# ep-256-think-like-a-rocket-scientist-simple-strategies-for-g...

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**SPEAKERS**

Ozan, Aidan

**Aidan** 00:00
Our guest today wants us to take ownership of our lives to question assumptions, stereotypes and established patterns of thinking. Where others see roadblocks. He wants us to see opportunities and to bend reality to our will. He is the author of Think like a rocket scientist, Ozon Raul, welcome to the show.

**Ozan** 00:20
Thank you so much for having me on it. And it's a pleasure to be here.

**Aidan** 00:22
It's so great to have you on the show. I really loved this. And it was my Christmas read, which is fantastic, because I'm always that little bit more relaxed and able to take it in. But before we launch into the book, I love to share your story because it's pretty fascinating how you got to where you are today, you called us a slapdash combination of good fortune, excellent mentors, and a few good decisions, and perhaps a clerical error of two or two, I'd love you to share this.

**Ozan** 00:49
Yeah, so I grew up in Istanbul, Turkey, I grew up in a family of knowing the speakers in pretty humble circumstances. In the small apartment where we used to live, we'd have frequent blackouts, so electricity would go out. And it would when I was like three years old, this would just terrify me. So my dad came up with this game, he grabbed my soccer ball, and we'd lay some candles around the house, and then he'd rotate the soccer ball around the candle to show how the earth rotated around the sun. And those are my first astronomy lessons. And I was hooked. I read every science book, every science fiction book that I can get my hands on. And my moonshot became, you know, coming to the United States one day and becoming an astronaut. And so I learned English as a second language. I research the college admissions process, how to study for the PSATs and apply to colleges here and got into Cornell to study astrophysics. And about maybe a few weeks before I arrived on campus, I was still in a

stumble, but I was researching online with the Astronomy Department at Cornell was up to, and I noticed that one of the professors at Cornell was the principal investigator for a NASA led mission to Mars that would actually, that was originally planned to go in 2001. And then it ended up being postponed to 2003. And so I just, there was no job listing. But I emailed him out of the blue, and I taught myself how to do computer programming in high school. And I just, you know, attached my resume and said, I'd love to work for you. And when I arrived on campus, he invited me in for an interview. And I ended up getting a job on the operations team for what ended up being the Mars Exploration Rovers project, which sent two rovers Spirit and Opportunity to Mars. And in 2003. We built these rock rovers to last for 90 days, and I still get goose bumps every time I say this, but one of the rovers opportunity ended up roving for over 15 years, into his 90 day, lifetime. And so that was my journey into into rocket science. And then I did a wild one, he later went to law school, became a law professor and then ended up doing writing and speaking for, for general audiences. But that's, that's the general overview of my my journey.

**Aidan** 03:08
What I love about your journey journey is and something that I'd love parents of children out there, and if children listen to the show even better, but that you had a vision as a young child, and you dreamt about it, and you imagined it, and you taught experimented at time and time again. And you know, I really think this is so important that the stars align, excuse the pun for your your field, but the stars aligned when you do that. And then you're more awake to opportunities when they arise, because you're on the hunt for them.

**Ozan** 03:39
And I think I should also say that my parents get a lot of credit here, because they never said, You can't do that, right. And there were a lot of people around me when I was telling them that I go, I want to go to the United States someday and work on a space mission or become an astronaut, they will look at me and say like, you're not going to be able to do that, right? You're a skinny kid with a funny name, you know, from a country halfway around the globe from the US. But my parents never did that. You know, their attitude was as long as you work hard, and you make good decisions, anything is possible.

**Aidan** 04:14
I love that story. And one of the other things you talk about is schools and school, how schools are developed and designed to make us conform and you say the messages on mistakable. As a child, subjugate yourself or spread, repress your distinctive qualities, and embrace conformity for the greater good. But you didn't conform in any way you dreamt wildly, and studied widely.

**Ozan** 04:39
For sure, it was hard, though, I have to say that, you know, there's a lot to love about my home country of Turkey, but the education system is really deeply conformist. You know, the example I give in the book is, when we start a primary school, each student will get assigned a number, sort of like in the prison system and our principle will call us by that number as opposed to our real name. I mean, talk about stripping people's individual qualities, right? Like your name is the thing that makes you unique. And you take away all of that, and you replace it with with a number. So I think that's an extreme case. But the education system, regardless of what country you're in, tends to be on the conformance side.

They think the education system is really a relic of the industrial age, where we were training workers to work the assembly line, you know, you're there from nine to five with, you know, an hour break for lunch. And you do as the authority figure tells you, and so schools even to this age, I think we're playing a game. And I think this is saying something coming from an educator. I've been a law professor now for 10 years. And schools have become a way of playing this game of let's pretend, like, let's pretend what we're teaching you is important. Let's pretend that there was one right answer to every question. Let's pretend that that right answer has been figured out by someone far smarter than you are. And let's pretend that your job is going to be you know, to memorize a set of those right answers, and then spit them back out on a standardized tests. That's how you're supposed to get ahead in life, and it's wildly disconnected from reality. And so I think a lot of students and I love this quote from Neil Postman. He says, students walk into school with a question mark, and leave as as a period. All of that curiosity gets stripped away from them, because it's the authority figure behind the podium that determines what's important, what the students should be curious about. And the people who get get ahead aren't the creatives, the contrarians the trailblazers? If you look at the research, those students can't tend to get labeled as rebels, right as as misbehaved by their teachers. And so, so I think there's this enormous mismatch between our education system and how the real world operates, which I think is a reason why innovation and reimagining the status quo doesn't come naturally to a lot of people, because our education system does such a disservice to us in that regard.

**Aidan** 07:10
I love that what you said about curiosity, and I'm going to jump all over the place here, because there's so many places to jump in the book. But you talked about the origin of so there, you talked about education, and that, in a way we're trained for linear thinking and to stay in our boxes. But also it's deeply intertwined in our culture, because again, a king didn't want rebels didn't want people to question the rules and become a serf, and just do as they're told. And you talked about the origin of curiosity killed the cat, and many of our audience will know about Schroeder angers cats, but I loved the story you told and how you told us

**Ozan** 07:46
Yeah, you know, the Schrodinger scat is a is a is a thought experiment, basically, that's that Schroeder and you're created to question quantum mechanics are they the height that the Copenhagen interpretation of quantum mechanics that I'm not going to get into the details with respect to the thought experiment, but the idea is that he took this uncertainty principle, and he took it to its logical extreme. And he said, if you if you applied it to a cat, and the cat could be dead or alive at the same time, and it's the act of opening up this box and looking to see what's inside, that actually changes reality, that term is reality. And so and then I tie that to this notion of curiosity killed the cat, right? It's the curious act of opening up the box and seeing what's inside, seeing if the cat cat is dead or alive, that actually then ends up killing the cat. And, and it's interesting that that expression exists, right? Curiosity killed the cat, as opposed to curiosity should be something that's encouraged. It's, it ends up being something that does, does something disastrous, and if you look at children, they are naturally curious. They are naturally self driven. They're so interested in the world around them. And then you know, you fast forward 20 years and once they're out of the education system, that curiosity is just ripped away from them, which I think if you look at the the most innovative thinkers, they have been the ones who were able to hold on to that childlike curiosity, even when they were adults. So Albert Einstein is a really

good example of this. You know what 16 year old Einstein was devising thought experiments and dreaming about what it would be like to ride next to a beam of light. And then he stuck with that thought experiment for 10 years, and its resolution gave us the the general theory of relativity. And so, but he was able to hold on to that one quality that I think most of us don't hold on to. We just become obsessed with the status quo obsessed with procedures and, and and processes and habits. and routines. And unfortunately, don't step back and ask the types of seemingly wild questions that end up leading to the really innovative breakthroughs.

**Aidan** 10:11
I was thinking when you were saying that how you mentioned some of the, the exercises throughout the book. So Ozon for our audience, gives plenty of exercises for some homework for us to do, and brings us constantly to his website on we'll share where to find that at the end of the show. But you can constantly go to Amazon's website where there's there's extra work to do, there's experiments, etc, thought experiments as well. But one of them he talked about is actually really thinking like a seven year old and actually coming back to that idea of, you know, childlike thinking, beginner's mind.

**Ozan** 10:43
Absolutely. And there's a research study that I cite in the book that essentially says, if you tell people to think like a seven year old, that increases creativity, it sounds ridiculous, but it works. And so. So I think there is a lot of room in our lives to just step back and ask ourselves, How can I bring some play into what I'm doing? Like we have this obsession these days with deliberate practice. And I'm sure listeners have heard of the 10,000 hour rule, where you practice the same routine, the same skill over and over again, like the violin or chess in order to perfect it. Deliberate practice can be important for really refining a skill and becoming very good at it. But I think we also need room for deliberate play. Deliberate play is what generates creativity, it's the bending of the rules, the breaking of the routines, the disruption of the practice, that gives you the good ideas to propel you forward to find a different path forward, as opposed to sort of like practicing the same move on the chessboard, or the same, you know, chord on your on your piano. So I tend to ask myself from time to time, like, how do I introduce play into what I'm doing? How can I let my inner child come into what I'm doing and play with it for a little while, and I did, I recently reread my book. And I think looking back on it, the best parts, like the best writing comes out when I'm being playful. But when I'm in this, like serious mode, I'd my writing tends to get stilted. But when I could introduce play, when I could introduce like examples from different disciplines. Take an example from the restaurant industry, or take an example from stand up comedy, and explain how the examples from those wildly disconnected industries mesh well with like how raka scientists think that's really that's what makes it fun for me, and I think it makes it fun for the for the reader as well. And I think that mindset can apply regardless of what you're working on asking yourself, How do I bring play into what I'm doing? How do I infuse play into work? And how can I let my inner child come in and contribute to this project.

**Aidan** 12:55
So let's talk about both the inter interweaving of that play that you bring in. So you talk about Steve Martin, and then you talk about a restaurant that literally smashed itself up and began all over again.

**Ozan** 13:07

I talked about both of those examples in a chapter called reasoning from from first principles. And the basic idea with first principles thinking is you are questioning all assumptions in a in a system until you get to the fundamental non negotiable components. So it's a way of letting go of everything, except for what is essential. And was Steve Martin, when he first started doing stand up comedy. It was a stand up comic before he became an actor. There was a standard playbook for how stand up comedy was done, you would build tension, and then you would have a punch line at the end. You deliver that punch line to the audience, the audience would laugh, and then you'd move on to the next joke. It was sort of this routine, the standard way of operating but Steve Martin wasn't satisfied with the way that things were done. He thought that the first of all punch lines were long, lousy way to tell a joke, and that when the laughter ensued, following a punch line, it was almost like Pavlov's dog salivating like the audience knew they're supposed to laugh. And so they just laugh when they heard the punch line. And so, Steve Martin went back to first principles and questioned that assumption that to be able to be a stand up comic, you need to tell jokes with punch lines. And so he asked himself, what if there were no punch lines? Like what if I built tension and never released it? He said he was thinking like a rocket scientist. And one aspect of thinking like a rocket scientist is actually testing your hypothesis. And so, in one of his stand up gigs, he went up to the microphone, and he said, I'm going to do the nose on the microphone routine. And he went out and methodically, places nose on the microphone, stepped back and said, thank you very much. Now the audience was shocked, right? They're expecting like a standard joke with a standard punch line, but they Once they caught up to what Steve Martin had done, that's when laughter ensued. And by the way, I mean, when Steve Martin started to do this started to question this, this assumption that all jokes need punch lines, people were laughing at him and not in a good way. One of the newspapers in Los Angeles, called them the most serious booking error in the history of Los Angeles. But that most serious booking error quickly became the most profitable one. And Steve Martin ended up becoming a legend and stand up comedy. And then he did the unthinkable, right? When he was at the top of his game, he quit. He quit to do acting and to, you know, write screenplays write books, we can talk about why he did that. But I also want to get back to the other part of the question you asked Aiden, which was about the restaurant, similar mindset here. So the restaurant I have in mind that I talked about in the book is Alinea in Chicago. In 2011, I think, yeah, they became one of only two restaurants with the three Michelin stars in Chicago and one of only about nine in the United States. And they did that by questioning all assumptions about what a restaurant is supposed to be like. At that their most profitable year, I think this is in their, like, 10th year, they decided to destroy the restaurant. Now looking at that, and, you know, why would anyone want to destroy the restaurant that they built in its most profitable year, the owners stepped back and thought to themselves, well, look, we've been really successful. But it can be harder for a business to survive its own success than to survive as failure. And we can make changes certainly to the way that the restaurant is operating. But those changes are going to be incremental. And sometimes you have to do the unthinkable and take a sledgehammer to what you built and rebuild it from from scratch. So they took about six months and the entire restaurants and the menu got a seven figure transformation. And it ended up being this this amazing place. That is a vast improvement over what what it was in the past. And one of the one of the things that they did, which is I think is important is when you're rebuilding something, you don't want to bring in the same thought process, the same process that the same procedures and habits that led to the building of the first version, right? So they rebuilt something very different. The vision is the same the vision being we want to reimagine what a restaurant is going to

look like. But they took a sledgehammer to their own business in the same way that Steve Martin took a sledgehammer to his own career and quit at the top of his game, to go into acting.

**Aidan** 17:45
I'm going to plant a seed here for SpaceX as well, because this idea of questioning first principles, etc. We'll come back to that. But I loved where you went here. You mentioned about Steve Martin, destroying what he had created. You did it yourself. You were working in the operations team for the Mars Exploration, and you decided to take a sledgehammer to your own career again, when you do that people question What the heck are you doing? I was on what the hell are you doing Steve Martin, but I loved what you said here on it's such a core principle of this show. And I write about it myself in my forthcoming book, you quote a Donna Markova poem here and she said, I choose to risk my significance to live. So that which came to me as seed goes to the next as blossom. You say instead of us shaping the story, the story begins to shape us. And over time, the story becomes our identity. If we don't change the story, then we become doomed to repeat it over and over and over again. And you say we need to change that story. We need to take a sledgehammer to it. And that encapsulates such an important essence of this show. I'd love if you talked about this for a while. I think when

**Ozan** 18:55
we get up in the morning and look at the mirror, we tell ourselves a story. It's a story about who we are and who we are and and what we're supposed to do and what we're not supposed to do. And so you tell yourself a story about well, you're a doctor, and doctors do this, or you're a rocket scientist and rocket scientists do this. You're a lawyer and lawyers do this. That story, as you said, Aidan ends up shaping your identity and ends up being infused into who you are, which means then to change the story, you have to change the your identity, which is a really, really hard thing to do. There was a quote, I love by Upton Sinclair, he says, you know, it's hard to get a man to understand something, when his salary depends on him not understanding it. And I think it's the same idea with respect to identity as well. If your identity depends on you not understanding something, then you're not going to understand it. This is the reason why, you know, people stick to the same thing that they've done in the past. This is the same reason why you know once businesses have defined themselves have defined their identity around the singular product, it becomes so hard for them to to let it go. I mean, the cliche example here is Kodak, of course, right? The the company had patents to two digital cameras. And then they ended up getting disrupted by the same product that they had had invented. Because they had the define themselves, their identity was a producer of a physical film, and not not a digital film. And there are so many examples of this, I mean, Blockbuster Blackberry, borders, to name just just a few. And so. So the poem is I choose to risk my significance. And I think of that line quite often, because our ego gets in the way of change often. I mean, I experienced this in a number of periods of my life where I was, I just decided to reimagine me, reimagining who I was, so I switched from rocket science to law, from practicing law to then to then teaching law, I became a tenured law professor. And this year, I decided to leave my tenured position. So this will be my last semester of teaching. And a lot of my colleagues think I'm out of my mind, you know, if you if you think about it, right, but recession proof pandemic proof career with with tenure, I'm guaranteed a salary for life. Why would I give that up? Well, I decided to give it up. Because I realized that what I was calling my safety net had actually became had actually become a straitjacket. And that I was playing it too safe. And that I stopped learning and growing. I've been teaching the same classes for a decade now. And it just hasn't been bringing me as much

meaning and joy as it used to in the past. And the image that came to mind as I was thinking through this transformation is the the image of the snake. So the snake is the the ancient symbol of transformation. And it's the ancient symbol of transformation because the snake has to shed its old skin for its new skin to emerge. And so a snake's insides literally outgrow his outsides. And so the snake has to scratch and literally crawl crawl out of his old skin. If it can't complete that process, it will die. But if it is able to complete the process, if it is able to shed the old skin, then this new vibrant skin will emerge. And I tend to think of my life that way as well. I think you have to let go of what's no longer serving you to be able to do the next thing to be able to to let that new skin emerge and new possibilities emerge. And that's true. Whether we're talking about someone's personal life, or a business as well.

**Aidan** 22:51
Well I talked about in my book is their aura, Boris, I don't know if you know the symbol of the aura, Boris, it's a symbol of a snake eating its own tail. And essentially, the story I talk about is similar, where it's not so much only shutting your former self, it's that there's something valuable in the former self that will feel the next. So you consistently consume yourself to become something new. And I loved where you went with this. You said, when you risk your significance, you won't change who you are, you will discover it as the ashes and clutter settle something beautiful will soar. And that made me think of the Phoenix by the way, the whole idea of every 500 years, it burns itself up and from the ashes gathers something valuable to store again. And I don't I love this idea of there's assets in the ashes, there's always assets in the ashes. And I love the word then you went next, because this explains why you're so committed to this work on Indeed, when you worked on taught in law. You wanted to not only teach subject matter, but also mindset. And this book is really about mindset. You say, destruction by itself isn't enough if it's not accompanied by a commitment to the right thought process. Unless you change the underlying patterns of thought. You can expect more of the same regardless of how many times you hold a sledgehammer party. I love that. Because this teaser so beautifully for Elon Musk and SpaceX approach to designing rockets.

**Ozan** 24:20
For sure. Yeah. And before I go there, I want to underscore one thing you said Aidan, which is I think is so important where the old skin becomes fuel for the new skin. I think that's that, or the failure to realize that gets in the way of transformation for a lot of people because they think well, you know, I spent 10 years of my life doing this. That's going to be a waste. If I go and do something else. It's not a waste because you can take the skills you learn you can you can take those credentials, and the skill base you built up and apply it to different areas in different industries. And that's why I've been I wouldn't be too to you right now, if I wasn't able to use what I took from rocket science as fuel, for law and for business and for everything else I've done, I've done in my career. So I'm so glad you mentioned that

**Aidan** 25:10
right? But I got you, man right back at you. I wouldn't be doing this if I didn't do the same. So it's a meeting of serendipity is my friend.

**Ozan** 25:18

Exactly. You asked about Elon Musk. So I use this SpaceX story to illustrate the power of reasoning from first principles in the book. So SpaceX made headlines we're recording this in December 2020, earlier this year, when they became the first private company to take people into space. And just to set that accomplishment in context, only three governments have been able to do that before the US Russia and China. SpaceX beat everybody else, including the established players in the aerospace industry, including other major governments around the world, to the finish line. Well, one of their secrets is their ability to reason from from first principles. And so Elon Musk when he was first thinking about starting SpaceX, he first started to shop for so his dream, his moonshot was to send people to Mars. And so you need rockets to be able to do that. And so he first started out by shopping for used rockets in America, and rockets in the US were way too expensive. So he went to Russia to shop for decommissions, intercontinental ballistic missiles that he could repurpose as rockets. And those two are too expensive. And returning home from Russia, one of these airplane trips, empty handed, he had an epiphany. And he realized that his approach had been flawed all along, in trying to buy rockets that other that other people have built. He was not reasoning from first principles. So for him reasoning from first principles meant stepping back and asking, wait a minute, what does it take to actually put something into space? What are the fundamental non negotiable components of a rocket. And it turns out that if you buy those raw materials on the open market, and you build a rocket yourself, it's like 2% of the typical price, which is a crazy ratio. So he decided to build his own rockets from from scratch. So if you walk through SpaceX as factories today, you'll find people doing everything from welding titanium to building in five computers. And first principles thinking led him to question another deeply held assumption in rocket science, which is that rockets are not reusable. So for decades, rockets, when they put their payloads into into orbit, they would burn up in the atmosphere or plunge into the ocean, requiring an entirely new rocket to be rebuilt. Now, imagine for a moment doing the same thing for airlines. So commercial flights, I'm in Portland, Oregon, you're in Dublin, Aiden, I fly from here to Dublin, the passengers the plane, and someone just steps up to the airplane and just light it on fire. Sounds crazy. But but but that's what we did for rockets for decades. That was the status quo in in rocket science, and both SpaceX and Blue Origin, which is Jeff Bezos, a space company, question that deeply held assumption. And now we have a landing pad next to the launch pad at Kennedy Space Center. And so what was once a wild idea is on its way to becoming routine as both companies are landing these rockets stages back on grounds, refurbishing them, reusing them, sending them back out to outer space, like certified pre owned vehicles. And it's all because they're willing to look at this deeply held assumption, and hang a question mark at the end of it. I love

**Aidan** 28:56
this idea, because I think taking something as high profile and SpaceX makes us go actually that that works for everything, because so many assumptions were involved here. So the whole idea of well, the only people who can afford to do this are government agencies, because they have taxpayer money, etc, etc. But within that industry, there was a culture of outsourcing to somebody else to outsource to outsource that outsource. And you were saying that at the end of the day, it was only 2% To buy the raw materials yourself. And then if you hired people from various fields from different fields, like the telecoms, that you can actually create a totally different mindset.

**Ozan** 29:37

Exactly. And I think one reason why they were able to both SpaceX and Blue Origin were able to cherry pick the best rocket scientists, from government agencies from traditional eras, aerospace companies, and work them around the clock on these audacious projects is the promise that they made to them. And the promise was a really simple one. They said look, if If you come to SpaceX, or if you come to Blue Origin, you don't have to sit in endless meetings, you don't have to deal with bureaucratic red tape. You don't have to fend off internal political attacks, if you come here, you will get to do what you were trained to do, which is to build rockets. And those rockets one day, are going to take people to Mars. Now, that is an offer, that a rocket scientist can't refuse. And I think if you, as a business are in a position, to be able to make that offer to somebody to be able to say, to have this moonshot, and also really pragmatic way of actually achieving that, and say, you will get to build on something incredible, you're going to attract top talents to your company in a way that you otherwise wouldn't have been able to do if you're just simply aiming for incremental marginal improvements over the status quo.

**Aidan** 31:00
Another thing you talked about in there that is core is, you know, we talked on the show before about the width of a train being to horses, bullets, essentially, that whole idea of the tracks etc, in time, is a mental model that we've created. So a train stays the same width as it always been, and which is based on the chariots of Rome. But also, if we take that over to SpaceX did one of the deep assumptions was that the rocket had to be vertical, which meant you had to spend a fortune on creating a container to be able to hose that rocket, I'd love if you took us through this.

**Ozan** 31:34
So rockets traditionally, were built vertically, which is a lot more expensive, and it's not as safe because then you've got all of these workers just dangling in the air. SpaceX is assembling what they're building the rockets horizontally, which makes a lot more sense. Again, it's a simple assumption. But those assumptions add up another one that they question. So the Atlas five rocket, for example, had three stages. And each of the stage, each of the stages was fueled by a different type of engine. And when you're doing that, you're adding complexity and therefore cost into the mix. They question that assumption. So SpaceX question that assumption. And their stages use the same same engine, same diameter, same everything. And so you're basically building one of one of, or multiple of the same thing, which then creates economies of scale, and just makes things simpler, and, and a lot cheaper. And so and those I mean, in isolation, some of these might appear small. But if you add them up, they amount to something incredible. I mean, SpaceX is honest way to cutting the cost of spaceflight by a factor of 40. And that's all because they're willing to just put a question mark, at the end of things that that we take for granted. So I think that's a helpful exercise to do, both in you know, your personal and professional life is to just ask yourself Do Do I own my assumptions? Or do my do my assumptions own me? Now? What are we doing simply because we've done it before, or simply because other people are doing it? And can we question that assumption, and replace it with something better?

**Aidan** 33:21
Like you said, there, you told about Steve Martin on even yourself, when you decided to burn yourself up and become something new. People will always challenge that idea and call you crazy. And the same thing happened for SpaceX, people are gonna go no, I wouldn't travel on one of those rockets. But you say, what was once a wild experiment is on its way to becoming routine. And I love the idea

here, you talked about invisible rules or rituals that hold us back. And you told the brilliant story of the cat and the meditation.

**Ozan** 33:51
Yeah, so and in the story. This is a fable of a great saint who would lead His followers in meditation. There was a slight problem, just when the followers were dropping into their Zen moments, this cat annoying cat would just walk through the temple and purring and meowing and bothering everyone. So then the followers of the saints came up with a solution. Before they meditated, they would tie the cats to a pole, and then they would sit and meditate. So that quickly became a process the same type of process you might find in a business. You first tie the cat to the pole, and then you sit down and and meditate. A little while later, the cat died of natural causes. And a religious crisis ensued because the followers were like, Well, wait a minute, like how are we supposed to meditate without the cat because we are supposed to tie the cat to the pole first. Again, sounds ridiculous, but so many of us are operating and this is true for businesses as well are operating under those invisible rules. So you create a procedure a process In response to yesterday's problem, and even when the problem is no longer there, even when the pathogen leaves, the immune response remains. So I think what I mentioned questioning assumptions and the importance of asking this question of like, well, do we own our assumptions? Or do they own us? Demand and current evidence is really important. So you can always come up with a historical reason for why a certain process or a certain routine or a certain habit is in place. But you have to demand current evidence. Is there anything right now, that supports the way we're doing this? And then also just stepping back and asking, like, Would I do the same thing I'm doing today? If I hadn't hired this person, if we hadn't implemented this process, if we hadn't installed the software? Because what we what we've done before shapes what comes next ethical path dependency, and the the able the, or the ability to step back and ask, what would we do if we hadn't done this becomes a really powerful way of seeing through the outdated assumptions, the clutter that's that's holding you back.

**Aidan** 36:12
One of the things that really hold us back and you start the book with this, I'm going to go right back to it is uncertainty. And I loved what you said. In the end. It's the confused apes, the connoisseurs of uncertainty that transformed the world, and life offers more of itself, when we treat uncertainty as a friend, rather than a foe. I'd love if you took us through uncertainty, because most people don't even start on the vision because the uncertainty drives so much fear into them, that they're paralyzed.

**Ozan** 36:41
The confused a preference, by the way comes from an anecdote from Richard Fineman, the Nobel Laureate in physics, he saw himself as a confused ape, he said, You know, I would rather have I would rather basically be uncertain, be uncomfortably uncertain, rather than comfortably wrong. So I'd rather live not knowing and lean into that curiosity, like a confused eight might, as opposed to pretending that I know the answers to these questions that that I'm getting that I'm seeing that people are asking me. So uncertainty, I think is, is really fear inducing. For a lot of people for a number of reasons. I think there is a genetic component embedded in this. The fear of the unknown was a survival mechanism. If you if our ancestors 1000s of years ago, 10s of 1000s of years ago, weren't afraid of the unknown, they would become lunch for a saber toothed Tiger. So fear of the unknown was a survival mechanism. But

then, so that the people who pass their genes on to us we're afraid of uncertainty, and then you take that genetic conditioning, and I'm going to go back to the education system here, you reinforced it with, with the way that education works. And the way it works is there is one way to answer to every question. There is one right curriculum one right way to interpret history. And so there is no uncertainty, right? You open a you know, a science textbook and you see Newton's laws, they're announced, you know, all these white answers are there as if they just arrived by a divine inspiration. You don't see the messy reality behind the answers. You don't see the the uncertainty and what Newton grappled with, you certainly don't see Newton's failed experiments like trying to convert lead into gold, his experiments in alchemy, which were spectacular failures, none of those makes the cut in this one dimensional story that that we give our students or children in classrooms. And so then people emerge out of the education system with this genetic wiring, educational conditioning, operating under the assumption that right answers are just out there waiting to be found. But breakthroughs happen in conditions of uncertainty, where certainty ends, Progress begins. And this is true in science as it is in business. If you look at scientific history, the discovery of everything groundbreaking has happened because scientists decided to embrace uncertainty and say lean into an anomaly and say, You know what, like, That's interesting that that's odd. That looks funny. Everything from DNA X ray, penicillin, the discovery of oxygen quantum mechanics, these happen when scientists leaned into uncertainty rather than grasping for for the right answer. And here's the other thing. I mean, right answers are cheap. Now, by the time that you know Google, or Alexa or Siri can spit out the right answer the move the world has moved on. What brings the most value is your ability to lean into uncertainty He had to make the best out of it. And I think uncertainty in the modern world rarely produces a mushroom cloud. Uncertainty can lead to, to joy to discovery to the fulfillment of your, your full potential. We were talking about TV shows before we started recording here. You know, one of the reasons why I no longer watch previews is because they give too much of the movie away. It's like you learn half of the movie, and then you watch the preview, you don't want to watch the movie anymore. So when it comes to a movie, we don't want to know what happens. We don't want to know what who the killer is. Because if you knew who the killer was, then you wouldn't want to watch the movie. But when it comes to our life, we want a play by play, we know exactly what the path, we want to know exactly what the path is going to look like before we even start walking. That's not how life works. As Rumi writes, he's one of my favorite poets. I'm going to paraphrase here, but the path will appear only as you start to walk, you can have an overall vision of where you might want to go. But you can't, you're not going to get certainty as to how the path is going to look like. And so if you stop yourself short, and if you say, I'm not going to stop, start walking until the path is crystal clear. Well, you're never going to walk. And this is why businesses stick with the status quo. And they plant the lightning rod where lightning struck last and expected to strike again, right, this work before. So let's do it again. And again. And again, let's launch the same marketing campaign. Let's don't launch the same product with marginal improvements over it. And I think that the the inability to embrace uncertainty leads to stagnation and leads to the preservation of the status quo. You know, if we were demanding perfect clarity on the Mars mission that I worked on, we never would have launched the rocket. Because it was the first time that we were landing in these landing sites, we had no idea when we have very little idea what they were going to look like. And by the way, when we landed there, what we saw turned out to be wildly different from what we expected. But if we had demanded perfect clarity, we never would have left the launchpad.

**Aidan** 42:20

I'm going to bring that Rumi quote to yourself because you have a beautiful quote here that really resonated with me, he said the truth is, and this is when you were talking about embarking on your recreation about using your former self to fuel the next he said I had no idea where I was heading until I arrived there. Looking back now I realized that the ending was there from the beginning, a common thread has been there all along, infallibly working itself out across my diverse pursuits. As I meandered from rocket science to law and then to writing and speaking to different audiences. My overarching goal has been to develop a set of tools for thinking like a rocket scientist, and to share what I've learned with others. That absolutely spoke to me, man, because that is exactly how we can embark on these journeys into the unknown into the uncertain, and I wanted to bring it back to the office place. So the workplace here because you talk about this unpronounceable word that or that you pronounce you know what it is. And you say we've mastered the art of pretending to have an opinion, smiling, nodding and bluffing our way through a makeshift answer. We've been told to fake it until we make it. And we've become experts at the faking part. And this is, I thought of an office meeting, and where you put on the spot and going and what do you think goes on? And all of a sudden, you're like, Oh, I better have an answer right now. And instead of kind of going Well, the truth is, we don't know because this is unknown territory. We've just had a global pandemic, this is digitization of a business that's never been digitized before. This is artificial intelligence merging with the physical world. We don't know what's going to happen. So on being having the confidence, the psychological safety, the save, that is rare, because people expect us to have answers.

**Ozan** 44:04
Yeah, absolutely. No answers are I think overvalued. And especially in conditions of uncertainty when you're exploring the edges. When you're working on things or building things that haven't been built before. You're not going to have the answers and I think pretending otherwise, you're just going to fool yourself. And as Richard Fineman says you are the easiest person to fool. And I think the the the mindset that's required to step back and say, as you said eight and that we don't know we are operating in conditions of uncertainty, here is what we think might happen. Now here are a number of different hypotheses, different ideas as to what might happen. And then the next logical thing to do is to go out and test them to SET set up small scale low stakes experiments so that you can get data to reduce uncertainty so many businesses moved from idea to execution with With no testing whatsoever, and I think that's a recipe for disaster, because that answer may not turn out to be correct. And if it's not correct, and you haven't set up a test, then you're setting yourself up for for potential potential disaster. And I think one other point related to the overvaluation of answers is the undervaluation of questions. The ability to ask good questions, is such a crucial skill. And it's a skill we don't learn in school, because school is all about answers. And it's no one teaches us how to ask questions. But a good question or questions are like lenses, they change what you're seeing. They change your ability, you know, you put on a wide angle lens, and now you're seeing a completely different thing than what you saw before. Werner Heisenberg has a quote I love he says, you know, what we observe isn't nature, but nature exposed to our method of questioning? And so the question you ask ends up being a different lens, and it can illuminate different answers that that you didn't see before. One example that I talked about in the book is, is from the Mars mission I worked on. Our initial mission was to send a single rover to Mars. And for reasons that I won't get into that plan got scrapped, basically. And I remember, my boss, the principal investigator, the principal investigator of the mission, walking into my office and telling me that he had just gotten off the phone with an administrator at NASA. Actually, the Administrator of NASA,

the head of NASA, had asked a simple question. And the question was, what if we sent two rovers instead of one. Now, up until that point, at least in modern history, NASA was just sending one rover one orbiter to Mars every two years and crossing their fingers that nothing bad happens along the way. And when I first started working on this Mars mission, something like two out of three missions to Mars had failed. Because sending a rover to Mars is really risky. You're sending this delicate robot 40 million miles through outer space and hoping that it lands safely on the surface, that you only have a vague idea about what it's going to look like. And it's usually littered with scary looking rocks, things that can like pierce through an airbag. And so instead of sending one rover to Mars, we ended up sending to and because of economies of scale, we're building two of everything that the second rover ended up costing a lot less than the first and we sent these rovers to the two rovers to very different regions of Mars. And so we were able to double the science that we got at a at a fraction of the cost. And it's all because someone was willing to step back and ask such a seemingly simple question. What if we sent two overs instead of one that no one had thought about asking because we were too stuck in the weeds. So I think questions are really important. And in many cases, they're far more important than then coming up with the right answer.

**Aidan** 48:22
I just mentioned the term that is unpronounceable. I'm gonna give it a go here. No, so no Sia, is that right?

**Ozan** 48:31
I think that's about right. It's funny when I was reading the when I was reading the audio version of the book, I looked up how to pronounce it. And then I completely forgot, but what you said sounds about right to me. Yeah,

**Aidan** 48:42
let's share what it means. So people have a new word of the day toilet paper moment. Sure.

**Ozan** 48:46
So it's basically a medical condition that describes someone who is not aware that they're suffering from that condition. So if you say go up to say, someone who's paralyzed, and who's suffering from this medical unpronounceable medical condition, and you ask them to to move a pencil, they will say, I don't want to do it. I don't want to move the pencil right now. So they're not aware that they're actually paralyzed. And so so that I think that mode of operating where we're ignorant to our own paralysis in psychology is called the Dunning Kruger effect, where you don't know that you don't know where you're in this realm or actually you think you know the answer but you the answer is wrong. That is where we find ourselves quite frequently and and we're not aware that we're actually staying we think we're standing on a solid pref platform, but it's actually quite fragile that can just topple oval over with a with a rogue gust of of wind. So that was the essence of that. That example, in the book

**Aidan** 49:51
works quite well to to so for the next one, which was thinking that you're infallible, the danger of have success of previous successes. So here we have two stories both involving NASA. One is the story of the O rings, and the other than is the story of the Lockheed Martin disaster.

**Ozan** 50:12
The first one, the Orings. It's the tragic case of Challenger, which exploded over the Atlantic Ocean in January 1986, killing all of the astronauts on board and investigation revealed that the problem that caused the explosion was a failure of the O rings. The Orings are these like they're like rubber bands. Basically, they seal the the joints of the the rock solid rock rocket boosters in the space shuttle and prevent gases from escaping the openings. They have to be flexible to be able to function properly, but they have a tendency to turn brittle in cold weather. And on the morning of challenges launch the temperatures at Cape Canaveral, in normally Sunny Florida, were uncharacteristically cold that actually dipped below freezing. And a number of engineers raised their hands and said, you know, we should delay the launch until the weather improves. But the NASA management overruled them, the orings failed and within the entire shuttle. From the management's perspective, they said, look, we've seen NASA had been flying shuttles with damaged Orings for about five years. In a number of missions there, there were two Orings on the space shuttle, the primary and a secondary for good measure, the primary had failed. But the secondary had sealed to save today. And engineers had raised their hands before one engineer by the name of Roger Berger lay wrote a what turned out to be a Prussian memo saying if we don't do something about this problem, this is six months before before challenger. If we don't do something about this problem, the result is going to be a catastrophe of the highest order. I'm talking about the loss of human life. And this memo was ignored because from the management's perspective, you know, the oaring problems and happen on previous missions as well. But none of those missions had resulted in a catastrophe they were they were both they were all quote unquote successful. And because they were successful, the management thought look if we just follow the same process that we followed yesterday, nothing bad can happen. So success lead to complacency. At this organization who is lose lifeblood is creativity. I mean, NASA is the reason why I came to the United States why I got interested in spaceflight and seeing the footage of of Neil and Buzz on the on the lunar surface. What NASA had achieved in the 60s with the Apollo era was was turning the seemingly impossible into into the possible but once we got to the space shuttle, the agency's mindset, I think moved from a place of like spaceflight is really risky, dangerous. This is a work in progress. To Space Shuttles mission, the goal was to make spaceflight routine. And anytime you treat something as a routine, as a completed sort of product that you can just make routine. Basically, you're flirting with with disaster. Because the moment you think you've made it is the moment you stop listening when people are raising their hands and saying there's a serious problem here that we need to to address. And just because you're on a hot streak, doesn't mean you'll be at the house. So your previous success cannot guarantee your your future, which is why as I mentioned before it can be it can be more dangerous, I think or more. It can be harder for a business to survive a success than to survive. It's as failure because success leads to complacency, and to tunnel vision. And there's a quote from Bill Gates that I love. He says success is a lousy teacher because he says something along the lines of it makes smart people think that they can't lose. And I think that's that's the mindset at work at Challenger and Columbia. And then with respect to the Lockheed Martin example. I think it's it's a similar idea of being stuck with the status quo. And so the example Aiden, you mentioned is from the Mars Climate Orbiter, and the orbiter for it was supposed to be the first orbiter to study in other planets whether to be able to get into orbit, the orbiter needs to stay safely above the Martian atmosphere. What happened was the orbiter did not stay safely above the Martian atmosphere and ended up going into the Martian atmosphere of most likely burning up or skidding across the surface. And what happened takes me

back to my high school physics class and high school life This teacher was ruthless. If you wrote down an answer without including units of measurements, you would get zero points. So even if he got the answer rights, if you wrote 150, as opposed to 150 meters, you would get zero points for it. And I had a really, you know, laissez faire approach the units of measurement and didn't know why they were such a big deal, until I read what happened with the Mars Climate Orbiter. So what happened was JPL, the Jet Propulsion Laboratory, which operated the Orbiter. And Lockheed Martin, which built the orbiter, were using different units of measurements. JPL was using the metric system, Lockheed Martin was was using the the antiquated inch pound system. And they did not include units of measurement. And so they were talking in two different languages, but they were not aware of it, because there were no units of measurement, which meant all calculations in terms of power, and where the spacecraft would end up in orbit above the Martian surface, were off by a factor of four. And so this really ridiculously expensive spacecraft was lost, because they forgot to include rocket units of measurement. And so these rocket scientists would, would have failed my high school physics class. But setting that that point aside, I think that example is, is I included in the book for a number of reasons. One is, even rocket scientists can have a hard time thinking like a rocket scientist, sometimes, and to the power of the status quo. You know, Lockheed Martin was stuck using this inch pound system that JPL had moved beyond and, and they had not been careful enough. And the absence of checks and balances, there are mistakes that can happen. But it was the absence of checks and balances of like when there were indications along the way that something was wrong with the orbiters trajectory. But the rocket scientists working on the mission told themselves a story going back to this idea we were talking about before, that everything is rights. It's just the the computer is spitting out incorrect information. And so they stuck to the story. They told themselves instead of changing the story, in response to the facts that that they were seeing, and so I share that example, to mention, or to also illustrate the fact that like, no one is immune to this. This can happen to anybody, if we're not careful. It's too easy to tie up our identity around our beliefs, is too easy to stick with the status quo and do what we did yesterday. And it's hard sometimes to change our minds in the face of conflicting facts. And this could happen to anyone.

**Aidan** 57:49
There's so much in that I thought that, firstly, there was the questioning assumptions, or the lack thereof, just assuming everything was right there was the ignoring the errors, but also there was the diversity of thought. So if you had diversity of thought there, if you had the embracing of the dissenters voice, if you had beginner's mind, you would have seen all these things. And you talk about Dumars and the silkworms I love this because I love the way you do this, because this shows how diverse your own reading is, and how how, how wide you've read, to prepare for this book to learn these met each message. And you talked you bring us right back to Dumas. And you talk about how he used this about the Silk Road. I'd love to share this.

**Ozan** 58:36
Yeah, sure if I remember the example correctly, I think it's Duma OS and Pastor having a conversation and then pastor says, you know, you should study this aspect of sick, sick worms. And the man says, Well, I know nothing about that. And pastor says older better, because you can bring a beginner's mindset, a beginner's mind into into the mix. Beginners have a way of of asking what people pejoratively call dumb questions that are actually not dumb at all. They go to some like fundamental

aspects of the problem, some assumption that everybody else the insiders are taking for granted, because they're too close to the problem to to think differently. I think expertise is certainly valuable. But the but the the takeaway here is or the important point is that experts should not work in isolation. Experts benefit from the input of outsiders, particularly outsiders from their industry, you can come in and just ask a question that will illuminate things that the insiders have been taken for granted. And which is why if you look at modern gatecrashers, like modern disruptive businesses, were really fundamentally reimagined the way that that things are being done. They tend to be outsiders to the industry that they ended up reimagining. So we talked about Elon Musk when he was in He was an outsider to rocket science he came from he was the co founder of PayPal. And he picked up rocket science by reading textbooks. He was after he sold the eBay to to PayPal, he was on a beach in Brazil, reading the fundamentals of rocket propulsion. And he was able to see many of the the outdated assumptions that the insiders took for granted. Jeff Bezos started Amazon after spending time on in the finance world on Wall Street, Reed Hastings, the co founder of Netflix, he was a computer programmer before he saw all of these outdated assumptions that the that the video rental industry was, was operating under. And actually that the story of Netflix is, is a great one too, because it shows the value of cross pollination of ideas. And so one of the great things that beginners do is to ask those really great questions. But they also bring in expertise from different fields, to shed light on on a different on a different industry. And what's commonplace in one industry can be wildly innovative in the other and so to bring the point back to Hastings, he had rented I think the movie was Apollo 13. And from Blockbuster and incurred a bunch of late fees because he you know, forgot where he put the DVD. And he finally found it, returned it, you know, paid $50 or whatever it was in late fees. And he was at his gym working out angry that he had to pay a bunch of money to in late fees for for renting this movie. And and the thought occurred to him, he thought to himself, well wait a minute, I go to this gym, and I pay a monthly subscription fee. And I can use the gym as much or as little as I want. And it's the same fee. What if we took that idea and applied it to video rentals. And that was a seed that eventually blossomed into into the the way that did the mode of operating the business model that Netflix ended up ended up adopting. I mean, Sara Blakely is another great example of this. She was selling fax machines, door to door when she started Spanx and became the world's youngest self made female billionaire. So she was an outsider too. She knew nothing about fashion. And she had never been in that business before. And I love how she talks about the way she found the Spanx. She says, you know, I'd never taken a single business class, I knew nothing about fashion or retail. People asked me now if I had a business plan, I had no business plan. She says a business's is all about building a product, building awareness and excitement around it, and selling it. That's it. Those are the first principles of a business. And she says, As long as you can nail those, then you're going to be successful without all of this noise that tends to come in to to the mix. And so I think those are some of the examples of just beginners coming in and, and seeing things differently in a way that insiders are not able to see

**Aidan** 1:03:11
when you mentioned the Reed Hastings moments. So you know when you have a challenge or you have something implanted in your mind, but usually the solution emerges in a moment where you're not focused on it. So we often talk about the shower, for example, I loved the story you talked about to emphasize emphasize this, where you talked about the telescope, and the showerhead, actually giving inspiration, and changing the way we thought about telescopes in space

**Ozan** 1:03:40
as the Hubble Space Telescope, which suffer from a major error and the solution. Basically, they had to come up with this mechanism for reaching into the telescope to change the lens. And the solution came in literally in the shower for an engineer working on the on the problem. It was I think a retractable showerhead. And he looked at that and said, What if we do the same thing to fix the whole space telescope, and you're right eight and that the answers usually come during those moments of slack, not hard labor, it's really hard to innovate, when you're busy clearing out your your inbox. And that's why the shower is so powerful, right? You're there free of distractions, you're by yourself. And your subconscious has the room the breathing room to be able to make these connections between these seemingly disconnected ideas in your head. But if you're moving from one email to the next one meeting to the next one notification to the next, you're not giving room to your subconscious to be able to do what it needs to do to generate new original insights. That's why you know Reed Hastings, as you said was at the gym working out so it stepped away from the problem. This engineer was was in the shower when he came up with a solution for fixing the Hubble Hubble Space Telescope. There's so many examples of people, scientists, literally walking themselves into the right answer. So they'll be stuck on a problem working on it. And then they'll step away from it, go for a walk, and then the idea will just come to them. You know, for Einstein, this was picking up the violin, when he was stuck on a problem, he'd walk away, pick up the violin, start playing it, and then he stopped in the middle of the song and say, I've got it. And so but if we don't allow room for that to happen, then those epiphanies just going to be obscured by all of the other junk, frankly, that that exists in our heads. And in this day and age, with so many notifications, just screaming their 100 decibel sirens for attention, we need to be intentional about creating those moments. And this could be just a walk a word counts, I sit on my recliner every day for 20 minutes, do nothing. Just sit there with a you know, a pen and a notepad. And just jot down whatever might come to, to my mind. And some of the best ideas I've had in recent memory have happened on that recliner. But I put it on my calendar, by the way, if I don't do it, then it just won't happen. I call it airplane mode. And it's on my calendar to take time for myself to put myself on airplane mode. So that I'm letting those insights emerge. And by the way, I mean, 95% of the insights that come up, turn out to be junk. But often you got to get the junk out for that 5% the gems to emerge to the surface.

**Aidan** 1:06:37
There's a beautiful quote by Blaise Pascal, all of humanity's problems stem from stem from man's inability to sit quietly in a room alone. I love that quote, because we talked to Ashley Willans, a few weeks ago, Harvard professor about time smart her latest book, and she said about this what you talked about shedule time to do nothing sheduled time to sit there. And as you say, let the junk just pass by your mind. And this is not meditation, this is just sitting there. And I told you about this that one of the challenges is imagine you walk into a colleague and colleagues, they're looking out the window, you're kind of gonna Well, it's well for you. So it needs to actually, it needs to pervade the culture, the culture of the organization needs to allow that for people to just sit quietly, Think not expected to have answers when they're just answered, ask the question, etc. There's a whole cultural shift that needs to happen that I'm sure you saw in the many industries you've worked in.

**Ozan** 1:07:34

Absolutely. I think, you know, these always on technologies these days don't allow room for that to happen. When I was practicing law, this was the Blackberry, you know, when that red light would start going off with stuck blinking, I'd be just tempted to pick it up. Because it might be an email from a client, that's what I was expected to do. And these days, it's slack, or it's email, where you're constantly on and always expected to be responsive to people. And there isn't room for what Cal Newport called deep work to be able to step back and actually devote time and the time free of distractions, either to just solely thinking or to work on a project. And those constant distractions are cognitively exhausting. They take a real toll on your attention. And they take a real toll on your ability to generate, generate new insights. And so that's seemingly harmless. Like, let me just take a quick peek at my inbox to see what's there. Or let me just quickly respond to this thing. This deck came up on Slack ends up getting in the way of idea generation because now your brain is just cluttered by what you saw in your inbox. And that tends to linger. So if the first thing in the morning you pick up and you check your email, and you check slack, and you check the New York Times, and you check Instagram, insert your favorite app that you begin the day with all of those little ideas are taking space in your brain. And they are cluttering. What are the gems that are that are hidden hidden underneath the surface. So I think there's a lot of value to sort of like applying like the Marie Kondo tidying up concept to your own brain to looking back and saying like which of these are serving me, and which of these can wait until later in the day and for me that the best shift that I ever made, and I had the luxury to be able to do this is to stop checking email before noon on this I had to and I could devote that time in the morning to thinking and reflecting and creating. And when you get that unstructured time in the morning when I'm at least for me, personally speaking, I am at my best. I want to be able to devote that to my creative process. It's as opposed to answering emails that can easily wait until later in the day when I'm more tired and not not as focused

**Aidan** 1:10:08
on you have Tito's up beautifully. For the final story today, I loved how you told the story of our Chrome's razor. But more than that, if we go into that idea of minimalism, of subtracting rather than adding, you say, it's one of the keys to innovation, and here you share the positive story of Kenneth Fraser on pharma giant Merck.

**Ozan** 1:10:28
Yes. So all comes razor is you may have heard of the phrase before but it's a it's a mental model, basically, that says a as a preference for the simple, all things being equal. Symbol tends to be sophisticated. You know, if you look at like Newton's third law of motion, right, for every action, there's an equal and opposite reaction. It's almost poetic, and its simplicity. It's beautiful. Now you don't see of course, the messy reality that that Newton had to undergo to be able to get to that to that final law. But the final product is is simple. I think when we think about innovation, is all about adding, right, it's like let's just add this process or less add the software, let's add the system. And we don't think enough about subtracting about letting go about removing and rocket scientists are forced to do this because they have to constantly deal with weight in space constraints on a spacecraft. So they are forced to apply Occam's razor to cut. But I think in most modern day businesses, that force that constraints usually is not there. And so there's a tendency to just add an add an ADD and get bloated over time. And complex, things just break more easily. Because every time you add a new component into the mix, you're giving it one more reason to fail. So this is Auckland's razor is basically just a preference for

for the simple. And the story of Kenneth Frazier comes into play. Because he he he did this exercise. And I talked about this in the context of I think his first principles thinking. But he did a simple exercise. That's the brainchild of Lisa Bourdelle. She has a book with the same title called Kill the Company. And I first read about the exercise in the context of Burke. So Kenneth Frazier wanted to promote innovation at work. And most CEOs will ask the typical cliche questions like, you know, how do we think outside the box? Or what's the next big thing? But because those questions are cliche, because we've heard them so many times before, they tend to generate the same answers, or at least the answers that are just marginal improvements over the status quo. And Kenneth Frazier was not interested in marginal improvement. So he asked his executives to do something they had never done before, to kill the company, to kill Merck, to put Merck out of business. So he asked his executives to play the role of one of America's top competitors, and generate ideas to put Merck out of business. And then they switch roles went back to being Merck executives, and figured out ways to defend against those threats. And I think the the exercise was really successful for rural for two reasons. One, it's one thing to say, let's think outside the box, but it's something else to step actually step outside the box and look at the box from the perspective of a competitor seeking to destroy it, you end up using new neural pathways, and you end up seeing things that you otherwise may have missed if you're just stuck in that same perspective that you've been operating under. And second, it was successful. And it gave it created this urgency to change because once you do actually generate reasons for why Mark might be put out of business, you realize the urgency of change, like you realize that you might be your position might be far weaker than you may have assumed because all of a sudden, you took this completely different perspective. And so that the need for change becomes a lot more clear than if you were simply sitting in your own perspective. And I think you can apply this, you don't have to be a pharmaceutical giants to be able to apply this exercise it can, you can operate it, or you can apply it to say if you're a small business to your small business, or if you are if you run a division within a bigger company, it could be you know, kill the division exercise or kill the product or exercise. So there are different ways to apply it. But I think the the underlying idea is the same. The exercise just forces you to switch perspectives and look at the problem from a fresh angle.

**Aidan** 1:14:47
And as you say in the book, Think about it for your own role as well. You start to see your role as you say, the lens change and you start to see your role differently. And I'm gonna I'm going to finish with a quote I pulled that I absolutely love from the book. And while I'm reading that out, maybe you'll think about your parting message, I'll let you have the final word. But where can people find out more about your talks because you have a beautiful setup for those who are watching us here. ohsms a beautiful setup, very professional setup here on video. But also you do a lot of keynotes both virtually and in person when we can. But also you rise and you have all those brilliant exercises on your website.

**Ozan** 1:15:26
Yes, so for speaking, you can just go to my website, ozone murale calm and there's a speaking link at the top or you can go directly to I think it's ozone baral.com, forward slash speaking. And then you'll you'll see my keynote topics there and watch a watch a demo reel as well. And then in terms of my email list, I have a weekly email that goes out every Thursday to nearly 30,000 people. And it shares just one big idea that you can read in three minutes or less. And you can sign up for that by heading

over to weekly contrarian.com. That's weekly, contrarian, calm, and just drop your email address there. And you'll get that email every Thursday.

**Aidan** 1:16:07
And I'm gonna finish on this quote and then hand over to you to finish up so the quote I loved was as follows. To think like a rocket scientist is to look at the world through a different lens. rocket scientists imagine the unimaginable and solve the unsolvable. They transform failures into triumphs, and constraints into advantages. They view mishaps as solvable puzzles, rather than insurmountable roadblocks. They're not they're moved not by blind conviction, but by self doubt, their goal is not short term results, but long term breakthroughs. They know that the rules aren't set in stone, the default can be altered, and a new path can be forged. I love that ozone and I'll pass to you now to maybe give your final message to our audience today.

**Ozan** 1:16:54
It's a beautiful summary, Aidan, and thank you for for directing the readers to my website as well. I think. Just to add to that, the only thing I'll say is you don't have to be a rocket scientists to think like one. You know, a lot of the strategies that we talked about today are so applicable, so wide, the outside of rocket science. And so there is no secret sauce here. Really the power is the power was there for the taking. I think it just takes a willingness to dance with uncertainty, to embrace and learn from failure, and not let success get to your head. I think it requires being just comfortable with with discomfort in so many different ways. Because uncertainty is uncomfortable. Failure is uncomfortable having to prove yourself wrong, which is something that we didn't talk about today, but it's so important to the scientists mindset is coming up with hypotheses and instead of trying to prove them right, actually trying to prove them wrong. So affirmatively putting yourself in that profoundly uncomfortable position of seeking out data that actually disconfirms your hunch of listening to the people who work for you who work with you or raising their hands and saying there's something wrong with your eggs or something bad happened during the launch of the Columbia space shuttle instead of sticking to what we've done in the past. So the goal I think here should be to to find what's right and not to be right and as long as we can move from the mindset of like I just want to be right I want to be proven right to being proven wrong. And and and being comfortable with that discomfort that comes with that it's it's quite amazing what what we're able to accomplish.

**Aidan** 1:18:51
Author of Think like a rocket scientist, simple strategies for giant leaps in work, and life was overall. Thank you for joining us.

**Ozan** 1:18:59
That was great. Thank you for being such a wonderful host