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So, openness in education and the future of education. "Open" is a word that has a lot of different meanings, and "education" has several as well. So let's start very quickly by getting some terms out of the way before we move on with the talk.

For over a decade now, "open" in this educational context has been an adjective used to describe different educational artifacts—things like textbooks, resources, and courseware. Used in this way, openness is really talking about teaching materials that are freely shared and that come with permissions to engage in what I call the four R activities: reuse, redistribution, revision, and remixing.

While the nouns differ—open content, open educational resources, open textbooks—the operational actions that go with each of those uses of the word "open" are the same. It's really about sharing, about being generous with other people, and about giving—whether you're sharing your course content or even moving over into the realm of open-source software and sharing your source code. Openness is really about being generous. It's about overcoming the inner two-year-old in you that screams "Mine! Mine! It's mine, I want to keep it. I don't want you to have it."

Unfortunately, law and policy are increasingly enabling us in our fit-throwing, letting us scream "Mine!" ever more loudly, letting us throw ever larger fits, and giving us bigger toys to hit each other with. Even worse, there's this whispering in our ear that says, "It's okay. Everybody's selfish. People sue each other all the time. You can do these things. That's acceptable behavior. It's legal." This is not a good situation. We as educators are not immune either. You can see this kind of thinking in your colleagues down the hall, maybe in your administration. It's not completely pervasive, but these ideas—that it's okay to be selfish, it's okay to sue people—are unfortunately common.

So what is the role of openness, having given that term a little definition, in education? I think this question is actually really insidious because it implies there could be a large role for openness in education, a small role, a primary role, or you might not need it at all. When in fact, I want to argue that openness is really the only means of doing education. You can't talk about education without talking about openness. If there's no sharing—if I'm not sharing what I know, if I'm not giving you feedback, if I'm not engaging in this give-and-take with you—there is no education. Education is inherently an enterprise of openness and sharing and generosity.

So I would argue that education, properly considered, is this relationship of sharing between two or more people. In the definition of openness and in the definition of education, we see this common theme of sharing. We say that the successful educators—the teachers who are the best teachers—are the ones who share the most completely with the most students. That's our definition of what a successful educator is.

So how is it that new media and technology are affecting education, openness, or our ability to share? There are great opportunities here, and let me talk about one of them very briefly: expertise. In other words, the things that we know, the things we know how to do, the attitudes

we have in terms of ethical behavior—things like that—are non-rivalrous. In other words, they're not competitive. I can give some of my expertise to you without giving it away. I can share that with you without losing it. You probably know this rather famous quote by Jefferson: "He who receives ideas from me receives instruction himself without lessening mine, the same way I can light his candle without the fire of my candle being taken away from me." It's a good thing that teaching works this way; otherwise, teachers would all be like honeybees who can sting one time and then die. You teach someone and then you wouldn't know anything anymore, and that would be a problem for the advance of society and civilization.

So knowledge has a special property: you can give it without giving it away. You can share your expertise, you can share of yourself without losing part of yourself. It's very important. Expressions of our expertise, however, are different—like expertise that you put outside yourself and capture in a book. If volume five is off the shelf and is missing, I have to wait for it to come back before I'm able to gain access to that expression of your expertise. Well, I should say expressions really aren't different now. We've been talking about new media and technology, and digital expressions of expertise are non-rivalrous themselves. So Larry's book *Free Culture*—if you want to read the printed version and it's missing from the shelf, you have to wait. But everyone in this room could go to the website and read the online version of the book at the same time. When that knowledge or that expertise is expressed in a digital way, it no longer is a resource we have to compete for access to.

This advance in our ability to give without giving away is almost indescribable. It's the first time in human history that we find that both expertise and the expressions of expertise are able to be given without being given away. This gives us an unprecedented capacity to share at a scale that we've never been able to share before. And we can substitute the word "educate" in here as well. This technology gives us an incredible opportunity.

Now, I will say parenthetically—although it's been handled very well in the morning session and will be handled well the rest of the day, I'm sure—education involves more than just sharing expressions of expertise, of course. The internet's pretty good at enabling these social interactions and the other things that we consider important parts of education. But I do want to focus on this idea of content. Technology, for better or worse, gives us great new capabilities, but technology never is a one-man show. Technology always plays opposite its nemesis on stage, which is policy.

Going back to tell a story for a minute: I love the expression "web minus 10" mentioned earlier today. In the 15th century, we saw what is arguably the greatest technological advance ever—the printing press. The difference between the printing press and the internet, of course, is that with the printing press, things went from being very expensive and slow to produce to being relatively fast and inexpensive. But now we go from being relatively inexpensive and pretty fast to produce to being immediate and basically free. The difference from before the press to after the press and the difference from before the internet to after the internet are really two large things. But in the 15th century, we also had the most draconian restrictions you could ever imagine on the dissemination of information—something that makes a global DMCA look like, as my youngest girl would say, a parade of rainbow sparkle ponies.

Gutenberg's masterwork is a 42-line edition of the Bible—the Vulgate, to be more specific, a Latin Bible. While the press showed that we could mass-produce Bibles at scale, they weren't being produced in the vernacular, in the language that normal people could understand. There was a great demand for access to the word of God in English or Italian or whatever language you wanted—something you could understand. Now that we know the press can print these things affordably, why can't I get access to that in a language I can read? As this technology developed and advanced, instead of obliging that demand, the church ramped up production of indulgences—slips of paper you could buy to receive forgiveness of your own sins or those of loved ones in purgatory. They also pushed for stricter laws against access to vernacular copies of the scriptures. This English law from the 15th century didn't talk about possessing the scriptures—just reading them in the mother tongue. If you did that, you'd forfeit land, cattle, life, and goods from your heirs forever. The DMCA seems soft by comparison. The first year that this law was in place, 39 people were not only hanged—they were then burned after they were hanged.

So we have this collision happening in the 15th century between this incredibly powerful new information technology, huge demand from the people, and outdated ways of thinking reinforced in law. This collision resulted in that series of events we generally refer to as the Reformation—a time of fairly large social upheaval.

Unfortunately, our day isn't very different. We can tell the same sort of story even just in the education context. Take course management systems like Blackboard or Desire2Learn. This is an online technology, the content of which is capable of being shared with everyone in this non-competitive way. But this technology has turned against itself with passwords, restrictions that keep people out, that withhold and conceal instead of sharing, being generous, being open, being giving. Not only do they conceal, but they also delete all the contributions that students make at the end of term. We like to joke that if Facebook worked like Blackboard, every 15 weeks it would delete all your friends, unsubscribe you from all your groups, and delete all your photographs. That's not a way to build a community of people.

Technologies today have a lot of potential, but they're not being used appropriately. In 2008, we had a case of a professor at a university in the southern United States who filed a lawsuit claiming copyright of his lectures. Because they were copyrighted, all the people taking notes in his class were creating derivative works of his copyrighted material. As the owner of the original, he claimed the right to control how those were used. Why are you in education? It really makes me wonder—can those students ever become professors? If I stood up to teach, wouldn't that be a public performance of some derivative of his copyrighted work? Or what if I took a job and applied the skills I had learned in his class? If someone observed me, could they reverse-engineer what he had taught me? It's an outdated way of thinking.

In terms of demand, we have about 120 million people enrolled worldwide in higher education institutions right now, and that's expected not to grow up to 150 million, but to grow by 150 million in the next 25 years. In other words, we're going to more than double the amount of people trying to get access to higher education. My favorite way of summarizing this is that in India alone, this means 2,400 new universities in the next 25 years—or building, hiring, staffing, and opening a brand-new university every two weeks for the next 25 years. You can't do that.

Again, 500 years later, we have this collision between powerful new media—the internet—ravenous demand for access to higher education, and outdated ways of thinking about protecting intellectual property, copyrighted material, and a culture of withholding instead of generosity, sharing, and giving. Education is right on the rickety edge of its own Reformation. If you've seen Anya's forthcoming book *DIY University*, she talks about the cost side of this. We're at a troubling point, and it all hinges on openness. Openness is what is missing.

As we stop and look at ourselves and spend some time introspecting, we think about this great new technology we've been blessed with 500 years later. Have we learned the lesson of 500 years ago? As we take this technology and this opportunity to share on this scale, will we use it to be more open, or will we turn it back against itself and use it to keep the status quo, enforce that status quo with policy, maybe with state and federal law? Are we really going to fight this fight again, or are we going to wake up and understand that we need to be more open?

I want to submit to you that as you think about new media and technology and how those intersect with education, the only proper role for technology in education is to increase our capacity to be generous—whether that's giving feedback, sharing materials, or engaging in discourse, discussion, argument, debate, and conversation. Collaboration matters. You don't just have to give your resources; you can also give your time. There are a lot of things you can give, and to the extent that we do give and to the extent that we are open, education will be improved.

Thank you. [Applause]