

## **Social Change at Scale -- That's Innovation! Jim Fruchterman at TEDxSanJoseCA 2012**

I was a geek as a kid. I still am. I was fascinated by technology and science. I wanted to understand things. I thought tanks and airplanes were the coolest thing on the planet. I wanted to become an astronaut or maybe win a Nobel Prize in physics. One of those two. I went to Cal Tech. That's geek Mecca to you guys. I wanted to meet other people like me that wanted to figure things out and solve problems. There's a whole bunch of people like that at a school like Cal Tech, but when you meet these Nobel Prize winning professors you feel kind of like pond scum. Will I ever come up with a good idea? I spent all my time at Cal Tech trying to come up with a good idea. My breakthrough came in a modern optics class.

The professor is busy telling us about this cool technology called pattern recognition. You have a missile, because this is the nineteen-seventies and all the jobs for engineers were working for the military contractors, so there's this missile and it has a camera in the nose. Then, inside the mind of the missile is a representation of a tank. You know, the target. It zooms around and it blows it up. Wow! That's such cool technology. I went back to my dorm room. Then, I started thinking a little differently. I said, "I wonder if there's a more socially beneficial application of this technology?" I scratched my head. Oh, instead of recognizing a tank in the battlefield, maybe you could recognize letters and words and you could read to a blind person. That would be so cool.

That was like my one good idea in college. I had no idea how I'd actually do it. How I'd put that within the reach of a blind person, but I thought, that's my one good idea. I kept that idea in my heart. I went on, came up here to the bay area, started a PhD program at Stanford and promptly dropped out to join a startup rocket company. I mean, astronaut, missiles, rocket on the long stand. Oh, it was so cool. Our business manager, who's from Texas, but went to Stanford, she's doing the countdown. Five, four, three, two, one. Oh, shit. The rocket blew up on the launch pad. End of my rocket science career, but I still had aspirations, so I came back to Silicon Valley. You have to celebrate failure in Silicon Valley.

I and my former boss, we got together and we started our own rocket company and we tried to raise three hundred million dollars, and no one gave it to us. Couldn't quite figure out why, but then my boss Dave said, "Oh, I know this guy, Eric. He's a chip designer. He has an idea for a company. Let's go talk to Eric." We went over and we went and we talked to Eric. Eric said, "I want to make a chip that can do one thing really cool. We'll build a company around it." I said, "What is it?" "You can make a chip that like looks at a piece of paper and recognizes the letters and words on it." And I'm like, "That's my one good idea from college. You can make a reading machine for the blind with that."

It was like, wow. Wow, that's like really cool, so we raised twenty-five million dollars. Not to make a reading machine for the blind, but to do the commercially valuable applications of character recognition. Scanning contracts for lawyers, and insurance forms for insurance companies, and routing the mail, right, but in our hearts, the coolest application we could imagine of our technology was reading to blind people. Dave, who's my former boss was the VP of engineering. I was the VP of marketing. Our teams built a reading machine for the blind prototype and we brought it to our board. We're already selling lots of things to these commercial applications, but this is the cool new product.

Everybody sitting around the board table has put at least a million dollars into our company. I have a piece of paper and it scans the page. Takes a picture. Then, our cool technology was turning that

picture into the words that were on that page. Then, we sent it to a first generation Votrax voice synthesizer. "These are the times that try men's souls", but not that natural sounding. The board like "Cool. The demo worked. Jim, you're the VP of marketing. How big is the market for reading machines for the blind?" I said, "Well, we've done a lot of study on that. We think it's about one million dollars per year." After a very uncomfortable silence one of the investors says, "And what's the connection to the twenty-five million dollars we've invested in your firm?"

I said, "Oh. Oh, it's easy. It'll be breakeven million dollars a year and it's the coolest thing that we could build. Our employees will be so happy. Our customers will be proud of us and we'll be helping millions of people read who couldn't read before," and they said "No! You promised to make us a lot of money. There's this giant market that, and you aren't making us a lot of money yet, and we think that you should uphold your promise." That's business as usual in Silicon Valley. You know, and I admire it. I mean, we're really good at making money and starting companies, but we're not so good at doing social good. We had promised our investors to make them a lot of money, but all is not lost.

See, there's this cool thing about technology is, you make one copy of something and you can make a million, or ten million, or a hundred million copies for not a lot more money, right? It's that incredible power. It's what makes Bill Gates so darn rich, right? Makes one copy of Microsoft Office, sells a gazillion. What if we harness that same power for social good, you know? We could really change the world. We could do social change at scale. I want to tell you the stories of a few people who have overcome that sort of naysayers that said, if it doesn't make a lot of money, put it back on the shelf. They said, no, no. In my heart, I wanted to become a technologist because I wanted to do cool things and solve problems. Just because it doesn't make a boatload of money is no good reason not to do it, which I think is triple negative, but we'll work on that.

The first person I want to give you is my friend Victoria Hale. Dr. Victoria Hale. She's a pharmaceutical scientist. What was in her heart? She wanted to save lives making drugs, but she went to work for the FDA and Genentech and she found that a lot of life saving drugs don't make it out of the lab. Why is that? Well, imagine two drugs. The first drug fights a parasite that kills a hundred thousand people a year. The second drug makes middle aged men feel like teenage boys again. Now, if you're a for profit western pharma company, which drug do you make? Oh, those hundred thousand people, they're poor people in the developing world. Who would do that? No, you would rather make billions of dollars with a lifestyle drug.

Lives, or lifestyle? I mean, jeez. That's terrible. Victoria said, "No way. I'm going to start a nonprofit pharma company and I'm going to make that drug that saves a hundred thousand lives a year." Yeah, she's great! There's this drug, it used to be used for another purpose; I think it'll kill this parasite. She ran the clinical trials and this drug today is basically approved for sale in India and Nepal fighting leishmaniasis, this terrible disease. The power of a single idea to save a hundred thousand lives a year. That's cool. The next place I want to take you, another kind of scientist. What can math geeks do for human rights? Well, it turns out that Guatemala is a country that's has a terrible civil conflict.

Thousands of people were disappeared. A genocide was committed against the Mayan Indians. The people who were behind the killings of thousands, or tens of thousands, or even a hundred thousand people, they got promoted. They were still in positions of power. That's called impunity. I think it's in-just. A little bit more than six years ago they discovered the secret police archive. The archive of the national police. Thought to be disappeared. Eighty million pages. We sent some math

geeks down there and they modeled the warehouses fully in three dimensions and did volume metric samplings. It's very, very cool. They pulled out twelve hundred documents. More than ten percent were pertaining to a disappearance or human rights violation, so there was gold in those eighty million pages.

The stories of many people who had been disappeared and of the people who disappeared them. Got him down there, helped him scan a whole bunch of the documents. Now, more than ten million of them are online. Then, two years ago they said, "Well, what does it say? Let's look up a really famous disappearance. Garcia. You know, his widow is like the head of the opposition in Guatemala. What can we find out about him?" Four hundred documents pertaining to his disappearance. Based on that and other testimony, our geeks went down there and testified, they were able to convict two active duty police officers of disappearing Garcia. Then last year, they appointed a new attorney general. She arrested the former head of the national police.

Then, she went further. She arrested several retired military officers, including the former dictator of Guatemala, Rios Montt, on genocide charges. Well, what did they do? They called our chief geek. Benetech's chief scientist Patrick Ball. He went down there and he did an analysis that showed that if you were a Mayan Indian in this area during the peak of that time period, that civil conflict, eight times the chance of dying as if you were Ladino, the white derived ethnic group. We'll let the judges decide, but if we as geeks can do something to fight impunity, we will have helped honor the experience of those victims, who for so long saw nothing happen to the people behind it.

You don't have to be a geek or a PhD to make this kind of difference. I have two friends who are professional motorcycle racers. They wanted to help health care in Africa, so what do you do? Well, you stage a benefit race. They raised seventeen thousand British pounds. They went down to Africa to give the money to the health care workers and what do they see? Dead motorcycles and dead vehicles. This kind of bugged them, you know? They had to say, "What's wrong here?" People said, well you know, it's missing a part or it ran out of oil. They said "Ah." Then, they had a great idea. What if we go to the health ministry and have them pay us a buck or two every month for every vehicle in their fleet and we'll do preventative maintenance and keep them running.

That's what Barry and Andrea, my formal professional motorcycle racer folks did. Now, three times the people in rural areas get access to health care because the health care workers can get out there and deliver vaccines, and drugs, and bed nets. The power of a single simple idea, preventative maintenance. You didn't have to import a bunch of mechanics. The mechanics were there in all these African countries who really knew what they were doing. They needed a business model that would pay them to do preventative maintenance. They came up with it, and now millions of lives are being positively affected because they're getting access to the health care that they wouldn't get otherwise. Pretty cool stuff

My story? Well, I left my for profit company. I started a deliberately nonprofit company, Benetech. It's organized as a charity. We started making reading machines for the blind. Within three years, it was a five million dollar a year slightly profitable business, inside a nonprofit. We've sold forty thousand reading machines. Basically giving people with disabilities the power to scan their own books, rather than having people read to them. Then, we went a step farther. Of course, just because we're in Silicon Valley, we talked to our people and they said "Oh, your software's a service. Move to the cloud." I'm like, "What does that mean?" Well, we actually created Bookshare. Sort of Amazon, meets Napster, meets talking books for the blind, but legal.

Yeah, it's pretty cool. We've changed the power structure of the traditional library for the blind. Instead of sided people like me deciding what blind people could read because we couldn't afford it, if you thought it was worth scanning, we think it's worth having in our library. It's now the largest library for the blind in the world and we have a hundred and ninety-eight thousand users as of the beginning of this month. Again, it wasn't what we did. It was technology as a tool to let people, a community actually write their own ticket, so that they have the eBooks that they need for education, employment, social inclusion, in books that can be turned into braille, large print, or a voice synthesizer that sounds a lot better than the one that sounds a lot better than the one that I demoed for you earlier.

What can you do to help? It turns out that you have tremendous opportunities, again, because technology brings the challenges of the world within our reach to actually do something about. You know, you can become a donor and you don't have to have a lot of money. Something like Kiva allows you to loan someone fifty dollars to get a business going or Vittana that allows you to loan some money for secondary education for someone in the developing world. There are many other organizations like that. If you have a great idea that actually could help humanity, figure out a way to make it a sustainable social enterprise. Become a social entrepreneur. Don't give into the naysayers.

If you control intellectual property. If you have an invention. If you have content. What does it cost you if somebody else takes it to the other ninety percent of humanity and doesn't mess with your top ten percent revenue generating business? It's easy to do. When we ask high tech companies to cooperate with this on this kind of basis, they say yes eighty or ninety percent of the time because in the hearts, I think of most technologists is this desire to do important things. People are demanding it of their companies and they want to make a difference. Then, of course there's so many volunteers in things. Whether you go and you volunteer for TedX SanJoseCA or if you say, go to random hacks of kindness. Best brand name I've heard in quite a while, which is weekend hackathons for social good or go to work for Code for America.

Spend a year helping them develop technology for a community that's trying to use technology better to respond to their citizen rate. We have a new project coming up called, social coding for good. Sort of an online dating service for geeks that want to do social good. Tell us your passion, your skill, your time availability and we'll match you up with Wikipedia, or Mozilla, or some of our projects, or many of the other great open source projects that help society. The power of technology to do good, of a good idea to help millions.

I believe that technology enables positive social change at scale. I believe that we can and we must give voice to oppressed people all over the world because every story of human rights abuse and suffering is a tool for justice. I believe that we can and that we must bring access to all of human kinds knowledge to every single person on this planet because education underpins all social good. I believe that we all want to bring about his better world because paying it forward many fold is in our hearts and within our reach. Thank you. Thank you. Thank you. Thank you. Thank you.