



Finding a Trustworthy Path Through THE CLOUD

Brad Smith, president and chief legal officer of Microsoft, made two public appearances at Marquette Law School on November 15, 2016. Smith delivered this academic year's Helen Wilson Nies Lecture in Intellectual Property and participated in an "On the Issues with Mike Gousha" program. Smith is responsible for Microsoft's corporate, external, and legal affairs and leads a team of 1,300 professionals working in 55 countries. Here are edited excerpts from his remarks during these appearances.

The Arrival of the Fourth Industrial Revolution

In the late 1700s, the First Industrial Revolution, powered by the steam engine and locomotion, permanently changed human imagination. For the first time, people could build a machine that traveled faster than a horse, which had defined the fastest speed at which humanity could move for literally millennia.

This First Industrial Revolution was in many ways exceeded in importance by a second wave of innovation, which began in the 1870s. By September 1882, the Second Industrial Revolution brought the first hydroelectric power plant to the United States in—I'm proud to say—my hometown, Appleton, Wisconsin. It brought other miracles as well. Mr. Harley and Mr. Davidson, by 1903, were working on the first motorcycle just down the street from where we are today in Milwaukee. The shift from horses to engines for locomotion, of course, meant sweeping changes for the economy. In 1905, 25 percent of all agricultural produce in the United States was used to feed horses. But 20 years later, the population of horses had fallen from 6.5 million to 1.5 million.

The jobs that had existed in urban areas to feed horses, to care for horses, to drive horses, to clean up after horses had disappeared. The effects of this wave of innovation were also felt outside of the city. By 1925, the entire Midwest was experiencing an agricultural recession. Each horse that worked in the city had consumed the equivalent of four acres of produce. Fewer horses meant less need for food.

You can see the way these things reshape the economy and society. We saw it again in the Third Industrial Revolution, a revolution which we at Microsoft participated in. A revolution that changed how people create, the way they connect, and the way they learn from each other.

In many respects, I believe the single most important contribution of the Third Industrial Revolution is the foundation it has laid for the Fourth Industrial Revolution, which is beginning to unfold. It's an industrial revolution largely founded on three broad sets of technological changes.

The first is in the physical world, as we see advances in robotics, new materials, and 3D printing, which will change manufacturing and autonomous vehicles. If that were the only change coming, it would be of huge importance. This new era will also bring changes in the world of biology, founded on genomics and genetic engineering, that will change human health, and agriculture, and the care and feeding of livestock. And we're seeing changes in the world of digital technology, from the internet of things to blockchain and a variety of new, disruptive business models. ▶▶



Brad Smith



These industrial revolutions were all fundamentally driven by one or two critical, enabling technologies—technologies that drove everything else. It was the steam engine for the First Industrial Revolution. It was electricity and then a combustion engine for the Second Industrial Revolution. It was the microprocessor for the Third.

When we think about all the advances of the Fourth Industrial Revolution, they all depend on one thing: the cloud, which enables us to make use of massive computing power in data centers distributed around the country and, indeed, around the world. This is why, as we look ahead to the future of law, to the future of public policy, it is important to think about the broader issues we will need to address.

“A Cloud That Is Trusted”

We need to build a cloud that is trusted, responsible, and inclusive. And every one of these areas involves new challenges and new changes for important aspects of the law, including intellectual property.

Let me first take the theme around trust. All of our data are moving to the cloud. As we’ve thought about what we need to do to ensure a trusted cloud, we believe it’s important to be clear and pursue laws that ensure security for our information; protection for our privacy; transparency so we know how our information is being used; and compliance so that those of us who are in the business of running data centers, providing cloud services, and serving as custodians of information are managing your information so that it is compliant with the law.

In many ways, all of these things often boil down to one thing. I’m so often struck when I meet with

people around the world—it almost doesn’t matter what culture or country—people basically want the same thing. They basically want one thing. They want the confidence that the traditional protection they have had for their information stored on paper will persist when their information moves to the cloud—not more protection, not less protection, but a comparable level of confidence.

“For Those of Us Who Are Lawyers”

For those of us who are lawyers, there is a lot of work ahead of us. There’s a lot of work that will align labor laws with the changing workforce. The country’s labor laws, I would argue, are very much a product of the twentieth-century economy. Under federal labor law, every person who works is one of two things: either an employee or an independent contractor.

And yet, when you look at the people who are working for companies like Uber and Lyft, it becomes increasingly difficult to conclude that they fit into either one of those two categories very well. And so, therefore, people are starting to suggest that our labor laws need to evolve. We should add new independent-worker classifications that will better encourage innovation by employers and protection for employees.

And, as we do that, as people work in this variety of different situations, there are opportunities to think about new models for worker benefits as well—more affordable benefit models that can be used with people, especially if they’re working for multiple entities at the same time. And there’s so much opportunity for experimentation in the private sector and among state and local governments.



Technology in Service of People with Disabilities

As we think about a world where technology is ubiquitous, we constantly need to keep in mind, I believe, the need to ensure that technology addresses the needs of people with disabilities. The reality is that there are 1.2 billion people on this planet who have some kind of disability. That's why we're seeing more laws and regulations around the world.

That's why we're seeing more focus, rightly so, on technology companies such as Microsoft, so that we do a better job of developing technology that can be used by people who may be blind or visually impaired, who may have other physical disabilities, who may have cognitive challenges. We have to recognize that technology can make or break their ability to be successful in the workforce.

America: 4½ Percent of the World

We live in a world where the American people represent only 4½ percent of the global population. Our future depends on understanding the rest of the world. In fact, we live on a pretty small planet. But I do believe that with the right kind of thought and discussion, and innovation in the law, and with better use of technology, we can ensure that this isn't just a small planet but a better world.

Dealing with the Consequences of "Disruption"

I sometimes get a little bit of heartburn because I sometimes find, especially in California, that people talk about disruption as if it were an end and a goal

unto itself. And I don't think it is or it should be. I think change is inevitable, but we should address the change that will be good and then work through the adverse consequences.

The Uneven Geography of Digital Inclusion

There are fundamentally two different aspects to this phrase, "digital inclusion." One is whether people have access to digital technology. I think it's fascinating if you look at a map of Wisconsin and look at what the state has put out in terms of wireless broadband access; you see in the southeastern part of the state high-speed broadband access, and you see in the northern part of the state no broadband wireless access at all. It's very different over the state. So there's the matter of access to technology.

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But ultimately I think that the bigger question is to provide people with access to digital skills. Wisconsin is actually like most states in the United States. There are 500 high schools in the state. In 2015, the number that taught the advanced placement course in computer science was 80, so the students in 420 of the high schools did not have the opportunity to study what the students in 80 did. And those students in those 80 schools are given a head start in really mastering the language of tomorrow, I would say. ▶▶

The Job Boom for Those with Four-Year Degrees

If you look at the data about job creation since 1989—meaning through both Republican and Democratic presidents—you will see that the number of jobs in the United States held by people with a four-year college degree has more than doubled in the last 27 years, up 107 percent. The number of jobs held by people with a community college degree has gone up 47 percent. The number of jobs held by people with a high school diploma or less has fallen by 13 percent. There are 7.3 million fewer jobs in the United States today than a quarter century ago for people who did not go beyond high school.

But there is cause for optimism. Our opportunity is to help people of all ages move up that ladder by developing skills and getting certifications that show prospective employers that they have what it takes to be hired.

Managing for the Long Term

We're not trying to create products, frankly, for today and the beginning of 2017; we're

creating products that will probably see the light of the day in the year 2020 and 2022. The one thing I've learned—and it started when I worked with Bill Gates and then followed with Steve Ballmer—is to focus first on the long term. It eventually arrives.

Privacy Versus Security

It is one of the profound questions we must grapple with, as a company that has more than 100 data centers, in more than 40 countries, holding the personal information of roughly 1.2 billion people. We defined four principles to guide every decision regarding our customer's information.

- We will keep people's information secure.
- We will protect people's privacy, with a recognition that it is their information, they own it, and we are their custodian, and we are responsible for its safety and privacy.
- We are responsible for managing people's

information in compliance with the law around the world. We worry about compliance, so our customers don't have to.

- We will be transparent in how we handle data, so our customers know what is happening to their information.

When questions arise, we rely on these principles.

It is an approach that has led us four times in the last three years to file lawsuits against our own government, the U.S. government, when we felt that we needed to stand up for transparency or privacy, either for American citizens or for our customers in other countries.

Coping with Outdated Laws

The Electronic Communications Privacy Act was passed in 1986. The Computer Security Act was passed in 1986. Basically, the last big reform of the tax law was passed in 1986. The last big amendment to the immigration law was in 1986. I wish I could go back to 1986. Ronald Reagan was president, Tip O'Neill was speaker of the house—you had two parties, but two leaders who figured out how to hammer things out. We have just lived through three decades of enormous technological and economic change, and I would argue the law just hasn't caught up. And until it does, it puts enormous pressure oftentimes on the courts to apply old laws to new facts, and that's a tough thing to ask the courts to do. It does sometimes call on us to say, "Hey, we're prepared to go to court to try to get an interpretation that we think makes sense for the era in which we live."

The Importance of Universities

You will not find a vibrant tech community anywhere in the world that is not next door to a college or university with a good and probably growing computer science department. And the University of Wisconsin at Madison has had one of the leading computer science departments, but it's been shrinking over the last several years. I think that's worth at least talking about.

"The Intense Pursuit of Curiosity"

The piece of advice that I would share for law students is actually a piece of advice I would share with almost anybody. I think about the people that I've had the opportunity either to work directly for or interact with, whom I would call truly remarkable. I put Bill Gates, Steve Ballmer, and Satya Nadella in that category. I'd put German Chancellor Angela Merkel or Justin Trudeau of Canada in that category. I've been so struck

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that there is one trait that every one of these truly remarkable people shares: It is the intense pursuit of curiosity, constantly learning new things, and constantly asking new questions.

When Satya and I met with Chancellor Merkel a month ago, she asked questions for an hour and a quarter: Where do we see technology going? What does it mean for this part of German industry? What does it mean for these issues in German society? Any day you can use whatever position you have, whether it's a position in a company, or a government, or just as somebody who can read a book or be on the internet, to constantly ask new questions and learn new things. Curiosity, I think, is quite possibly one of the most powerful traits in the world.

What Books Have You Read Recently?

I'm about two-thirds of the way through a wonderful book, *American Ulysses: A Life of Ulysses S. Grant*, by Ron White. I think he's one of the greatest American presidents that most of us don't fully appreciate. He is somebody who had humble origins, was sort of plucked out of obscurity, and rose to huge success in the Civil War. He helped the country through what was almost certainly the most tumultuous time in its history politically—the presidency and impeachment trial of Andrew Johnson, and then Reconstruction. And there's this fascinating part of the book, when you start to

read about Grant's presidency, and a quote that says, in essence, that the two great issues of his presidency were how to achieve economic growth in a difficult time and how to address issues of race and diversity when views and feelings were so fractured. Consider that.

The Need to Improve Infrastructure

I thought it was fascinating that in a year when the two presidential nominees didn't really agree on very much, they did agree on the need to improve our infrastructure. It is odd to me that we can drive down a highway in South Africa that is bigger and smoother than one in Milwaukee or Seattle or somewhere else in the United States. We do have real issues with our bridges, our roads, our airports. I don't know why we feel in this country that it is simply impossible even to dream about the kind of high-speed trains that people in Europe take for granted—even though there are parts of this country, including between Seattle and Vancouver, where this would just generate, in my view, a lot more economic growth. It's always controversial, and you have to ask where the money will come from, or whether it should be in tax incentives. But take me at the age of 57. Fifty years ago when my parents were driving me in the car, we were probably on some roads that are in a little better condition than they are today. I don't think that's the infrastructure we should leave to our kids. We should aim higher than that. ■

