

Thank you so much for having me. I am not a chemist, I'm a historian. But I am going to try to put disability into perspective for everybody.

I often start my talks these days with something I've been thinkin

through my life — okay, I went to grad school there, the post doc in France — oh yeah, I'm here in California. It was to the point that — I ran into a friend who is a mathematician, and there was this one unresolved problem in an article I'd written and I wondered if he could help me with. He couldn't quite understand my paper. And then I read it, and neither could I. And I *wrote* it. That's how scary things were for a while.

To say that I had lifestyle changes would be a gross understatement. The physical part — to give you an idea — I wrote down a page and a half full of symptoms that I did not have before that tick bite. And the cognitive and emotional parts — I've mentioned some, but also I've seen five different spec scans that show encephalitis. The last one, about seven years ago, showed a lot of progress, but it also affected me more emotionally. I was more emotional than guys are permitted to be — especially out there in Livermore, in cowboy country;

by looking on the bright side of life. And, somebody who has more insight than I thought he did wrote that: Me.

Before we get too far, I want to think about *what is a disability?* That question is one, I think, that we can ponder a lot. What does it mean to be disabled? Are disabilities really a burden or a hindrance, or can they be beneficial? And the message here — I think it's good to point out — is that every one of us in this room is good at something and not as good at other things. We all have things that we are better at and things that we can't do. Are those things that a run of the mill person can't do so well considered disabilities? Well, in some ways I think that they are. And we can make an argument, effectively, that all of us in society have a disability, and have different ways of looking at problems, or different ways of doing those things that we're less good at. Some people are not good spellers. Well, they use spellcheck. That's why that was created.

Let's think about, as well, the idea of how we overcome disabilities. Well, there's many different ways. But it all boils down to developing tools to achieve results differently, and to achieve sometimes the same results in a slightly different fashion. Some people might take the stairs to get from here up to the 25th floor. Some people might take the elevator. So, it's the same thing — some people might read a book in braille to understand information, some might read it in print. It doesn't really matter — the means in which you go about solving a problem, as long as a solution is approachable and intelligent and useable.

So, I think if we can come up with the r

century — has made it much easier to solve problems and, frankly, revolutionized what we can do as a society.

But the truth is none of us can do in our mind what a computer does. So are we all disabled in that regard? I think it's important to think about.

I'll tell you just a little of my story. I've been totally blind since birth. I began really loving science when I was quite young. As a child, I always wanted to know how things worked, how things fit together, why water could travel from a water treatment plant through city waterlines into our house and get everywhere it needed to go. Plumbing, electricity, electrical systems always fascinated me. And these things led me to really enjoy science, and enjoy asking the "why" question.

So, I decided to attend school at UC Davis, with encouragement from blind friends of mine, my parents of course, colleagues, and many others in my life. And I ended up receiving a chemistry degree at UC Davis. I didn't know how science was going to work, as a blind person, so I also received a history degree. I took

disabilities gain the confidence in fields like chemical engineering that they lack because people always tell us that a disability is going to hold you back and that it's an impractical career to study because it has so much technicality and so many hurdles that can be inaccessible to anyone with a physical disability, all the way to those folks who might have mental or psychological disabilities. And having a group like this that motivates and supports and promotes the work and the great accomplishments that have developed from the disabled community is paramount and so incredibly important.

I'll close by talking about the method that I think is the quintessential way that disability works, and how a disability revolution and understanding takes place — so that changes take place for folks with disabilities that can help not only those of us with obvious disabilities but everyone.

The first idea in this is awareness. Being aware that there are people in our field with disabilities and that they are just as capable as anyone else. And that's what I think that a committee or society dedicated to disability resources and disability advocacy is so good at — creating that awareness.

Once we're aware of folks with disabilities, and aware of the fact that what we do and the discussions that we have might not be as accessible as they could be, change takes place. We start to think about how we can put things together differently, how we can think about things differently in order to make change, and make the environment more approachable to folks with disabilities, and more accepting.

And once this change takes place, I think progression is what happens. We need groups — like the Committee on Chemists with Disabilities, like the disability action network that is being developed here — to promote and remind people that, though change has been made and though we're working hard to accomplish what we know is possible, we need to keep thinking and keep chipping away at that iceberg and at the barriers that some of us face. Just because of a lack of understanding of what folks with disabilities, and folks of any minority, can accomplish.

So, again, those pillars are awareness, change, and progression,

Finally, I think it's very important to think about what I said at the very beginning, which was — people with disabilities are very good at creating tools for accomplishing what they need and for making their lives accessible. And I think that as chemical engineers, and as scientists in general, our calling is to develop these ways of solving problems, as well as the critical thinking skills that we need to revolutionize how we think about engineering and how we think about the world at large. And if we put that perspective onto this framework of folks with disabilities developing their own skillsets and tool sets that work for them, we can see a crystal clear image of why having a disability is by no means a disadvantage, but most likely an advantage when approaching a b/TT4 1 Tf [(di)4 (s) 2 (a) 1 (dva) 1 (nt) 4 (a) 1 (ge)

So, at this point in my career I realized that regardless of what I had accomplished — earning a PhD in food toxicology, earning an MBA and finishing first out of a class of 240 students — that my career was going to be extremely limited because of my speech disability.

So, I took some speech therapy, and I've been participating weekly in Toastmasters International, a public

Two more examples I'd like to share with you. I read recently that some tech firms in the South Bay of San Francisco have discovered that hiring programmers who are on the autism scale is serving very well, because they have a propensity to program efficiently and not be distracted. Stellar employees. It's about matching someone with a disability and unique ability with the right job. I think that is something that employers and people with disabilities should strive for.

And my last example goes to World War II. In World War II, soldiers who were colorblind were eliminated from officer training school and all sorts of promotional opportunities. They were relegated to being infantry. Then, someone stumbled on the fact there was a bomber that was so much more successful than all the other bombers. And it turned out that their spotter was colorblind; he'd kept it a secret. It turns out that camouflage, as we would expect, is designed for people with so-called normal vision. And camouflage is basically ineffective against people who are colorblind. So every bomber wanted to get a colorblind spotter. And those who did had higher success rates.

So, pairing people with disabilities-slash-unique abilities with the right job is something that can really be a win-win; a win-win for the individual with the unique ability and a win-win for the organization as well. It's not going to fall into our laps, it's going to take some work and planning. But there is a great opportunity out there for all of us by hiring from the community of disabilities.

That's something that's similar to a lot of mental disabilities. You say to yourself — I solved this problem. I finally thought I could overcome depression or anxiety in this scenario, and then it strikes somewhere else.

which commenced a year of rehab. After that year, I started back to work part

funding from the U.S. government — universities, hospitals, schools, post offices, things like that. And once that became law in 1977, and they started making people comply with the law, that ensured that organizations that were federally funded would follow it. What was missing was the fact that private enterprises — stores, hotels, etc. — were not required to make their places accessible, until 1990 when the Americans with Disabilities Act came in. So, if I was going to school in the early 1970s, I would not be able to ask or know to ask that I could have accessible

One thing I've mentioned along those lines is, there are probably more people than who will probably admit it, that have some kind of psychological condition.

Among the things I've learned in the trainings I received is something called trauma-informed care. Basically, trauma is where an event overwhelms the individual's response to cope with it. And there are three typical outcomes for people who have dealt with trauma. Initially, trauma overwhelms them and they end up continuing to have trauma and degenerating into psychosis conditions. The three outcome choices are mad; bad (they end up being rebellious and possibly criminal); and the third one is good, where they focus their energy into scholastic achievement, and continue along those lines. And I know that I was one of the latter ones, because — although my family history isn't one you'd see on Oprah — school wa0.24(w) -6 (a0) -6 () -6 (d) -2 (-6 (a0h (d) - (O) - TjET Q q 0.24 0 0 0 45 0 0 Tm/Ts)]570.72m BT) -1 (g) -1

no matter how awkward they are — such as in Ashley’s situation. I have my own slew of stories there. But if we have an opportunity to explain things to people, and we’re not willing and open minded about it, they’re not going to learn and they’re going to make the same judgment calls they’ve always made. And we’re not going to make the progress that we need.

Actually, I’ve found myself on both sides of this situation. For a while, when I was in the Boston area, my girlfriend worked at an institute for people with cognitive and developmental disabilities. And I had to learn how to help people out and how not to. I learned that the hard way when I tried to help somebody put their shirt on and got a hostile response. It is a learning process, and some of the people, especially those who have been on the receiving end of some kind of condescending treatment, can be touchy, which is understandable. That’s where I have to know that, if I’m truly helping somebody it’s for *their* benefit, not mine. It’s not like I’m being especially heroic if I’m helping somebody. And, again, they might not need it. I agree, the communication part is important. That’s why I’ve put myself center stage here in this whole process. Some might think — aren’t you totally blowing your chances for being employed by presenting yourself as

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As a teacher, this was kind of a terrifying moment. I was just starting to be more open about my vision impairment, and I was teaching a large lecture course in women's history, and I brought a bunch of slides with me. And for some reason I didn't look at them closely enough before I went, and I was putting slides up and I had no idea what they were. It was terrifying; here I've got this whole room full of people waiting and expecting me to illuminate them. So, what I ended up doing is being forthright about my disability, and I said, "okay, talk to me about what's on the screen there." And this room of about 75 people started talking about the slide. And I said, "let's describe what's up there." And somebody said, "well, there's a tree, and I think there's a snake next to it, and a woman is sitting there." And then somebody else said "no, that's not a snake." And pretty soon the class was having a conversation. I knew what the slide was once they started talking about it — and what was great about it was that I knew from the readings they had done for the course that there were certain elements from the reading that they were picking out from the slide, so that I could say "Oh yeah, remember that in the reading there was something about snakes. What did you learn about that? What was its relation to witchcraft?" And what happened in that room was magical because, instead of me being the one who gave them the information that they passively took in, the students were engaged — not just with me but

The biggest disadvantage to being blind is not being able to drive. It's a hassle. Honestly, disability is just a little bit of an inefficiency. And that's an example of an inefficiency.

I mentioned some of the things that are pluses. One is the ability to do things quickly. I am taking a public speaking class, and part of it is critiquing other speakers. There was one essay for that, a bit over 800 words that I wrote in 45 minutes. And when I did the spell check, which I usually have off because it keeps telling me that a lot of the technical terms are wrong, it was perfect. So, there are times — like that Jaguar — when I'm on, I can easily go 90 miles an hour. And this was an asset from before the Lyme disease, but it's also more true now.

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societies.

However, I see independence as doing whatever it takes to realize and understand how you can operate at your highest efficiency, not based upon reliance of others.

I like to say, in my sensory work, that sight is sort of a first-