

Intro 00:00:01 Inventors and their inventions, welcome to Radio Cade a podcast from the Cade Museum for Creativity and Invention in Gainesville, Florida. The museum is named after James Robert Cade who invented Gatorade in 1965. My name is Richard Miles, we'll introduce you to inventors and the things that motivate them, we'll learn about their personal stories, how their inventions work and how their ideas get from the laboratory to the marketplace.

Richard Miles 00:00:40 Rare earth minerals are critical to the modern economy, but their supply is vulnerable to shifting geopolitics. What do we do? I'm Richard Miles, your host, and my guest today, Tready Smith Chairman of the Board of USA Rare Earth, also CEO and founder of Bayshore Capital and Investment. Welcome to Radio Cade, Tready.

Tready Smith 00:00:58 Thanks Richard.

Richard Miles 00:00:59 So Tready you're only one of a handful of guests in the last two years that I've actually been able to interview in person rather than on Zoom. So already you're in an elite group of interviewees. I thought we'd start by defining where earth metals. I think a lot of our listeners are probably familiar and have heard of it, but they may not know exactly what it means. So, what exactly is a rare earth metal, and where can they be found and what are they used for?

Tready Smith 00:01:21 Thanks Richard, for having me. So, I have come up this learning curve since our first investment in USA Rare Earth, a number of years ago. And so I'll try to keep it brief to what has been most helpful to me, but rare earths are materials, natural materials found in the earth. They're not very rare. They're found all over the place, but we as a world have not spent a lot of time developing the capabilities to process them. And that's because rare earths haven't been in great demand until recently. Rare earth, if you look at a periodic table, there's two rows at the bottom that are kind of hanging off the bottom, and those are your rare earth elements. And they all end in, I U M neodymium, all of these things that are very hard to pronounce. So, it just not even knowing how to pronounce rare earths and their titles.

Richard Miles 00:02:12 So the ones that we've all forgotten since high school chemistry. Right?

Tready Smith 00:02:14 Exactly. Yes. And so those are the elements that are very important for this energy transition that we're going through green revolution and sort of the shifting technology.

Richard Miles 00:02:25 Interesting. So just a little bit of research, cause I had to try to pretend like I'm smart about rare earth. So, some of the applications, a lot of it's in magnets, right?

Tredy Smith 00:02:30 Correct.

Richard Miles 00:02:31 Which it doesn't sound very sexy, but then it's magnets that are used for other things. Yes. Like electric vehicles, like wind turbine generators, right. And then further down the size scale things like cell phones.

Tredy Smith 00:02:45 Anything that has a semiconductor that is electrical and pretty much everything that we touch in our everyday life has rare earth magnets in it. And so, you're correct. The magnet is the end product. The rare earth is part of the formula that makes a, that makes a magnet

Richard Miles 00:03:00 Okay. So that's crucial to understand mm-hmm <affirmative> I think also the context in which people have heard about rare earth metals in the last say couple years is China's got all of them. We've got none of them and oh my gosh, what's gonna happen. Obviously, we're in a rocky period of relationship with them. And it may last for a while. Also with Russia, obviously. Can you tell us a little bit Tredy about which country I guess is producing or has access to most rare earth minerals? Where does the United States fall on that? And then what other countries out there have significant either reserves or production.

Tredy Smith 00:03:33 Okay. So, you're right. China has been the main producer of rare earth magnets. They have processing capability and the magnet manufacturing capability. The rest of the world has outsourced that to China as we have done with a lot of our other manufacturing. And so, the actual rare earth are found everywhere in the world. Like I said before, they're not that rare, but they are in jurisdictions that might be hard to mine, not as economic to get them out of the ground. And depending on what type of rock they're embedded in really drives whether people are investing money in that jurisdiction to try to extract the rare earths. So, we have a lot of rare earths in south America, South Africa, some in mid Africa, Canada, USA, rare earth is actually the company that owns the rights to the mine in Texas here, which is the largest rare earth deposit that we know of in the US.

Tredy Smith 00:04:25 But right now, like I said, even when you mine, those rare earths and you get the oxides out of the rock, we still have to send that to China for further processing in mag manufacturing. Now China does know that they have the lock on that capability. And so, they have also tried to go around and buy a lot of the different deposits around the world so that they have an integrated value chain, and they aren't requiring cause they know the rest of the world will at some point develop their own magnet manufacturing capabilities and they really need that input for them to take it through their whole value chain. So, they have been going around the world, buying up reserves.

Richard Miles 00:05:03 So I already feel a hundred percent smart about rare earth cause that's an important point I didn't understand is that it's not so much the mining of it. I was gonna ask, is there something special about the mining that's say different than mining coal or diamonds, but it's the processing right? It's processing. That's kind of the tough part that China does a lot of mm-hmm <affirmative> yes. And that's where we're behind. It sounds like.

Tready Smith 00:05:22 Mm-hmm <affirmative> we used to have the processing capabilities here. We sold that and sort of gave that processing capability to China decades ago. Very gladly said, you guys do this over there. We will just be the buyer of your end products. And now COVID really brought to light the need for a secure supply chain. The US was having trouble getting PPE pharmaceuticals. Other things of the supply chain have broken because we were living in a globalized economy. And now that people have started to take sides and sort of, we are de globalizing, it has brought to light the need for our own capabilities here in the United States to be able to have that full, secure supply chain here.

Richard Miles 00:06:03 I see. And then the processing itself is that like highly sophisticated? Is it a huge capital investment to build, say a processing plant? Is it like manufacturing chips for instance.

Tready Smith 00:06:13 Yes. Those semiconductor fabs are clean rooms. You know, very, very technical. The mining side of this and the processing is not quite that stringent, but it is very technical because every place you find rare earth it's in a different rock and getting it out of the rock takes a different processing technology. So, USA Rare Earth has spent the majority of our time dialing in and really having that intellectual property around how we process the rock and how we are being able to recover at what purity levels and at what recovery rates are. We able to get those trace minerals out of otherwise locked in rock. And so, it requires a lot of capital investment, but it's something that is absolutely crucial. And depending on what type of rock you're working with, there are some rocks that is easier and less expensive. So, the mining and the processing would be more economic. The easier it is to get out of the base rock versus other places in the world where it is less economic because the rock holds onto those minerals. So tightly that it just isn't economic to try to recover the minerals out of that.

Richard Miles 00:07:18 Okay. So, the processing, then this is not something just any country could do. I mean, this requires a really strong technical base and then also capital available to do that.

Tready Smith 00:07:27 And because China has been the primary processing and magnet manufacturing country in the world, we as a world have not developed, there's been no incentive. And the people who are chemical engineers and metallurgists are now the dying breed. And so, we are really needing the investment in younger people and have that knowledge transfer from the group of scientists who, who did it in the sixties and seventies need to transfer that knowledge down to the next generation, actually skipping a couple generations because we don't have that knowledge base like China does.

Richard Miles 00:08:02 I see. So, let's switch now to getting specific about the company itself or USA Rare Earth. And we were talking a little bit about this earlier, running an investment firm. You don't ordinarily get into the operations of the companies that you invest in, but in this case, you are heavily involved. You're running the company itself. Tell us what triggered that decision to depart for your normal path. And then what is the business model? Where is the company now and where do you hope to take it say in the next three to five years.

Tready Smith 00:08:29 Mm-hmm <affirmative> so what drew us as an investment firm to this company and this idea because it was a science project at the time when we first started was really the need for this supply chain and these capabilities to bring back to the us. So, I really looked at it and our firm looked at it as a need for patriotic capital. And so, while that sounds sort of like a lofty mission driven idea, it was in our opinion, crucial to make sure that the us could catch up and stay competitive in what we knew was coming the green energy, your revolution, sustainable energy, and all the things that we need to do to make this next transition out of the industrial age, into the next age. So, like you said, we don't normally get involved as deeply in the operations, but it spoke directly to my heart as well as my head.

Tready Smith 00:09:18 And I was learning a lot about something very new, which I'm prone to get attracted to. So, we took a more operational role. We were the lead investor. And so, it has become a very important part of our portfolio and important for the country. I just am not ready to let go quite yet. Mm-hmm <affirmative> but we are bringing on new partners and growing the firm, growing the company right now, the company has moved progressed tremendously from when we first invested in 2019, the engineering work that's gone into building the advanced technologies and the processing is almost complete. And the next stage of the business model is to set up a manufacturing arm that will take the mining and the processing and put it into metal making and magnet manufacturing so that we are growing the full supply chain here in the us.

Richard Miles 00:10:07 So I know you have, or the company has a mine in Texas, right? Correct. Is that also where you would build or are building the processing, the manufacturing arm all located in same area?

Tready Smith 00:10:18 So the mine will be in Texas, like you said, it's about 80 miles Southeast of El Paso in a part of Texas, that is pretty desolate, not many people there, which is great because it allows us to work in an environment that doesn't impact people around us. The processing will be on site, there'll be a processing plant on site that takes the rock and leaches the rare earth out of the rock and gets it into an oxide form. We have decided to build the manufacturing plant, to make metals and then to turn those metals into magnets in a different location. And so that is gonna be in Oklahoma and we had to find a purpose built building that was very specific to the specifications that we need. So, we will be soon announcing the opening of the manufacturing plant in Oklahoma.

Richard Miles 00:11:09 This sounds pretty complicated.

Tready Smith 00:11:11 Yeah, it is. And so, Oklahoma is very excited as was Texas to be a part of this integrated supply chain and the Governor and the OSU University and the city where the plant will be located, have all been very constructive and very instrumental in making sure that we could be successful in our growth plans there.

Richard Miles 00:11:30 Tready, what is the end game or the expectation, I guess, is it that at some point in the near future USA Rare Earth or the us domestic industry could supply all or most of the United States needs for wherewith metals? Or is it more modest than that? I guess what's the timeline, if that were the goal, when would it be achieved?

Tready Smith 00:11:49 So the need, the demand far outstrip supply. And so that is a problem. And so, we are committed to working with other mining, other recycling, anybody who is interested in this space, we need all of that capability to come online, to really even come close to meeting the demand in the us alone, much less the rest of the world. And so, it is quite a problem that we're trying to solve, but it is great that we have a lot of people trying to throw resources and grow companies to help meet this need. And we need to work cooperatively with these other companies. We don't think of them as competitors. We think of them as colleagues trying to solve this problem, USA Rare Earth will be the first fully integrated mine to magnet producer in the United States. The other thing that makes us very different is that rare earths aren't all the same.

Tready Smith 00:12:40 There are heavy, rare earths and light rare earths. And so, the light rare earths are more abundant and the heavy, rare earths are more rare. And so, the heavy, rare earths are what really take a magnet to be a high-performance magnet. And so, I always say, it's like baking a cake, you need flour, a lot of flour and butter to make the cake, but you only need a little bit of almond extract or a little bit of vanilla extract in order to make it taste good, you know, to turn it from a pancake into a cake that you would want to sit down and eat. And so that's sort of the same way with the rare earths. You've got a lot of light rare earths around, but not as many heavies. And we are a heavy, rare earth project.

Richard Miles 00:13:21 One more question about USA Rare Earth. And then I'd like to talk a little bit about Bayshore Capital is the market reacting to this supply and demand balance in terms of where is, do you have other firms or is it capital moving in that direction?

Tready Smith 00:13:34 Yes, for sure. It is when we've made our first investment, it was the summer of 2019. And I would say the problem was not obvious to most in the last three years, the problem has become front and center. And as countries have made these proclamations that they are committing capital and committing to the green revolution, it has driven up the need for rare earths in people's understanding of how rare earths fit into that solution. There are a lot of investment firms and investment dollars moving into this space. It's hard to know what part of the space to play in because there are lots of smaller companies doing pieces of the pie, but yes, I think there's a lot of capital moving in this direction and it's exciting to see.

Richard Miles 00:14:18 So that sets us up perfectly to talk about the second part of what I'd like to discuss in that is your larger role in Bayshore Capital as a Founder and CEO in the innovation economy. We talk a lot on this podcast to founders and other folks entrepreneurs. This is a critical link in the innovation economy, and we would argue one thing that makes the United States so strong. It's the role of capital mm-hmm <affirmative> give me an idea of what have you learned in your role at Bayshore Capital? What are you looking for in terms of not just to return, obviously you want that for your investors, but when you look at a potential company or an existing company, do you have a short checklist of like, okay, this is definitely, we would consider this. And then on the other hand, we wouldn't and leaving apart the quality of the idea. Cause what we find a lot of times is that you have a great idea and vendor has a fantastic idea. So, it's not really the idea itself. It's the potential for that idea to make it to market. Mm-hmm <affirmative> I know that's a really kind of long sloppy question, but <laugh> yeah. What would you say?

Tready Smith 00:15:17 I would say that we believe the team that is trying to bring an idea to market is crucial and having a, we call it a purpose-built team that has been rounded up. Having people on the team who have specific capability and experience in an area makes that team either successful or not successful. So having that purpose-built team where you look at it, you can say, oh, I see why every member of that team is critical to the success of this idea. And people drive ideas, people have relationships, people are the critical part of investment success.

Richard Miles 00:15:52 Tready, most people like to talk about success is not as many people like talk about failures or disappointments. I'm certain in your portfolio over the years, not every company has been a wild success. Some you've probably pulled your investment out or just didn't work out. What would you say are the most common mistakes of those companies that don't make it? The investment goes south? What would you say are the top mistakes that those companies make.

Tready Smith 00:16:14 Not growing their team appropriately, not scaling quick enough or scaling too quick, where you lose the culture. You lose the purpose behind the team to begin with where everybody is going off in different directions and not rowing the boat in the same direction. We have had a number of failures though that even with the great team who all seem to be rowing in the right direction, it just hit the market at the wrong time, we had one of those in 2020, an investment that we made in late

2019. And when COVID hit, it just took their business model completely off the map. And so, they decided to move forward with the business model because they had raised the capital, they built the team, and they took a chance, and that chance didn't work out. And so sometimes even with the best team and the best intentions where it all looks tight, still the market isn't ready for it or the market won't accept the idea or the product.

Richard Miles 00:17:08 It's funny. It seems like some of the most seasoned entrepreneurs and vendors always bring up the role of luck or time they've been through enough ups and downs to realize that it's not all just to skill and brilliant thinking. Yeah, that, that sometimes as you said, the market's just either not ready or due to nothing really mistakes you made, you can't predict everything.

Tready Smith 00:17:27 Yeah. Luck does play a big role, but we at Bayshore say luck is when preparation meets opportunity. And so, you do have to be in the game, swing in the bat, looking for those pitches. And when it all connects just right, you call it luck. But at the same time you've been preparing for that. You've been looking for certain things you are at bat. You have been picking your pitches, but luck, timing. That is all very much a part of success.

Richard Miles 00:17:53 So now the favorite part of the show is, you know, enough about USA Rare Earth, enough about Bayshore Capital. Let's talk about trade smart. I wanna get an idea of the sort of person who would take pretty big challenges on one, just starting the firm itself, but also in this particular instance, USA Rare Earth, which sounds like a massive complicated, but potentially very, very rewarding project. I know you're born and raised in Tampa. Yep. Deep Florida roots. I know your dad was in the cigar business at some point. It doesn't get any more Tampa than that. Right. I mean, right.

Tready Smith 00:18:20 <laugh> yeah.

Richard Miles 00:18:20 Yeah. Tell me a little bit more about your upbringing in early education. What were you like as a young girl? Were you a great student? Were you the one in the back that the classroom cutting up and disrupting? What, what were you like?

Tready Smith 00:18:31 I was pretty intense. I think I am still pretty intense. I think it sometimes is off putting to some people that I am really driven by ideas. I've always been driven by ideas, and I've been relentlessly curious about learning, but I have not been interested in learning something just by routine or by rote to spit it back out. I really do like the practical side. And I think that's because I was raised in a very entrepreneurial household. We spent many weekends at the cigar manufacturing plant while my dad was working weekends, my sister and I would put on our roller skates grab a broom cause the manufacturing floor was polished concrete. So, there was nowhere better to roller skate than on a polished concrete manufacturing floor. And so, we would go up and down the manufacturing lines with

our brooms, sweeping up the little shavings of the tobacco and having a great time being able to eat chips.

Tready Smith 00:19:25 And Coca-Colas out of the vending machine, which was not allowed at our household at home <laugh> and I think we saw the value of hard work to be an entrepreneur and to really grow a business, you really can't walk away from it ever. It's something that is in the back of your head at all times. And that it really takes many, many years to really grow something and have success. And so, like I think the old saying, you know, every overnight success is 10 to 20 years in the making that is for sure what we have seen and what I have experienced.

Richard Miles 00:19:55 Did your dad encourage you? Did he like having you all around or was it sort of like, oh my gosh.

Tready Smith 00:20:00 I think my mom was for the one saying get these kids out of my hair. I've had them all week long and you've been at the office. And so now you take them for a couple of hours. And so, my dad was trying to juggle being a father and an entrepreneur. Right. And so luckily, we had a good outlet for that.

Richard Miles 00:20:16 Did you ever work in your dad's company at all?

Tready Smith 00:20:18 We did not. Um, our family had a known nepotism clause.

Richard Miles 00:20:21 I see. So they drew the line at roller-skating. Exactly.

Tready Smith 00:20:24 Yeah. And so, we believe, and I still believe today. It is nice and essential to go work for someone else, understand how to be a good employee, how to tow the line you need to do what is expected of you show up on time. And that's easier done with someone who is not your parents.

Richard Miles 00:20:42 That's a great insight thread. And, and I read something sort of related, not directly, but a commentary by someone saying one of the problems with the economy of the last decade is the growth of these internships. Everything from law firms to think tanks to businesses, which on paper sound really great. But the writer argued that well actually being an unpaid intern is not a real job. You don't have the same expectations. You don't actually develop the same work ethic mm-hmm <affirmative> but you think you're working at this fancy corporation or law firm, whatever mm-hmm <affirmative> and they were arguing like, look, high school kids and college kids need to go back and get



an actual, real job. Yes. With real pay and a real boss who says, you gotta do this, you gotta show up and so on. Yeah. And I thought it was fascinating. And you kind of said the same thing, right? That you have to have these hard expectations by people who are not related to you. Not trying to make it easy for you.

Tready Smith 00:21:31 I was a waitress, which is the hardest job in the world. Yes. You never know who you're gonna get. When you're serving people, you really have to hone your people skills. You have to hone your problem solving. You have to own up to your mistakes. Cuz clearly you're gonna key in something wrong or deliver the wrong meal to the wrong table. And the feedback loop is instant. Instant. <laugh> love that.

Richard Miles 00:21:50 Both good and bad, right?

Tready Smith 00:21:51 Both good and bad. Yes. So, I, I agree with you. I think people should have real jobs in the real economy.

Richard Miles 00:21:57 And not just a title. Right.

Tready Smith 00:21:58 Not just

Richard Miles 00:21:58 A title makes you feel good, but if it doesn't come with that actual responsibility. Yeah. Mm-hmm <affirmative> uh, okay. Final question, Tready. In your line of business, you have a lot of people working for you and I'm sure you're asked often to give advice. So, when you're sitting in front of 20 somethings, are there things that you say definitely do this and not so much this or what kind of words, wisdom do you give to them?

Tready Smith 00:22:20 The two things that I wish somebody had told me is, you know, life isn't linear. And so, you're never on the wrong path. You're just on a path and you can pivot. And so, every job you should say, what do I like about this job? What do I not like about this job? And pivot to something that is more in line with what you like, because that is typically what you're really good at. The things that you don't like are the things that you're not really good at. And so why worry about things you're not good at? There are other people who can fill in those blanks, which gets me to my point number two, which is life should be a partnership. Whether you are in a business or in a relationship, you need to find the right fit in a partner. And so, bringing on other people with other experiences, other ideas, other strengths can really help you move forward and grow as a person and certainly helps build a company or build anything that you're trying to build. It's better with other people because one person can't know everything or be good at everything.

Richard Miles 00:23:16 Those sound pretty solid words of advice to me. So Tready thank you so much for your time this morning. Really appreciate having you on the show. I'm looking forward to the success of USA Rare Earth, and I know we have companies to run, so I'm gonna let you go. But thanks very much for coming on the show.

Tready Smith 00:23:29 Thanks for having me.

Outro 00:23:32 Radio Cade is produced by the Cade Museum for Creativity and Invention located in Gainesville, Florida. Richard Miles is the podcast host and Ellie Thom coordinates inventor interviews, podcasts are recorded at Heartwood Sound Stage and edited and mixed by Bob McPeak. The Radio Cade theme song was produced and performed by Tracy Collins and features violin, Jacob Lawson.