Scott Monty:

So I've got a number of questions to choose from, but I figured we could just see where the conversation leads us. I know you're passionate about a number of the things here, but let's just jump in, okay?

Temple Grandin:

All right. That sounds just great.

Scott Monty:

Excellent. Can you tell us when you first became self-aware of your autism?

Temple Grandin:

I really wasn't that self-aware until I was in a teenage years. Back when I was first taken in to be evaluated and I had no speech, I was screaming all the time, I was two and a half years old, nobody even knew what autism was. And so I went to a neurologist who tested me for epilepsy and for deafness and referred me to a little speech therapy school that two teachers just did it in their house. They had a couple of Down Syndrome kids in the class. They did a lot of the same early intervention things that are done now, which was really good. Autism diagnosis came a little bit later, but I had all the full-blown classic symptoms when I was three years old and I was non-verbal till four.

Temple Grandin:

I got mainstreamed into a normal little school, little kind of country, suburban school, 12 kids in a class. And Mother worked really diligently with the teachers, old-fashioned fifties classroom. And my teacher there explained to the other children that I had a disability that was not visible, like crutches or a wheelchair, and they needed to be helping me. That enabled me to get through elementary school without being bullied, elementary school years were good. And then high school, that was a disaster. And that's when I got a lot more aware of my problems.

Temple Grandin:

I can't, I've just can't emphasize enough the importance of good teachers when I was young, my mother, my speech teacher, my elementary school teacher and then later on in high school, it was my science teacher, because I was not studying. I could care less about school. And Mr. Carlock, my science teacher got me interested in studying when education became a pathway to a goal of becoming a scientist.

Scott Monty:

But can you talk a little bit more about Dr. Carlock as your mentor and the importance of mentors, particularly with unique minds?

Temple Grandin:

Mentors are extremely important. Well, I had watched a movie from Bell Labs they showed in the science class about optical illusions, and I got fascinated with an illusion called the Ames Distorted Room, where one person looks much bigger than the other. It's a trapezoidal room and they weren't going to just show me how to make it, they wanted me to figure it out for myself and he gave me interesting projects to do. And then with that, that got me interested in science and got me interested in studying. But I can't emphasize enough the importance of mentors.

Temple Grandin:

And then when I got out in the cattle industry, being a woman in the early seventies, that was a big barrier, but there were some really good people that helped me. And one of them was Jim Uhl, a contractor. He was just gotten out of Marine Corps. Former Marine Corps Captain, was starting a small construction company and he had seen some of my drawings and he seeked me out. He was another really important mentor. And mentors get attracted when they see ability and he'd seen my drawings and for 10 years we did jobs together. In fact, the dip vat jobs that are shown in the Temple Grandin HBO movie, Jim Uhl's company built them. I designed them.

Scott Monty:

Fantastic. So have you taken that concept and turned it on people that you inspire as well? In other words, have you become a mentor to others, either casually or specifically, perhaps in your academic work?

Temple Grandin:

Well, I have had about, put about 20 graduate students through either a PhD or master's program. And a lot of my students are out in the industry. Three of them have become professors, which I'm really happy about. Others are running animal welfare programs out in the industry, but I also get a lot of emails and letters from children and parents come up to me in the airport and I want to get pictures. So I feel now I have a responsibility of being a good role model. People ask me how I feel about all this attention. I said it's a responsibility.

Scott Monty:

That's great. And you hold it well, very clearly. So you mentioned earlier there about teachers, educators and your mother, and your mother didn't accept the advice of the day but back then was, as you said, it was a very different understanding of autism, wasn't even named. So what do you think-

Temple Grandin:

One of the things with Mother, I'm old enough that she didn't get subjected to all that horrible stuff about refrigerator mothers until I was about 10 years old, that came in a little bit later. Back in 1949, when I would have been taken in to see Dr. Crothers, a neurologist, well neurologists didn't even know what autism was. So she checked me for epilepsy, which was negative. And she checked me for deafness. And you have a child is not talking always, you want to rule out deafness. That's something you need to test for. And then she could see that I was developing and that now we know autism and neurological difference that varies from being slightly socially awkward to somebody who may not be able to dress themselves and doesn't talk. I have been out to Silicon Valley tech companies and I'd guess 25% of those programmers are on the mild end of the autism spectrum. You've got people on the mild end of the autism spectrum running some of those companies. Will let you figure out which ones. But they're there.

Scott Monty:

Yeah.

Temple Grandin:

There's a lot of videos online, go look them up.

Scott Monty:

So what would you say to parents who are struggling with this kind of thing? I mean, back in your time-

Temple Grandin:

First of all, I got to deal with age here. The big problem we've got is people over-generalize. Okay, if we got a three-year-old that's not talking, I have a standard recommendation, you've got to get them into a good early intervention program where you start teaching speech and start teaching skills, that's essential. Now when kids get older, things get a little more complicated. And so I'm going to think I want to emphasize for elementary school years is whatever the kid's strengths are, develop them. I was good at art, my mother always encouraged that, and she encouraged me to do lots of different kinds of art. You might have another child that's good at math. Well, move them ahead in math, don't make them just keep doing the boring stuff, develop the area of strength.

Temple Grandin:

But one of my big concerns right now is the schools have taken out so many of the hands-on classes, cooking, sewing, woodshop, art, school play, or whatever, that kids are not getting exposed to enough stuff to figure out what their interest might be. I get asked all the time, how did I end up in the cattle industry? Well, I was exposed to it when I was a teenager. It's that simple. Hadn't been exposed to it, I wouldn't be in the cattle industry. It's that's simple. I think people underestimate the importance of exposing kids to lots of different things they could turn to careers.

Scott Monty:

So do you think things that are tangible physical experiences are more important for children than the theoretical?

Temple Grandin:

I can't even answer that. I'm learning right now, there's a very big difference between a visual thinker like me, which is scientifically called an object visualizer, between the more mathematical kind of thinker and a totally verbal thinker. Because everything I talk about, I see it. I was talking about my elementary school classroom, I see Mrs. Deech's classroom. It's absolutely not abstract. I can see my kindergarten classroom when I was five, some of the things that we did there. Now, one of the things about verbal thinking is there's a tendency to really over-generalize because autism right now is a big, huge spectrum going from people running a Fortune 500 company to people that can't dress themselves and they obviously would not be running a tech company.

Temple Grandin:

And when I was out working in heavy construction, I did that for 25 years. I designed stuff. I was out on construction sites, supervising steel and concrete work, machinery installation. And I'm going to estimate that about 20% of these very skilled tradespeople I worked with, skilled machinery designers, people that own the metal fabrication companies, 20 patents, and their stuff is out in the industry being used, 20% of them were either autism, ADHD, or dyslexic. And I am saying that seriously. What the problem now is those people are retiring and they're not getting replaced.

Temple Grandin:

We got a gigantic mess right now with the largest container ship in the world jammed in the Suez Canal. I've been thinking about how to get it out of there. I could do it with hydraulics, but I got to be really careful because I could bend the framework on the ship, to pull it out with hydraulics. but you see that something I see, you see visual thinking is part of engineering too. It gets underestimated. We absolutely can't do algebra, but you need us. Maybe that big, huge container ship should have never tried going down the Suez Canal.

Scott Monty:

Seriously.

Temple Grandin:

Seriously. And it's a real mess. And getting the containers off that ship, I can tell you right now, there's not a construction crane anywhere can pick up a container.

Scott Monty:

No, I mean, that's a huge-

Temple Grandin:

There's some things I've learned from being in the construction industry. You're a bank, how would you like to be financing that ship right now? That mess right now?

Scott Monty:

I know, it's amazing. And I love the way you approach it. So this makes me think of you've been innovating your whole career and certainly the movie covered a very significant one of those, but what innovation or invention over the course of your career, are you the most proud of?

Temple Grandin:

Well, I was one thing I was so proud when I did those dip vat experiments, and I invented that new entrance to sign where the cattle which would prevent drowning in dip vats. And I remember when we got that to work, I was really happy. And one of the things that motivated me when I was in my twenties was I wanted to prove I wasn't stupid. Now there's another piece of equipment called the center track restrainer system. You can look it up on beef plant video tour with Temple Grandin, and it's in every large beef plant in North America. It's a piece of equipment I worked on developing. I was out in the early nineties out there supervising installation of it.

Temple Grandin:

Another thing I did is implemented the animal welfare scoring system for meat plants. And then I taught McDonald's and Wendy's and other buyers how to use it. And when we did that, I saw more change than I'd ever seen. But I made sure I didn't try and make the industry do stupid things.

Temple Grandin:

The thing that amazed me is I could take some plant that was kind of a shabby old place and with some very simple changes sometimes make it work decently. It's amazing what some non-slip flooring does. It's also just amazing what a change in the plant manager can make in something too because one of the mistakes I made when I started and I had a typical engineering mindset, I thought I could build a self-

managing cattle handling facility, there's no such thing. I had those center track restrainer systems out in the industry in the early nineties, half my clients were wrecking stuff and not fixing it. And we got in there with McDonald's, guess what? We made them repair stuff. And a lot of simple changes led to really big improvements. Only three plants out of 75 plants on the McDonald's approved supplier list had to do a complete front end remodel, which was multimillion dollar project. All the others I fixed with management, supervision, non-slip flooring, repairs of equipment, and simple changes in procedure and lighting.

Scott Monty:

Wow. So there's one aspect of this where you've taken a very engineering first, visual learner kind of approach. And then there's the other where there's the people approach. And I think you've talked about this before that with your autism, you've had to learn social skills that didn't come naturally to you. Can you talk a little bit about how that worked in some of these projects?

Temple Grandin:

Well, you learn this thing called project loyalty. I remember on one job I was on, the plant engineer didn't like this girl nerd coming in on his territory and we had some damage done to equipment and I learned if I'm at a project meeting and a plant engineer is sitting there with his arms, crossed silent at the conference room table, that's a bad sign. So what I learned is if I could find something I could praise him on that genuinely was really good, that helped. Sometimes there's a place to kiss some butt just to get the project. Did I like kissing that butt? No I didn't, but that's what I had to do to get the project done. So he'd stopped being in my way.

Temple Grandin:

And then sometimes you just done got to lick some shoes just to get the project done. I call that project oily. My job is to get the project done, not fight with the plant engineer, even if he is a jerk. it's about the goal of getting a project done. Now I'm not going to do something illegal or something like that. But sometimes you just got to kind of kiss up to somebody just to get a job done. Project oily, that's what I call it. You got to look at the goal. I'm appalled, I've seen stuff where everyone's fighting and they forgot about the project. One of the things about being autistic is I go, well, I don't really like this person. But if I kind of lick their shoes a little bit, that will help get the project done. Do I enjoy doing that? No, but I do it to get the project done.

Scott Monty:

This is fascinating to me because I see a parallel here between what you talked about with advice to parents and educators about focusing on the strengths of kids with disabilities and not working against what they can't do. In other words, not forcing a kid to try to learn algebra, but working with his strengths. It's the same kind of thing you just mentioned in project management, you're not fighting against the-

PART 1 OF 4 ENDS [00:15:04]

Scott Monty:

You mentioned in project management, you're not fighting against the project manager. You're actually finding a way to work within the system, and using strengths.

Temple Grandin:

Because the goal is you get the project built and the other thing I find that a lot of people can't do, let's evaluate scientific research. I'm a scientist. So I read a journal article, and I find that a lot of people cannot separate their dislike for another researcher and evaluating their research. I can go, "Yeah, I don't like this guy. I think he's a jerk as a person, but this is a good piece of research and I'm going to sign it." I find that most people can't do that. They have difficult time doing it. They don't like the guy, they'll say all his research is rubbish, even though some of his research might be really good. I can separate those two things.

Scott Monty:

Yeah. So different. Not less.

Temple Grandin:

Well, the other thing I really liked, I liked what Stephen Hawking said about disability right before he died, and I'm sure you know who Stephen Hawking is.

Scott Monty:

I sure do.

Temple Grandin:

And he said, "Concentrate on the things your disability does not prevent you from doing well." He told that to the New York Times just before I died. He said, and what he could do well is math in his head. He could do math in his head, super well. Couldn't do anything else super well, but he could do math in his head super well. So that's what he did.

Scott Monty:

And what does that mean to you, when he said concentrate on the things your disability doesn't prevent you from doing well?

Temple Grandin:

Well, I think I'm a really good designer. Last night as I was drifting off to sleep, I was trying to figure out how to get that container ship out of the canal. And I could pull it through the anchor hole with hydraulics, maybe to pull it off the banks, but I got to be very, very careful with hydraulics. They're very powerful, like work with them. I could break the framework of the front of the ship if I wasn't careful, but I that's the way I could get enough pull. I saw tug books pushing on that. They might as well be pushing on some mountain. But you could pull it off with hydraulics, but I'd have to dig a giant hole in the ground so that I anchor the hydraulics to something. It's going to take some time to do that. We can take one of those big excavators, dig a great big hole, put a pile of matts and rebar down there, pour a big block full of concrete with a giant weld plate on it and then use large hydraulic cylinders, and very carefully tried to pull it. Very carefully because I can break the ship with it.

Scott Monty:

Yeah.

Temple Grandin:

And that's something that's actually doable, but I have to be very careful how hard I pull because I could permanently, I could destroy the ship with the hydraulics.

Scott Monty:

Yeah.

Temple Grandin:

That's how, like it's really big cylinders. That's how powerful hydraulics is.

Scott Monty:

Yeah.

Temple Grandin:

But that's something, and it would take me a week to build this contraption. This is a real mess because I'm trying to unload those containers and where do I put them? Even I'm thinking, if I get three construction trains and try to lift them, I got to lift them all at the same time, or I'm going to bust one of the cranes. Now I've already been thinking about that. I'm glad it's not my mess.

Temple Grandin:

But the thing is, somebody probably should have said that, "Great, big, huge ship should never have gone through that canal."

Scott Monty:

Right. Right.

Temple Grandin:

In fact, I've been reading articles that the shipping companies are realizing that making a container ship that big's a mistake anyway.

Scott Monty:

Right.

Temple Grandin:

Yeah. How would you like to be funding that baby right now? Stuck in there. That's why you bank people need to have visual thinkers like me, so we shouldn't even have built this gigantic horrendous ship in the first place.

Scott Monty:

Yeah. I love that. Love that thinking.

Temple Grandin:

Well, you see, nothing's abstract. I also, I know from small hydraulics I've worked on, you can bend the whole framework on a machine with just a small cylinder.

Scott Monty:

Yeah.

Temple Grandin:

So if I use big hydraulics, I got to use them really, really careful because I could bend the whole front end of the ship with it. That's how powerful big cylinders are.

Scott Monty:

Well, a lot of this comes down to common sense, doesn't it?

Temple Grandin:

But I think common sense is visual thinking. All right, let's go to something simple. You got a bunch of grapes spilled on the floor at the grocery store, and then somebody slips and falls on it. So the manager would see that and they'd go clean the grapes up because they could see, "Well, someone slips and falls on that, they might sue the grocery store so let's clean it up." That's a very simple example of seeing a risk.

Temple Grandin:

Well, let's say some olive oil, I bought some olive oil yesterday, let's say I dropped it and it broke on the concrete floor in the store. Know I'd have a big skiddy mess there that probably needs to get cleaned up right away. The next customer is going to come and step in it and slip and fall. You see, I can see that.

Temple Grandin:

Now I'm seeing the grocery store. I'm now seeing the olive oil bottles, a glass bottle. I made sure I picked it up really carefully yesterday to take it to my car so it didn't fall out of the bag and break because it was heavy, but that's seeing risk. You see, it's not abstract.

Scott Monty:

Yeah.

Temple Grandin:

Let's clean it up right away if you dropped that on the floor in the store.

Scott Monty:

Yeah, we need-

Temple Grandin:

That's just a real simple thing, a real simple example of seeing risk.

Scott Monty:

Right. We really do need more people that, I mean, they seem to be missing some of the obvious things while they're focusing on some of these complicated and abstract things that may never even happen when it comes to risk.

Temple Grandin:

Well, you see, this is the problem. And what's happening is our visual thinkers, we can't do algebra. I mean, I've seen kids not allowed to take auto mechanics at the community college because they couldn't do algebra. You don't need algebra for auto mechanics. You need old-fashioned arithmetic the way it was taught in my generation. That you need. And I did fine with that. I did just fine with that. I understand fractions, you cut a apple and half, cut an apple in fourths. Then you start understanding fractions.

Scott Monty:

Yeah.

Temple Grandin:

It's part of something.

Scott Monty:

Well, you think back in history, some of the great mathematicians from ancient Greece and Egypt, they didn't have algebra. They were dealing with the physical, the things that they could observe in the world. It was a very practical application back then.

Temple Grandin:

Well, the other thing is I did a talk at the Patent Office and when the Patent Office first started and vendors had to give the office a model of their invention. And all of the inventions when the Patent Office started were mechanical devices made by visual thinkers. Visual thinkers ruled the Patent Office in the beginning. And then they finally had to stop doing the models and unfortunately they had some fires was burned up a bunch of the stuff, but the original patents were all mechanical devices. You see and I'm worried about my kind of mind getting ruled out because somebody, somewhere in management should have said, "Maybe we shouldn't have even built that great, big, huge ship."

Scott Monty:

Right.

Temple Grandin:

Another thing I now see a parallel to that gigantic Airbus airplane. Nobody wants it. When I first heard about that big monstrosity, and I saw it at the airport. Now I see Vancouver customs. I've been there. Hour line in customs when two jumbos come in from Asia and I go, "What if two of those big, huge, gigantic, ginormous planes came in there, you'd have a three-hour line in customs, and I don't want to stand in it." The problem is, is how is the infrastructure on the ground handle like twice as many passengers getting off a plane all at once.

Scott Monty:

Yeah.

Temple Grandin:

And I think some of those planes are going to the scrapyard. That was a point where it was stupid to build a plane that big. I thought it was crazy when I first saw it, because I'm immediately seeing the mess I'm going to have with all the ground facilities.

Scott Monty:

Yeah.

Temple Grandin:

Customs, and baggage claim's going to be the two worst things. I can see that. And then I'm thinking that one of the worst customer lines I've been in is Vancouver airport. And they have the flights come in from Asia. It's just, ugh, this whole great big room with a maze of those barricade tape they put up.

Scott Monty:

Well in a lot of ways-

Temple Grandin:

They'll have them lined up and they'll be halfway down the concourse upstairs.

Scott Monty:

Right. Right.

Temple Grandin:

I can just see that.

Scott Monty:

Well, whether we're talking about the Suez Canal where ships are now getting backed up, whether we're talking about Vancouver customs and people getting backed up.

Temple Grandin:

That's right.

Scott Monty:

Or whether we're talking about the cattle yards where they're getting backed up. You're really able to see these patterns and be able to predict movement, and again, I guess it comes back to visual learning.

Temple Grandin:

Well, it's seeing it. It's seeing it. I've been in Vancouver customs. Let's say I make it three times worse. I'm going to have the lines going up the stairs into the terminal itself. I've been there. It's absolutely not abstract.

Scott Monty:

Yeah.

Temple Grandin:

And they now are realizing, after building some this humongous container ships and humongous airplanes, realizing now it was wrong. But maybe someone in the beginning should have said, "I don't think we should build an airplane that big." I saw it at the airport. I looked at that and I'm going, "Ick." Then I started thinking about every airport, the main airports it would go, which I've been in all the international stuff in all of them, I'm going, "Ick. Chicago. Ick. Miami."

Scott Monty:

Chicago's bad on a good day.

Temple Grandin:

But dealing with an influx of that many passengers getting off all at once. What am I going to do about baggage claim? That's going to be horrible. They won't be able to get up to the carousels to get the bags hardly. You see, I'm seeing it. And those, that gigantic container ship and that gigantic airplane, you banking people, you financed those things.

Scott Monty:

Right.

Temple Grandin:

Maybe you shouldn't have.

Scott Monty:

Yeah. It's a good observation.

Temple Grandin:

Well, yeah. And that's a very expensive mess as I've read that none of the airlines don't love those big, huge monsters.

Scott Monty:

So what advice do you have for anyone who's coping with a disability today?

Temple Grandin:

Well, that's way too vague, because now I see a blind person they have a very different set of needs than somebody using a wheelchair. Okay. Let just talk about people with learning differences. Here, I'll just talk of really simple things you can do in the workplace. No multitasking. Multitasking doesn't work. See the problem is if I was a computer, I'd be an Intel 286, so I got a little tiny processor, but I've got huge warehouses full of servers for my memory, now a huge data center for memory. So I'm multitasking. I have hard time switching fast between things. People say to me, "Well, you interrupt during meetings." Well, the problem is I can't get the timing right. My processors too slow. But for something that involves just using memory, I've got more memory, but I've got a small processor. So multitasking's a problem.

Temple Grandin:

Don't put me on a super busy takeout window. Don't make me be a waitress where I've got to remember without writing it down six main courses and all their sides, because I can't do that. So any

task that involves sequence, give me a pilot's checklist. Step one, step two, step three, step four. I will need that. And the other thing is on some things on company culture and stuff, you just need coaching. My first job I criticized some welding, and I said it looked like pigeon doo-doo, and the engineer, he was a good job coach, pulled me into his office and quietly told me that's not acceptable talk. We tell the person what they should do, but we need our visual thinkers. We've got infrastructure falling apart right now.

Temple Grandin:

And the thing I found interesting in working with big clients and getting the suits out of the office and seeing some animal welfare issues, it was very interesting watching the animal welfare issue go from an abstraction that you delegate the lawyers and your PR department to something real. "Ooh, a half-dead dairy cow went in our product? Yeah. We might want to do something about that."

Temple Grandin:

Very interesting watching Undercover Boss moments. Boy, I watched those moments before that show came on the air. And now I hear all the abstract nonsense they're talking about when the power all froze in Texas. Well, another thing I've learned, you let me lose at that power plant, I'll find a person that really knows. Then we'll discuss how to fix it. And if it's on the site of the plant, that's a lot easier to fix than the distributed stuff. A whole bunch of wellheads. That's going to be a expensive mess to fix. effects. You see, and I see the equipment as I talk about it.

Scott Monty:

Yeah.

Temple Grandin:

And it's not abstract and you'd have start going, "Okay, now what's the low-hanging fruit I can fix first?" And the other thing I've learned to do in all the work of done in construction, I'm not an expert on power plants. I'll tell you what I am an expert at. You let me loose in that plant, I'm expert at finding the person, the head mechanic for the place, head of the maintenance department, he'll take me right to the stuff and show it to me, because he'll tell me the truth and I'll protect his identity.

Scott Monty:

Yeah.

Temple Grandin:

I protect my sources. That I know how to do.

Scott Monty:

Yeah. Yeah.

Temple Grandin:

Let me loose in there for about three hours, I'll find out exactly what's wrong with it. As I ditch suits and I'm just there walking around by myself talking to people, they will tell you.

Scott Monty:

Yeah?

Temple Grandin:

We need to build a building over this. Put some heat in it. Or whatever.

Scott Monty:

Well, that's interesting. That brings to mind the old mantra of management by walking around. So many people are tied to their desks and to their emails these days. It's refreshing to see somebody taking an old fashioned approach that really works. Management by walking around.

Temple Grandin:

Well, it works. And the thing is every way to fake a record, I've caught them doing it, because I train auditors for animal welfare evaluation. We have a scoring system, percentage of cattle you made instantly dead on the first shot. Well, the number one cause of that not working's broken equipment, maintenance. Like slipping and falling during handling, vocalization during handling, and then when I look at their internal audits and you know what they do when they cheat? They make them too good. They make them too good. But every way to fake up a record, I've found fake electrical meters on equipment. So I put the emphasis on the things I can directly look at.

PART 2 OF 4 ENDS [00:30:04]

Temple Grandin:

- the emphasis on the things I can directly look at because every way to fake a record, I've caught them doing it.

Scott Monty:

Oh, fascinating. Well, is there anything else you'd like to add before we wrap up?

Temple Grandin:

Well all right, let's just discuss the workplace. We talked about the multitasking, the problem with the slow processing. Multitasking's a problem, can't remember long verbal strings of information, needs clear defined tasks of what they're supposed to do. So if it's a design job for me, it had a clear outcome of what you have to do. You don't just say develop some new programs. You want to tell them design a program that does some specific outcome. Have to be much more specific directions.

Temple Grandin:

The other thing that can be a problem for a lot of unique minds is seeing flicker in lighting. I just got an email last night from a family, now have a young adult of autism that's broken a whole bunch of flat screen TVs and that's probably due to seeing flicker on the screen. And then some of the new electronic led lights flicker. Normally most people can't see that, but they can see that flicker. So that'd be like having a strobe light in the office, which is completely intolerable. And now we have all these new electronic lights and I'm not sure which ones do the flickering, but that could be really bad in the workplace.

Temple Grandin:

A person with a head injury can have this problem. A person labeled autism can have this problem. A person labeled learning problem or dyslexia might have this problem. Now I want to make it very clear not everybody has this problem with the lights flickering. But there's a certain subset of people that have this problem. And it will make the workplace absolutely intolerable. It's something that's on the have to be fixed list. Sometimes putting their desk right by the window would work because the sun will block out the light, but that's not going to work at night, but that's a real problem.

Temple Grandin:

Noise sensitivity, well you've got noise canceling headsets. I'll never forget going to this big room, this was just about two years ago, full of a hundred programmers, totally silent with headphones on. Totally silent, a hundred people. And they weren't even at regular desks, you know how you set up a convention where you have long skinny tables and then you sit at them.

Scott Monty:

Yeah.

Temple Grandin:

That's what their desks were like. And they were just glued to the computers.

Scott Monty:

And it worked for them?

Temple Grandin:

It worked for them, but the lighting thing, and the other thing is these people tend to be really direct. And one thing I had to be taught is you can't sit in a project meeting and tell other people that they're stupid. Even if they are stupid, just cannot tell them that. You've got to learn a little diplomacy.

Scott Monty:

Yeah.

Temple Grandin:

And it's kind of a business social they need to learn and you just coach them and you tell them what they should do. It's sort of like someone in a foreign country, like in the Middle East for example, it's really rude to show the bottom of your foot. Now I have no way of knowing that unless somebody told me.

Scott Monty:

Right.

Temple Grandin:

So it's like teaching somebody the rules for foreign country. Because you could do something really rudely that you didn't even know was rude in that culture. For example, eye contact, we emphasize that here in the U.S. and Canada, but in other cultures it's considered rude to just do a lot of eye contact.

Scott Monty:

Interesting.

Temple Grandin:

Yeah. So a person with autism might get along better in a culture where a lot of eye contact is considered rude. You see that's something that can be different. I'm concerned that we are losing skills. We no longer make the state of the art electronic chip making machine, the state of the art for making the smallest teeniest, little electronic chips. And it's from Holland. And you know why it's from Holland? Because they kept the skilled trades.

Scott Monty:

Yeah.

Temple Grandin:

That machine is based on research done in the U.S., it's from Holland. Big food processing plants, equipment coming over from Holland. High-wage country, hundred shipping containers per plant. I'm glad they weren't on that boat in the Suez Canal. Now, you see, now I'm putting two and two together.

Scott Monty:

Yeah.

Temple Grandin:

What if my whole plants worth of equivalent was on that ship?

Scott Monty:

Right? Well, there's a lot of downstream effects that we're going to feel because of this.

Temple Grandin:

Well, you see I understand supply chains really, really well. I worked for McDonald's for almost 10 years consulting and they have a very good school supply chain management.

Scott Monty:

Yeah.

Temple Grandin:

They do a really good job at that. And we're losing our visual thinkers and we need them. We need someone to say, "You know what? That ship can't go through the Suez Canal." Somebody needs to have said that before they put it in there.

Scott Monty:

Or that ship should be rebuilt.

Temple Grandin:

You have no margin for error. I guess they had a dust storm, it's wind, it shoved the ship over. You see, you have no margin for error with that.

Scott Monty:

Yeah.

Temple Grandin:

So smaller ship, it's not going to do that.

Scott Monty:

Right. Right. Well, this has been fascinating, Dr. Grandin, I thank you for your time. And I just love your thinking.

Temple Grandin:

No, but we need this kind of thinking, and I'm saying it seriously when I said that 20% of the people I worked with, I'm talking about people that own metal fabrication companies, 20 patents, just as eccentric as they can be, maybe definitely diagnosed autistic today. And what's happening is we don't have the new kids coming in and making the little shops that turn into big shops.

Scott Monty:

Yeah. I mean this is-

Temple Grandin:

And as far as chips go, chip factory in Japan just burned up and now we had shut down a car factory. That's a nice big mess.

Scott Monty:

Right.

Temple Grandin:

Okay. You banking people, big, it's efficient, it is cost-effective but when you break it, it's really bad. If you have a more distributed supply chain, your computer chip, your meat, whatever the thing is, it's way more expensive, but it doesn't break as easily.

Scott Monty:

Yeah.

Temple Grandin:

It's a trade off. It's always going to be a trade off. I want to finish up with a visual thing that I learned about plants that shows that a more distributed supply chains is where you need to go. If you're a primitive plant, [inaudible 00:36:50] has straight veins. Then if something eats it or the leaves rip the leaf dies because it only has one way to get its nutrients. More modern kinds of plants have a circuitous vein system in their leaf. So there's more than one passage way to get nutrients to one area of the leaf. Now that more circuitous system is more expensive to build, but it's more robust. And there's a book about that. And I read a review about it in the Wall Street Journal. That's where I got that idea from. There's a lesson there for supply chain management.

Scott Monty:

There is.

Temple Grandin:

There is. There is. You need us. You know that Fukushima burned up? How'd you like to finance that? You know why it burned up?

Scott Monty:

Why?

Temple Grandin:

Real simple. The engineers did a fabulous job of designing it to withstand earthquake shaking. Came through that just fine. But they did not visualize a tsunami flooding the site.

Scott Monty:

Right.

Temple Grandin:

And there were no watertight doors. So what do you think happened? The electrically operated emergency cooling pump drowned. See how basic and simple that is.

Scott Monty:

Yeah.

Temple Grandin:

Electric pump doesn't run under water too well. And that pump didn't run and then you know what happened.

Scott Monty:

Yeah.

Temple Grandin:

I'm not a nuclear engineer. I can't design a nuclear reactor, but somebody needs to say, "Hey, we better put watertight doors on this thing." See engineers calculate risk, visual thinkers see risk.

Scott Monty:

Yeah.

Temple Grandin:

And I can see, and now there's another Fukushima plant, the seawall's twice as high now. And it has a really fancy watertight doors. I've been on the website. I've looked at them. They are very cool. They're made to look really impressive and cool too, watertight doors.

Scott Monty:

Watertight doors reminds me of the Titanic and the issue that they had with their design. At the watertight doors, the compartments didn't go high enough. So what you had when the ship began to tilt is it was almost like an ice cube tray where water flowed from one cube to the next. And if the-

Temple Grandin:

That's because they have to be completely watertight compartments.

Scott Monty:

And they didn't extend up high enough because they didn't account for that.

Temple Grandin:

Well, that's ridiculous. You see that's a visual thinking mistake. You have to have complete watertight compartments so that when you shut your doors, you now have-

Scott Monty:

Sealed, right.

Temple Grandin:

[crosstalk 00:39:19] and it's full of air and that's going to help float the ship.

Scott Monty:

Right.

Temple Grandin:

See some of these mistakes are so basic, but I think common sense is visual thinking. How would you have liked to have financed the Millennium Tower? I think it's in San Francisco, that tilting skyscraper.

Scott Monty:

Yeah.

Temple Grandin:

I wouldn't give you 5 cents for an apartment in that thing. I wouldn't want to live in that building. They're already popping the windows out of it.

Scott Monty:

Yeah.

Temple Grandin:

And boy the fix they're going to have to do, an expensive mesh because they didn't put the columns down to bedrock. They're going to have to dig columns on the sidewalk and then bolt them to [inaudible 00:39:57].

Scott Monty:

Right.

Temple Grandin:

To keep it from sinking. Maybe they ought to tear it down. I'm going, "You got to be kidding." They are trying to save money there, but.

Scott Monty:

They're going to lose money in the long run.

Temple Grandin:

I don't know. I wouldn't want to even live in that building.

Scott Monty:

Yeah.

Temple Grandin:

They got strain gauges down in the basement and they're monitoring the cracks. I'm going, "Yech. How far can it tilt before it goes over?" It's a big mistake.

Scott Monty:

Yeah.

Temple Grandin:

This is why we need those people that can't do algebra on the team say, "Hey, we're going to have to put the piles all the way down to bedrock. I know it's expensive, but we're on full ground here. It's not virgin ground." That's why you need us.

Scott Monty:

We certainly do. And we are so grateful that you have taken the time to be with us this morning. I think we've got a lot of great material to work with here. So thank you for that.

Temple Grandin:

No. And I think we gave you some hints on how to work with them in the office. But the thing is it bothers me when you take all the disabilities and put them together.

Scott Monty:

Yeah.

Temple Grandin:

Because here's something, okay now we'll talk about disabilities. And also my mind works in specifics. I went to a seminar three years ago. A really articulate blind person described his frustration of trying to get call center jobs turned down like 20 jobs. And I I think what happens is the HR person panics and thinks the accommodations are going to be too hard.

Temple Grandin:

Well, the way I would've approached it, I would've gone into the interview and I go, "Okay, you see my dog. You know I'm blind. You're freaking out right now that the accommodations are going to be too hard. How about I give you a two week free trial? You only have to do one thing for me. Put the special software on the computer. I'll bring in my keyboard. I'll bring in my special everything else. My friend will help set the stuff up and my friend will stay here for three or four days so my dog learns the office and I'll give you a two week trial." And they probably would have hired him.

Scott Monty:

Yeah.

Temple Grandin:

But I can see it from the HR person's side just freaking out and going, "Well, this is going to be too hard."

Scott Monty:

Sure. At the same time, you think about the skills that a blind person might bring to a customer service job. They have more attuned listening skills that they can pick up inflections in voices and really get something out of it that a non disabled person might.

Temple Grandin:

Well, that's just it. And I had a blind roommate and the way we handled that was she had her bed closest to the door and that I made sure I always kept my junk on my side of the room. Real careful about that. And but the other thing on jobs too, I counsel people find the back doors, half of all good jobs are back door. Somebody gets you into a job, bypass all that horrible electronic-

Scott Monty:

The screening.

Temple Grandin:

AI system that you're chucking at your resume and all that stuff, just short circuit that stuff, find the back door. You show your portfolio to the right person. Another thing I learned really early on, is sell my work, not my self. On the interview for me, go in lay the drawings on the table, put the pictures on the table, put the trade journal articles on the table and just let them look at it. That's what I did.

Scott Monty:

The work should speak for itself.

Temple Grandin:

In other words, I sold my work and that's why Jim, the contractor starting his little bitty contracting company seek me out because he'd seen the work.

Scott Monty:

Yeah.

Temple Grandin:

No, you need us visual thinkers.

Scott Monty:

Absolutely.

Temple Grandin:

Now there's a big, huge jumbo plane. I read an article that maybe half of those will get chopped up for scrap. Whoops. You don't want to finance that.

Scott Monty:

No indeed.

Temple Grandin:

I knew it was going to be a mess in the airport's and like, "Ah, how am I going to deal with customs?" We don't even have enough room in the customs hall to line them up.

Scott Monty:

I know, I know.

Temple Grandin:

And I see it. And I see Vancouver airport because that's where I've had some of the worst customs lines.

Scott Monty:

Okay well-

Temple Grandin:

The first thing is realizing different kinds of thinking exist. And when you realize they exist, then you can start looking at how you can use them in teams to do things.

Scott Monty:

Right.

Temple Grandin:

Where the skills compliment each other. Well, just end up with computer interfaces. Zoom took over because it was easy to use. That's the visual thinkers job. The programmers have to make it work. I can't program the computer, but I like an interface where I don't have to learn how to do it.

Scott Monty:

Right. But in those cases everyone with a different skill set had a different role and they were brought together.

Temple Grandin:

Well, the first thing is you figure out what those roles are. The visual thinkers do the interface and the programmers do the programming, and they're both important. They both have equal-

PART 3 OF 4 ENDS [00:45:04]

Temple Grandin:

... and they're both important. They both have equal importance. Let's go back to the moonshot. Who's finally getting credit now, that needed credit, probably didn't know very much math? The ladies that sewed the space suit for walking on the moon worked for Playtex corporation. And a bra designer helped design it. Don't think there was much algebra there. Mission critical.

Scott Monty:

Absolutely.

Temple Grandin:

Finally they're now getting the credit they deserve.

Scott Monty:

That's great.

Temple Grandin:

Yeah. The guys couldn't stand up a lot of... They said, well, it was IPC designed it. Well they didn't want anybody to know what that stood for. International Playtex Corporation.

Scott Monty:

Well, that's interesting. You mentioned being a woman in a man's world. I mean, in a cattle industry, as a woman, I saw the struggles in the movie, obviously. In some ways being a woman was almost like having a disability for many years.

Temple Grandin:

That's right. It was. It was like having a disability. Now, the thing that was interesting, almost all of my trouble was middle management. It was the foreman of the feed yard. The foreman of the ranch. A middle manager at a plant. It wasn't the big managers. It wasn't the owner of the feed yards. Some of them were very supportive. It was middle management, was where 90% of my trouble was.

Scott Monty:

Do you think they felt threatened?

Temple Grandin:

Yes. They didn't like this girl nerd coming in. In a plant, where I had problems with the plant engineer. The plant engineer manager had hired me and the engineering staff didn't like this girl nerd. Now, I usually got along with the actual maintenance people themselves. It's the middle management. 90% of my trouble all through the seventies and even in the eighties and some in the nineties. That's where the trouble was. And I just list the jobs and I write down what the person's job title that was harassing me was. Now another thing that helped me is I was a consultant, so I never really worked for any one company, but one ranch I worked with very early in my career, the foreman of this ranch was making sexual moves towards me. If I'd been in a big corporation, I wouldn't be able to go anywhere.

Scott Monty:

Right.

Temple Grandin:

My situation, I went onto the next project and Jim, the contractor counseled me, I was about ready to quit and he counseled me not to quit.

Scott Monty:

What did he say?

Temple Grandin:

Well, he said, "Just go on to the next job." And the thing that's interesting about Jim the contractor, when he was putting his small company together, he got a really diverse crew of different people that had different skill sets. And I've actually, I've had quite a few people that were ex military officers that helped me. Plant superintendent, the local swift plant was ex military officer, didn't know that until I read his obituary. He was kind of a no nonsense, as a military officer, good military officer has.

Scott Monty:

Well, it sounds like a lot of people with different skills and different backgrounds coming together to really make something work.

Temple Grandin:

That's right. That is right. We need to be getting those different skills coming together. So your first step is recognizing that you can have an object visualizer like me, then you can have the mathematical visual spatial, he's going to be a programmer doing a lot of data analytics and then you have your word thinker and they have different skills. And one of the biggest problems I see with word thinkers is overgeneralization.

Scott Monty:

Yep.

Temple Grandin:

Yeah. Now I hope I'm getting you to think about some of the things you might not want to finance.

Scott Monty:

Well, this is very helpful.

Temple Grandin:

Unless you're financing the company that's going to get that ship out of that mess.

Scott Monty:

Right, exactly.

Temple Grandin:

They'll make a pile of money. And I hope they can get it out of there without having a wreck the ship.

Scott Monty:

I hope so, too.

Temple Grandin:

I hope so. I'm going to be watching very carefully to see exactly what they do.

Scott Monty:

Yeah. Well, we know who to send them to if they really get stuck.

Temple Grandin:

Yeah. Well, I've been looking for some hydraulic stuff, it would take me about a week to... Well, the main thing is, is to have a strong enough thing to anchor the hydraulics to, so on a pull. But now they're trying to dredge out underneath it. Let's say they pump the ballast water out. I hope it doesn't tip over like my toy boat.

Scott Monty:

Right.

Temple Grandin:

When I was a child. I built a toy boat in shop and it didn't have a keel and it tipped over when I tried to sail it. It was not sea worthy.

Scott Monty:

Lesson learned-

Temple Grandin:

Ship all of a sudden, just roll over.

Scott Monty:

Right. Right.

Temple Grandin:

Boy, that'd be a mess because pumping out ballast water, that's easy to do compared to trying to get the containers off of there.

Scott Monty:

Oh, I know and there aren't even cranes tall enough.

Temple Grandin:

I'm trying to figure out how to unload those containers. I mean, I guess they could build the container cranes there, but that would take some time.

Scott Monty:

Right.

Temple Grandin:

That's going to be too slow. Or you go up there and unload the containers, taking the stuff out. Then that'd be a mess. I'd take a construction crane that could unload each container and take the stuff out with a cargo net that a construction crane could hold and I'm like, "Oh, well won't that be a mess." Then what do I do with the stuff? There's going to be everything on that ship, clothing, computers, might have some odd... Well, it probably won't have hay in it. We ship grain and hay as back hauls to China, out of let's coast.

Scott Monty:

Yeah.

Temple Grandin:

Because you don't have any back haul, so they put hay and grain in them for dairy cattle. Okay, well, it's really good to talk to you and I hope I haven't gone too far.

Scott Monty:

No this is-

Temple Grandin:

Hopefully I got you thinking about some different ways of looking at stuff.

Scott Monty:

It's fascinating to just kind of watch the way you think and work through problems. I think it's so refreshing.

Temple Grandin:

Well and we need this because you see the thing that people don't understand is see this big container ship, the big airplane, you're concentrating something. And there's a point where it's optimal.

Scott Monty:

Right.

Temple Grandin:

Because the airlines have been backing off the 747s and they fly a triple seven. I've been on that international. That's a much smaller plane than the 747 was.

Scott Monty:

Right.

Temple Grandin:

So why would you want a plane bigger than a 747? Well, I bet you airport managers were just going ape.

Scott Monty:

Yeah. I'm a Titanic fan, as you might've guessed, and back when the Titanic was built, it was the largest moving object in the world. And you look at it now compared to some of the cruise ships they have out there, it's a little dinky thing, right? And you've got these cruise ships that are taller than skyscrapers and you're cramming 8,000 people into a ship. Well, again there's some suboptimal thing there where, how many people are you going to get in a buffet line? Or how many people are you going to get in customs on the way off or on the ship?

Temple Grandin:

The other problem they had there, I've figured out that COVID was airborne when I found out about cruise ships getting it, aircraft getting it and prisons. Okay, when I look at those things in my mind, they share one trait: people crammed into a small airspace without very much ventilation.

Scott Monty:

Exactly.

Temple Grandin:

So I figured out back then that was mainly airborne. Otherwise, why would it go through a cruise ship so quickly because it's shared ventilation, especially on the inner cabins. That's the first thing I would have looked at on epidemiology would be the balcony cabins, where you have a sliding door you can open to the outside versus the inner cabins. I would just like divide, do a Chi square, simple statistics, inner cabin versus out or balcony cabin and COVID cases.

Scott Monty:

Common sense.

Temple Grandin:

Very, very, very simple study.

Scott Monty:

Yeah.

Temple Grandin:

Because I got to know what cabin every passenger was in and I'm going to bet you this shared ventilation. And then the aircraft carrier, they sleep stacked up in those things.

Scott Monty:

Right. Right.

Temple Grandin:

That's why I went through that. You see and I've seen pictures of that, so I know what that looks like, those crew quarters. And prisons, I've seen plenty of the prison shows. It's all shared airspace, jammed in a small space.

Scott Monty:

This is why I have no desire to go to a crowded restaurant anytime soon.

Temple Grandin:

Well, I've had my shots and I've been going to restaurants and I've got one restaurant where I have my favorite table way in the back, away from everybody. And that's where we sit because my students aren't vaccinated. But if I don't get out and do some things, I'm going to just absolutely go crazy.

Scott Monty:

Yeah, I hear you. I hear you.

Temple Grandin:

I just want to hope that Pfizer protects me.

Scott Monty:

Yes.

Temple Grandin:

And here's another thing. It's Pfizer BioIntech. Little guys innovate.

Scott Monty:

Yep.

Temple Grandin:

Now BioIntech's little RNAs with the things protect me.

Scott Monty:

Yeah.

Temple Grandin:

Little guys innovate. Think about Facebook and Google. They started in the dorm room.

Scott Monty:

Yeah. They started as little guys.

Temple Grandin:

They started as little guys. Little guys innovate. I don't care what industry you're in.

Scott Monty:

Yeah. Well, McDonald's.

Temple Grandin:

They started out just a tiny little thing. A lot of big restaurant chains. The same thing. I mean, KFC started out as little.

Scott Monty:

Right. Oh, I love the Colonel's story.

Temple Grandin:

Yeah. But that's a little guy. You see? There's all kinds of things where your little small place has done the innovation.

Scott Monty:

Yeah.

Temple Grandin:

Well, let's look at some things in my industry. We've got individual pioneers working on regenerative agriculture, in other words, doing cover crops and rotate the crops in corn and soy, and then one year you do a cover crop, and graze some cattle on it. And you can really do a really good regenerative agriculture with that.

Scott Monty:

Yeah.

Temple Grandin:

And when that first started, it was sort of considered alternative nonsense. Well, 20 years later, it's going to be mainstream.

Scott Monty:

Yeah.

Temple Grandin:

That's the kind of thing just for all sorts of things. No, we've got to stop some of this monoculture stuff.

Scott Monty:

Right.

Temple Grandin:

You've got economic incentives in the short run to make it really good, when in the long run we're going to wreck the soil. And I think another big problem we got today is we've got kids growing up today that never even used a ruler to measure something with.

Scott Monty:

Right. Only removed from the world of the practical.

Scott Monty:

Yeah. Still needed. Still needed.

Temple Grandin:

You still need that stuff. You still need people like me.

Scott Monty:

Yes we do. Well, thank you for the powerful reminders here, Dr. Grandin. It's been a real pleasure speaking with you this morning.

Temple Grandin:

All right. Well, I guess I can leave the meeting now.

Scott Monty:

Okay.

Temple Grandin:

And it was really good talking to you.

Scott Monty:

Thank you very much.

Temple Grandin:

Okay.

Scott Monty:

Bye now.

Temple Grandin:

All right. Bye.

PART 4 OF 4 ENDS [00:56:25]