

### **Sue Nelson**

Hello, I'm Sue Nelson and welcome to the Create the Future podcast brought to you by the Queen Elizabeth Prize for Engineering, celebrating engineering visionaries, and inspiring creative minds.

[Music]

Simone Giertz creates robots people never knew they needed and in a way that makes many viewers of her YouTube channel, laugh out loud, and then want to engineer something similar themselves. An inventor, robotics enthusiast and STEAM communicator. Simone was born in Sweden and now lives in the United States. Known as the DIY queen. She said, "I have an angle grinder and a welder, and I'm not afraid to use them". Simone has been on The Ellen DeGeneres Show in the US. And her I turned my Tesla into a pickup truck video was viewed over 12 million times on YouTube. Simone advocates making useless things for the fun of it from robotic headwear that can clean the teeth to a drone that cuts hair. But she's raised over half a million dollars for her latest enterprise, to design useful products, including the everyday calendar. Simone, welcome to the podcast, I wanted to know first of all, what was the very first thing you can recall, inventing?

### **Simone Giertz**

Inventing is a very broad term. The step down from that is like making something and I was making a lot of things when I was a kid. But I don't know if I was really like inventing something. But the first YouTube thing that I did was a toothbrush helmet. So it was a skateboard helmet with a robot arm and a toothbrush and it helped me very poorly clean my teeth.

### **Sue Nelson**

And that did make me laugh out loud, as did the automatic lipstick. So, there's a lot of comedy involved, because that lipstick went, basically all over your face?

### **Simone Giertz**

Yeah. Honestly, it's one of the most painful projects that I've filmed because in between takes, I had to wipe the lipstick off and kind of make it look like I hadn't had any on previously. And my skin got really raw after like the fifth take and you're like, tried to get as much of the redness out and like put a new level of foundation on it to cover it up.

### **Sue Nelson**

Now that toothbrush helmet that was on YouTube and went viral, describe how it actually worked.

### **Simone Giertz**

So I built it because I wanted to do a kid's show about electronics. That was kind of the motivator back then. And I filmed a pilot episode on my computer just using iMovie and was trying to kind of cobble together a pilot episode that I could send to this network in Sweden. But the way the toothbrush helmet worked, I mean, it was very simple, really, it was a skateboard helmet and kind of on the forehead, like a unicorn horn, I attached this acrylic robot arm and at the end of it I put this really big toothbrush on it. And then it just lowered down in front of my face and went back and forth and only really poorly cleaned my front teeth.

### **Sue Nelson**

And so that was with your aim of doing a show. So you realised then that YouTube was a good medium as an audition, effectively?

### **Simone Giertz**

YouTube was a happy accident in some way because I put together this pilot episode which, looking back at it now, I think this was in 2015. So what seven years later and 1000s of hours of filming after I'm like, 'oh my god,

I'm so glad that that show didn't get picked up'. I filmed this pilot episode. I didn't hear back from them because it was unsolicited, like an email to a producer that I found on LinkedIn. Like it was very, I'm not surprised that they didn't get back to me. So then I was like, 'okay, but I have this clip of a weird looking helmet. I might as well post that on YouTube'. So I just posted a seven second clip of it working. And that kick started this crazy string of events and you know, things kind of just snowball on the internet. And I think it was almost it was just like six months later, I started working full time as an Internet creator, which is a very quick turnaround.

#### **Sue Nelson**

And when did you know that you enjoyed electrical engineering? Was that something that came out of wanting to do that video or was it earlier than that and more organic?

#### **Simone Giertz**

It was earlier than that. I never saw myself as somebody who would like electronics or programming, but I had started programming a little bit and made some like really obscure little websites and widgets and stuff like that, that I was having a lot of fun playing around with and then I remember seeing this woman in Sweden, she was talking about hardware hacking, and something just clicked in me. And I was like, 'oh, I want to do that'. So I had a bunch of ideas of electronics projects I wanted to do. And since I'd done a little bit of programming, the step wasn't too big. I got this little electronic starter kit and I remember the first time I wrote a programme to blink an LED, it honestly felt like magic. Like, I couldn't believe that I had done that. And it was just such a, I was like, 'Oh, this is, wow'.

#### **Sue Nelson**

You've also done other fun videos of ludicrous, if you don't mind me using the word, inventions, like the hand that wakes you up in the morning slapping your face. So humour, it's a very important part of what you do and has contributed towards your success. Was that a deliberate angle that you knew you wanted to use?

#### **Simone Giertz**

I approached it with a sense of humour, because for me, it's a way to make it less intimidating. I was very scared and intimidated by electronics and about roboticism. It was a way for me to cut myself some slack. But then what's interesting, so I've done that for I did that for many years. And it was only silly projects. And then, as I've grown older, on the platform, and also like acquired more skills, more build skills, I've started building more, I wouldn't say, sombre projects. But projects that aren't just simply a punch line. It's just always whatever intrigues me the most, I just spent 45 minutes on a stained-glass door to make a stained-glass window, which I think is as far away as you can get from projects like the toothbrush helmet.

#### **Sue Nelson**

Well, before we get on to some of your more, like you said, solid inventions and things that you've done, I wanted to just sort of remind you of something that you said in a very entertaining TED Talk, which said, 'as much as my machines can seem like simple engineering, slapstick, I realised that I stumbled on something bigger than that. It's this expression of joy and humility, that often gets lost in engineering'. Why do you think joy sometimes gets lost in engineering?

#### **Simone Giertz**

Oh, that was very eloquent of me. I worked with a lot of engineers, and to me, they were kind of superheroes. So I was working with electrical engineers and as somebody was tinkering with electronics, I was like, 'you have all the answers, you have all the skills I want to have. What do you do with these skills, like you have endless possibilities?' And I remember people just being like, 'Oh, well, not that much. I mean, I do my job, you know, and like maybe some side projects', what I realised was that, especially when you learn engineering, in school, for

one, often it attracts certain, like just one type of person. And people who maybe are a little bit more restless, like myself, I wasn't really drawn to that in the same sense as a lot of other people. But also, it's like, when you learn it in school, you don't really get to apply it to different projects as much, it's very much 'learn these things, because one day in the future, you might need them'. Whereas I was learning, it was only through what do I need right now. And I think that just empowered me to use them in a lot more creative and fun ways. So I think part of it has to do with how we learn things in school. And it's always like, duty is always valued over everything else. It's like you have to push yourself hard. And if you're not struggling with it, or you've been working hard. And what I realised for myself is like, yeah, I learn most when I'm having fun.

**Sue Nelson**

I totally understand that. And I do find it slightly offensive the way sometimes people think if you're having a good time, or have got a sense of humour, or will insert a gag into something that somehow it doesn't mean, you're as serious about what you're doing.

**Simone Giertz**

Yeah, that somehow it's not as valuable or as important. And that programming goes so deep, and I still now like, I'm like, 'this is too much fun, this can't be work. I'm not working hard' and I'm like, 'no, it can be both'.

**Sue Nelson**

It can be both. Let's go onto one of those really quite heavy duty projects that you've done. I sort of mentioned in the introduction about that turning a model 3 Tesla into what you called a Truckla, which is this combination of a pickup truck using a Tesla, before Tesla had actually brought out their own Tesla truck. Why did you want to do it in the first place?

**Simone Giertz**

Because I really wanted a pickup truck. I was kind of late in the game. I'm 31 now, I didn't get my driver's licence until I was 28/27. So I was like, 'okay, I can be one of the that first generation who has never had a gas vehicle'. So very early on, I kind of made this aspirational vow to myself to like, I'm only going to drive electric and I'm not going to drive any gas vehicles. But the problem is that I really need a pickup truck for my work. So, I was looking around and back then there really weren't a lot of options on the market. And the few options that there were incredibly expensive. So I figured I could just make my own. I call it the Make Your Own gnome. It's the little gnome that sits on your shoulder and is like, maybe you should just make your own.

**Sue Nelson**

And you did I mean, I was quite nervous watching you take some sort of cutting tool to this perfectly beautiful intact car.

**Simone Giertz**

What I did was, because I was going to cut out all the back seat, everything from the B pillar and on so the backseat and the trunk was going to become the truck bed. So, I wasn't going to use the trunk itself. So the first thing I did was I keyed the trunk. And I wrote Truckla on the trunk, and that it did hurt my soul on a deep level. But now I mean, it's destruction in the bigger purpose of construction. I wasn't just breaking it to break it and get a crazy thumbnail.

**Sue Nelson**

And what was for you the biggest challenge then of doing that?

**Simone Giertz**

The biggest challenge was that I was going through a lot of health problems at the time. So, I was dealing with I had very limited energy. And this was a beast of a project. But the build, I had so much support from so many other people on the team. But then we had endless hours of footage and kind of trying to stitch together a YouTube video from it was a bit of a mountain.

**Sue Nelson**

And what did Elon Musk think of it?

**Simone Giertz**

I've no idea. I think, I mean, he's seen it. I don't know how he would have avoided it. And I know he liked some tweets about it. But yeah, I got invited to the unveiling of their Cybertruck. But they were like, 'please don't bring Truckla because we're worried that she would take away from the unveiling', which I was like, 'oh, wow!'

**Sue Nelson**

Is the car still running then?

**Simone Giertz**

Yeah, she's my daily driver. She's unfortunately not weatherproof because you know, as any project you do, what to 80% and then the last 20% takes five years to finish. So she's still not weatherproof, but fortunately, I live in Los Angeles and it rains very rarely. But when it does rain, I have to cover her with a little waterproof car cover.

**Sue Nelson**

Also new videos you talk about over engineered solutions. Could you explain exactly what you mean by that?

**Simone Giertz**

I mean, it's just going down a rabbit hole and not double backing when other people would have. I think I just take it a little bit further or think about it a little bit more than other people would, or maybe that other people would have the opportunity to, because once again like having a YouTube channel, my job being making content I can like indulge myself a little bit more. So, I mean, I spent a month building a table, a dining table that's mechanical, so you can switch between two different table tops, because I like working on jigsaw puzzles, but I don't like that it occupies my dining table. So that is an incredibly over engineered solution but I can go on that exploration because I've kind of created that space for myself.

**Sue Nelson**

I must admit, I was very surprised until I heard you actually say on a video that you had performance anxiety, I wouldn't have guessed. Because you come across as you know, relaxed, having a good time has the fact that you use and invent things and demonstrate them. Does that demonstration actually help at all by relieving the performance anxiety because it's not just you and a script, you're sort of doing stuff at the same time?

**Simone Giertz**

I don't know. I think for me, my performance anxiety is more terrified of disappointing people. When I was younger, I was terrified of getting bad grades, kind of out of nowhere, because my parents really were very hands off and very supporting and loving. And it's still I think, for me, building these more useless machines was a way to kind of shield myself from my performance anxiety because it's all about lowering the bar for yourself. But it still comes into in some other aspects. I know I'm very careful with what I post. I'm always so scared of like upsetting somebody that I didn't intend to upset them. So yeah, and I'm always like, 'this isn't

good enough. I can't do this. Because it's not good enough. This build isn't good enough'. So yeah, it's still there. I think it's performance anxiety, or any anxiety. It's just, it's just constant work trying to keep it at bay.

**Sue Nelson**

And you also sort of casually mentioned on the Tesla truck video that you've had a brain tumour?

**Simone Giertz**

So in 2018, pretty much immediately after I gave my TED talk, I think it was the week after I found out that a swollen eyelid was a brain tumour the size of the golf ball. And I had brain surgery. And, you know, I feel like people really deal with those types of things in different ways. Some people don't want to tell anyone, some people want to be by themselves. For me, it was like, I wanted to shout it from the top of a mountain. I remember being like, 'I needed to stop telling waiters and taxi drivers that I have a brain tumour' because people would be like, how are you doing today? Sweetie? I'd be like, Well, I'm good. But I have a brain tumour. But also, can I have a French fries? You know, like, I need to stop telling people. So for me it was having a platform where I could just be like, 'oh my God, this really intense thing is happening'. It was actually really, really cathartic. So I didn't even consider like, Oh, should I cannot tell people because I really, really wanted to.

**Sue Nelson**

Well, fortunately, it's all turned out okay. Has it changed the way you work or approach your inventions or life?

**Simone Giertz**

Yeah, it's changed so much. I really think in so many aspects for the better. Disclaimer, I came out really great from surgery, I didn't get any brain damage, I did have to go through radiation treatment and struggled with that for a bit. But like all of this is with a pretext and disclaimer that I'm doing fine. I'm fully recovered. I'm not allowed to do headstands, but that's pretty much it. But yeah, it was such a stark chapter turner, in a way. And I think that's when I started stepping away from only building useless things, because I was like, I'm not feeling like you're right now. I mean, it was a pretty dark period in my life. I wanted to build more thoughtful things, and it just fast tracked me to grow up a little bit and also reprioritize my time. When you have very limited energy. It's like am I spending it on the things that I want to spend it on? So it kind of made me course correct, in a way that I'm very grateful for now. And it also really forces you to find a good work life balance, because I couldn't work as much as I was before and I had to listen to my body and its cues because if I didn't that I was going to be bedridden for the next week.

**Sue Nelson**

And is there an overall theme or area that you want to pack your useful things in? Say, maybe it could be transport related or climate or is it just everyday items, but useful?

**Simone Giertz**

The umbrella has been unique solutions to everyday problems. So, it's really, what motivates me right now is just finding those minor inconveniences in my everyday life and kind of looking at objects, not in a critical way, but in an exploratory way of like, we have so many objects around us that we don't really question. A fork is a fork is a fork. They look in a way and what I've been doing a lot, it's just being like, but does it have to look that way? What would I want it to do that it's not currently doing? Is it really the most comfortable or best solution or what's a way to add fun twist to it? So that's kind of where my creativity has mostly been these last couple of years. And it's so much fun.

**Sue Nelson**

It sounds it, it absolutely sounds it. I mentioned in the introduction that you've raised money as well, for this this project of useful inventions, a staggering amount \$500,000. I mean, that's a massive, but was that easy to do because of your YouTube fame? Was that what allowed that to happen, or did that fundraising come via a different route?

**Simone Giertz**

I would have hoped that it would have been able to stand on its own legs. But no, of course, it really helped. So yeah, we did a Kickstarter a couple of years ago. It's an electronic calendar that you can hang on your wall, it has 365 days on it, so it has a full year represented. And if you tap a day, you can light it up. So it's kind of like a personal gold star system for your habits. So, I used it to make sure that I meditate every day, you can use it to track how often you're floss saying or writing or jogging or even like when you get your period. Basically, it's just a visual representation of your progress. A lot of people are using it to like stop smoking, but it's very much tapping into like the perfect streak thing, if you miss a day a day you know you're going to see it for the rest of the year and it's going to be an eyesore.

**Sue Nelson**

And how did the development process go? Did it go smoothly, was it fun?

**Simone Giertz**

Nothing but. I love developing products. I love thinking about it. But oh my god, it is such a pain. And as somebody who's terrified of disappointing people, there are so many opportunities to have somebody be disappointed or somebody's shipment doesn't arrive. And you're I mean, obviously we're doing our best to figure all of that out. But there's definitely a lot of sleepless nights. But for me, it's just really I've wanted to be an inventor ever since I was a kid. I think if I got to go back and redo things I would probably have studied, like industrial design and kind of gone down that route again instead. But yeah, there's just something about having something that you've made and thought of, and people bring it into their lives and they use it and it's just a crazy, crazy feeling in the best of ways.

**Sue Nelson**

And you're working with a UK engineer at the moment, I believe, what are you able to tell us about that particular project?

**Simone Giertz**

A lot of my management team is in Australia and then we have a engineer in the UK and then some people here in California, but we're kind of all over the place. We're launching the store. It's called Yetch. Spelled Yetch. This is spelled out how my last name is pronounced because I wanted it to be something funny, but not something silly. This is kind of an inside joke for people who know what it is. For me, it's been a great way of balancing things. My goal has never been to have the most followers, it's always like, what would I want to use that for and running a product design company, it's kind of the perfect combination of businesses and it's such a fun, dynamic way to set things up. Because I can use my YouTube channel as like a R&D department where I'm constantly motivated to build new things, I post it online, it's early audience testing, and then I can pass it on to the product company, we can develop it as a product. And then I can use my YouTube channel, again, as a marketing platform. So it's kind of been this the this perfect combination of businesses that I'm so excited to explore further, but we'll see how the store launch goes.

**Sue Nelson**

Excellent. So, something for us to look out for then, you know, I mentioned that you'd said, you know, you have the angle grinder and a welder and we weren't afraid to use them. Do you have a favourite tool, a fabrication tool or something else that you just find invaluable?

**Simone Giertz**

Yes, I do. It's my CNC. I call her CNCecilia. Imagine like a drill. But the drill goes really, really fast. And it's controlled by a robot. You can upload computer designs to it and you can cut acrylic, you can cut wood, and you can carve it into different shapes. And as somebody who comes like CAD first, I always like making a model in my computer, and then kind of building it from there. It's perfect. And it has opened up so many avenues of making, I've had it for about a year and it's changed my build life.

**Sue Nelson**

And if somebody listening, particularly some of our younger listeners, is really inspired by your videos or listening to you interview now and they also you know, have loads of ideas buzzing around their head and want to be an inventor, where do they start, they need to have a workshop, for instance?

**Simone Giertz**

It's a little bit unfortunate that building often comes off as a gear sport, because to some extent it is. If there's a local maker space that has classes and tools and equipment, that's a great place to start, because that will give you a good it's like a buffet of different areas of making. I would say if you want to get into electronics and Arduino Starter Kit is a really great place to start. If you want to get into robotics, I love my LEGO Mindstorms kit. It's amazing. They're a bit expensive, but it's really it's such an easy way to start playing with mechanical motion. And if you wanted to get it to woodworking, I don't know, try some spoon carving, try laser cutting. There's so many different ways. But I think the best thing is just find an idea that you're excited about. And then figure out what you need to know and what you need to learn to make that happen.

**Sue Nelson**

And looking back, you said, you know, there are few things you think 'oh maybe if I went back, I would do this'. Are there any videos that are up that you'd think 'if could do that differently now, or I would approach that differently', or maybe, I've read that you're interested in animal behaviour, you know, 'maybe I would make something for a dog or a cat'.

**Simone Giertz**

Definitely I have been thinking of revisiting some of my earliest builds. Because I really learned how to build things on YouTube. You see me learn and it's kind of, I'm very proud of the skills that I've gotten over the years. So it would be fun to revisit some of my earlier builds and be like, 'how would I approach this differently now?'. I have been thinking, I mean, my dog is my muse, I have a tiny dog named scraps. And I've been building a lot of projects for her. I'm really inspired by these different machines to teach crows how to collect trash for you. I'm a little bit reluctant to mess with wildlife because I feel like they got their own thing going and they don't need more influence from humans than they already have. But I think in another life, I studied animal behaviour. That was one of the big things I wanted when I was a kid and now trying to think like, 'oh, but could I lift that into what I'm doing right now?'.  
  
**Sue Nelson**

**Sue Nelson**

And in the future, you've obviously got store coming out, you've got your own products and designs. Anything else?

**Simone Giertz**

I want to run an innovation house, that's really like, if I squint and think about the future. It's a giant workshop, I have my own area where I'm prototyping things and I can throw a prototype over to a team of engineers to be like, 'hey, let's see if this is something'. And then I just want people to come and be like, 'what about we do it like this?' And I'm like, 'I don't like the colour of that button'. I don't know. So that's what I'm working towards. You know, I just want to work on fun problems. That is really what keeps me up at night, in a good way, where I'm like 'ah, but could I do it like that? No, but what if I flip it over and I do it like this? Or what if we change the material?' like that is the happy place for my brain.

**Sue Nelson**

And if you had the opportunity to take your Truckla into space, as Elon Musk did in terms of sending his up into orbit, would you do it?

**Simone Giertz**

She's my babe, I can't, I've been like 'I should get another car. I can't drive her around'. But I just I just love her so much. She just whenever I see her she just makes me smile. She's just funny and unique in the best of ways.

**Sue Nelson**

That sounds rather like you. Simone Giertz, thank you so much for joining me on the Create the Future podcast.

**Simone Giertz**

Thank you so much.

**Sue Nelson**

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