what you want to do is... Hey, I did some reading, I asked some questions, survey, you know, I did some observations, you know, observable, you know, phenomena. I did a little mini experiment here and there. And then I brought all that together, you know, in my past experience, your lit review, right? You bring all that together and they all point to the same place. Well, then, you know, there's pretty good probability that's where you are. Those are your findings. That's reality.

**Speaker 2** [00:17:36] Yep. And then you can act upon that. And the degree to which you've tested it will correlate with the degree with which it manifests the same way in real life.

**Speaker 1** [00:17:46] So that's the degree to which you test it, we call the IO loop, the information organization loop. So you're getting information from reality, then you're organizing it in your mental model, then you are getting more information, you're testing that mental model. You're always fitting your mental model to reality not reality to your mental model which is called confirmation bias.

**Speaker 3** [00:18:08] That would be bad.

**Speaker 1** [00:18:09] So you're always fitting your mental model to the reality as you get new information from reality. And this is what science is doing, which frustrates the general public a lot because they go, oh, science is changing its mind. No, it's not really changing its' mind. It's getting new information. It's giving new research. it's getting new, whatever.

**Speaker 2** [00:18:28] It's iterating. It's building upon itself, which is, I think, interesting that you have an initial mental model of something. And so, for example, you said, Joe's mad at me. So that's your first mental model, is that Joe's mad at you. Well, in order for you to know if that's real, you have to go out into the real world and test that. So first, you ask Joe if he can go to lunch. And then you use that data.

**Speaker 1** [00:18:54] Well, first I asked Joe, are you mad at me? Oh, yes. Right? You start with the real bit. Well, at first I observe, and I'm like, oh, Joe's not looking at me, you know, Joe is kind of not talking to me. Okay, now I know Joe from past experience, when he doesn't look at me it means he's mad at. You know, so now I'm going to ask him the question that surveys in science, you know, or something like that. Hey, Joe, you mad? No, I'm not mad at you. And he walks down the road. Okay, that's a weird response from experience, so I'm kind of triangulating. And then I'm like, okay, I'm gonna do a little experiment because Joe won't tell me the truth or at least I think I have a hypothesis that Joe's mad at me. And now I have an additional hypothesis that he's not telling me the true about it. And which means he's probably really mad or hurt or something like that. So that I'm going to do a experiment and then I get the data on that and then bring it all together and voila. Yeah, Joe's pissed off. Well, or not. Or not. Or not, maybe Joe's got like, you know.

**Speaker 2** [00:19:49] May Jo's got a bunch of other stuff going on.

**Speaker 1** [00:19:52] like, you know, somewhere else.

**Speaker 2** [00:19:54] Maybe Joe loves you, but is-

**Speaker 1** [00:19:55] I mean, it could be a million things that Joe has happened to.

**Speaker 2** [00:20:00] Maybe Joe's just having a bad day, but he's grumpy to everybody, and it's not personal. Maybe. Yeah, but I guess, I mean, the point, well, maybe, I don't know, but the point is... We have to constantly be checking ourselves. Checking it, checking it, checking it. Iterating our, changing our mental model, checking that new one.

**Speaker 1** [00:20:21] And that's, you know, that sounds real easy and real basic and real kind of like, oh yeah, of course, but that's not what we tend to do. What we tend do is, here's what we intend to do, so we just explain what we need to do with the loop. What we intend do is Joe's mad at me, and I find all the reasons that affirm my belief that Joe's is mad at.

**Speaker 2** [00:20:44] and therefore.

**Speaker 1** [00:20:44] And therefore, Joe's definitely mad at it. And that's called confirmation bias, right? Because we've decided that Joe is mad. And then we look into the universe to find anything that confirms that assumption. And we essentially lowlight. We highlight anything that confirm it, and we lowlight anything that doesn't confirm. And that's pretty much. How a lot of people a lot of time operate is like we just find the things that we assume.

**Speaker 2** [00:21:20] I think we do that a lot because we want to be right.

**Speaker 1** [00:21:26] Or it's just that it's easy, right?

**Speaker 2** [00:21:28] It's easy, and you want to believe that you're right. And so you look for ways to confirm that you are right. And until something happens downstream, which is a bigger problem, do you even test the idea that maybe you could have been wrong back there?

**Speaker 1** [00:21:43] And it gets worse. It gets worse because we've now industrialized confirmation bias.

**Speaker 2** [00:21:48] What the hell does that mean?

**Speaker 1** [00:21:49] We've now industrialized it. It's industrial strength, because what we've done is we've created echo chambers in our social media and all of our signal has all been sort of confined to people that will confirm our bias. So then we never get any signal other than signal that confirms our bias, and then we can just be right all the time until we have to pay the piper, and that's not gonna be pretty. that's when we run up against reality because reality is patient. Reality will sit around and watch while you confirm your own bias. And it'll keep giving you signal and you'll keep ignoring it. And but the reality is eventually going to come and slap you upside the head or slap us all upside the head, you know, and when we're going to pay, Like, there's no getting around reality.

**Speaker 2** [00:22:45] Reality is, in fact, what it is, and you'll get feedback from it, whether you're looking for it or not. Now, the choice that you have is, do I listen to that feedback? Do I take it in? Do I allow it to change how I'm thinking about things? Or do I just, like you're saying, confirmation bias, push it back out because it's not what I want to hear. It's not what's...

**Speaker 1** [00:23:05] Yeah, which when you push it back out, all you're doing is delaying the impact. Right. But you're going to get the impact, it's just a matter of whether you're going to give it a little increments or all at once.

**Speaker 2** [00:23:16] Yeah, that's not good, getting in your mouth all once. You can imagine, I mean I can imagine you set down a path based on what you believe is right about something. Maybe say a work initiative, I set down the path. I believe I'm right about what this work initiative is, should be, and what its impact will be. And I just steer everybody into my path. Yeah, it happens all the time. All the time, and then it's not until the end where I don't get what I want out of it that I stop and pause and I say to myself, Oh Somewhere, somewhere along the way, I went wrong. And then I have to go back.

**Speaker 1** [00:23:52] No, normally what people will do is go, oh, it's Jim's fault.

**Speaker 2** [00:23:57] health or

**Speaker 1** [00:23:58] Let's fire Jim or Joe or Sally or whatever. Yeah, Joe's mad at me, fire him. That's normally what we do. We never take blame.

**Speaker 2** [00:24:08] That's right.

**Speaker 1** [00:24:09] No, normally would just be like, Oh, that didn't work. Fire somebody. Yeah. That didn't work. Blame somebody. Yeah. Find somebody to blame. Right. Which again, is just pushing reality down, down the road. Right. Cause because you can fire Jim, you can fired Joe, you can fire Sally, you can get divorced. You can, you know, you can do whatever all the different things. Eventually it's going to catch up with you. Reality is patient.

**Speaker 2** [00:24:36] Well, uh-

**Speaker 1** [00:24:36] and pervasive.

**Speaker 2** [00:24:37] pervasive. And actually, it's communicating with you all the time all the time in small ways.

**Speaker 1** [00:24:44] It's so wonderful.

**Speaker 2** [00:24:45] in big ways.

**Speaker 1** [00:24:45] It's so loving. That's the beauty of reality is it is literally always telling you about itself, the situation around you, whatever situation you're in, your business, your marriage, your kids, your health, your physical health. All of those things are always telling you about themselves. They're always telling about themselves if you will listen, if you will observe, if will Jane Goodall them. If you will do that, they are always telling you about themselves. Now think about that, your marriage is always telling you about itself. That means if you listen, it's very communicative. It's telling you, about itself, your work, your friendships, your physical health. It's always communicating with you. Reality is not some philosophical concept. I want to get away from the philosophy of this because I can't stand philosophy. I can say that. Well, I don't love philosophy. I mean, philosophy has an important role to play, but if we live in philosophy, it ends up being kind of a weird thing. We've got to get to science. Philosophy can influence science, and that's a great role for philosophy to play. But you can't stay in philosophy or you get in these loops. You've got get out in the world to observables and pragmatics, and you've got a... You've got to test your concepts. Otherwise, you're smoking cigarettes in Paris and wearing a beret.

**Speaker 2** [00:26:17] Yeah, but I think it's really important to say it's not just about questioning, it's before that making sure that you're not in the confirmation bias mindset because then you can question all you want, but what you were saying is all of those questions are just confirming and confirming, so you want to start at the very beginning.

**Speaker 1** [00:26:38] These things, this reality thing, is not esoteric. No. It's your marriage. Yes. It's you kids. Yes. It's job, you know. It's, it's your physical health. It's everything. And those things are communicating all the time if you'll listen. If you will be a scientist in the everyday, like Einstein was talking about, not, you don't have to do lit reviews and experimental designs and. Reliability and all that you don't have to do all that because you're not publishing Right and you're, not part of the academic establishment you Don't have all you got to do is get it right with your kid all you Got to do, is get right with, your wife all you Got to, do is getting right with with your physical health all you Got to Do is get a right with Your boss or your job or whatever with your customer yeah that's what you got To, do so be a scientist and listen Observe ask questions think it through yeah meta-analysis

**Speaker 2** [00:27:36] Well, and those

**Speaker 1** [00:27:37] Synthesize whatever you know bring it all together is it those are big words, but you know, bring it. All bring them all together

**Speaker 2** [00:27:42] Into one, into one.

**Speaker 1** [00:27:43] Because the probability of three different sources pointing to the same solution is pretty low if that's not the solution.

**Speaker 2** [00:27:51] Right, so then the answer to the question is, how do you know what's real, what that really boils down to is listening to the feedback that you're getting from reality, being open to that, and taking it in, and then questioning along the way as you're building mental models, testing them against reality, coming back around and making your next mental model an even better approximation. So that's the cycle by which you become.

**Speaker 1** [00:28:19] depending on the degree to which you've got to get it right, right? If you're doing policy for the entire country, then you've gotta get it, right. You've gotta try to be in alignment with reality as much as is humanly possible, right, okay, well then you're gonna do slightly more sophisticated techniques. But really, at the end of the day, you're going to do A review of what we know, you're going to observe, you are going to ask questions, you are going do experiments and you're going to bring all the information together to see where it points. I literally just described the entire edifice of science and also everyday stuff that you can do to make sure that you're approximating reality as much as possible in the quick and dirty way that we need to do it because we're not going to do in this super sophisticated way. We're going to do it in this quick and dirty way.

**Speaker 2** [00:29:21] Well, and another way to say quick nerd is moment by moment. Right, it's happening all the time. It can happen all the time if you're paying attention.

**Speaker 1** [00:29:28] I like quick and dirty.

**Speaker 2** [00:29:30] Well, I get that, but I'm just saying, moment by moment, because we started with refinement of everyday thinking. Yes. Everyday thinking means. It's crazy.

**Speaker 1** [00:29:40] I'm dirty.

**Speaker 2** [00:29:41] everything you're doing all day.

**Speaker 1** [00:29:44] Yeah, moment to moment. Moment to moment! Quick and dirty.

**Speaker 2** [00:29:46] I just said moment to moment.

**Speaker 1** [00:29:47] moment-to-moment quick and dirty. Quick and dirty.

**Speaker 2** [00:29:49] All right. That might be.

**Speaker 1** [00:29:50] MMQD.

**Speaker 2** [00:29:52] You have to have acronyms for everything.

**Speaker 1** [00:29:53] It makes it faster, moment to moment it's fast.

**Speaker 2** [00:29:59] That's right. That's what I'm saying. You have to have that mindset.

**Speaker 1** [00:30:01] That's a really slow moment.

**Speaker 2** [00:30:04] doesn't make it slow.

**Speaker 1** [00:30:05] It just makes it painful. If you just extend the unit of moment to it, then they could be not fast. You could have a moment that's an eon, and then it's not fast, unless you're a galaxy and then that's really not that.

**Speaker 2** [00:30:19] I sense that that might be another, a separate podcast.

**Speaker 1** [00:30:21] Bleh.

**Speaker 2** [00:30:22] The moment that is an eon. Perceptions of time.

**Speaker 1** [00:30:26] Well, moments are just defined by the unit of analysis, right?

**Speaker 2** [00:30:29] Alright, so I think...

**Speaker 1** [00:30:30] Did we answer the question?

**Speaker 2** [00:30:32] I think we did and I actually am I'm

**Speaker 1** [00:30:35] Michelle.

**Speaker 2** [00:30:36] I'm impressed by that.

**Speaker 1** [00:30:36] It was a great question, Michelle.

**Speaker 2** [00:30:38] Good question.

**Speaker 1** [00:30:39] Good question. I guess one thing that I would say that I hope people take away from this is that you've got to, we've got stop thinking of science as this thing that scientists do. Yes. And we've gotta stop thinking ourselves as not scientists. Yes, that's true. We are all scientists. And science is not a job. Science is a demeanor. Science Science is an approach, science is a way of being. It's a disposition. To be scientific in the world is simply to be realistic. Yeah. Literally, realistic. To be in alignment or be attempting to be as much in alignment with reality is to be realistic. Yeah. So we are all scientists. We are all trying to get reality right. Our reality, our marriage, our kids, our body, our work, our whatever. Yeah. There's nothing philosophical about that. It's so practical, it's ultimately practical, and it is ultimately every day, and I really, I just think this is really important that we kind of, there's this really important distinction that folks should make between science and academia. What's happened is the edifice of academia, which is a political and social edifice. has sort of taken science as if it's theirs and it is not theirs. Science is of the people. Science is the universe. It is not the express domain of academia. In fact, there's a lot of academia that has absolutely nothing to do with science. There's academia that's the game of academia, the game publishing, the games of pretending to be smart. That is not writing in ways that are so impenetrable that nobody can understand you. You know, all that bullshit is academia, you could say, but that has nothing to do with science. Science is an entirely wonderful thing. Yes. That is incredibly democratic. It is the ultimately democratic thing. and it's owned by everybody. And it's accessible to everybody. It's accessible by everybody And it is useful. And it useful to everybody Not only is it useful, it's the most useful thing that we've ever found. Yes. I mean, the greatest invention of mankind is science. Yeah. It's the more useful thing that we ever found, it's that thing that gets us to the truth of things. Yeah. That's all it is. And the other thing I'll say is There is technically no scientific method. People think that there's this like express scientific method and there isn't. The scientific method is by hook or crook, figure out reality. That's the scientific method, by hook of crook figure out the reality. And the amazing thing about science, if you look at the history of science is different scientists who are the great, that we think of when we think of science, did it in different ways. They didn't all follow one singular method. That's right. Right? They did it in lots of different ways, but the one thing that they did the same is by hook or crook, they found alignment with reality. Right. They showed us something about the real world that was amazing. And they did it in crazy ways because they had to figure out, how do I even, you know, Newton wanted to understand gravity. so we invented calculus. Right. That's not the scientific method. The scientific method doesn't say like, Oh, and then invent calculus. Right. Right? He needed to invent calculus in order to figure out this problem by hook or crook. Yeah, by hook, or croak figure it out. That is what science is about. And you could say that about the most pragmatic things in the world. Yes. Right or farm equipment by hooker crook, you know, make it work. Yeah. Right, that's a scientist. That' right. A mechanic, auto mechanic. Scientist. Yes. Figure out what's wrong with this car, scientist. Yeah. Figure out, what's going on with this kid, scientist? Yeah. Those are all scientists, teachers, auto mechanics, you know, doctors, all kinds of people, mothers, fathers.

**Speaker 2** [00:35:18] It's being scientific.

**Speaker 1** [00:35:19] It's being scientific.

**Speaker 2** [00:35:20] Not just thinking of science as this pie-in-the-sky, inaccessible thing, but being scientific and pushing yourself to better understand until you're satisfied the reality of things by doing that.

**Speaker 1** [00:35:36] And don't buy into this bullshit that it's not yours. It's yours. Science is yours. I was a high school dropout. I have ADD, I have, you know, autism, all kinds of things. And I was consistently told that I wasn't, didn't belong in academia. But, and I didn't care, because I love science, because I loved reality. Academia is a separate thing. Academia's a political and social function. It's not a science function. And academia does not own science. We own science! Yes, all of us. All of us!

**Speaker 2** [00:36:18] I think it's time to wrap. I think we actually answered that incredibly interesting and difficult question. I wanna thank you for sending it in.

**Speaker 1** [00:36:25] we'll know when Michelle says so. That's right. I'm sure.

**Speaker 2** [00:36:30] When a shell will let us know.

**Speaker 1** [00:36:31] Michelle will let us know if we answered the question.

**Speaker 2** [00:36:33] Yeah, and what else do we need to tell them before we go?

**Speaker 1** [00:36:36] We just found out that we're in 9% of podcasts in the world.

**Speaker 2** [00:36:44] I mean, top nine.

**Speaker 1** [00:36:44] Top 9% because of you. Thank you very much. That's awesome. That's great. We're very happy about that and we're super, super appreciative. So please tell your friends about the podcast. Do all that stuff, comment, like it, ask questions like Michelle. Yes, help us grow. Yeah, we're really excited that you're liking the content and that we can.

**Speaker 2** [00:37:16] Let's keep going. Yeah. Yeah. All right, that's a wrap.