Technology and Democracy

A presentation by:
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Thank you and good afternoon. It's a great pleasure for me to be here today to discuss technology and democracy.

Now, before I begin I should mention that I'm not a scientist. And I'm not a technologist. I was trained as a lawyer.

So I'm used to speaking at great length on topics about which I know very little.

Let me start by making an obvious observation: We live in an age of swift technological change. We take that for granted. But consider for a moment what this change really means.

By the time we finish our discussion – and this is not a threat to filibuster – close to four thousand new telephones will be installed around the world, one every second or so.

About 7000 personal computers will be installed -- almost two per second.

And about 2000 new customers will sign up for cell phones.

This rapid pace of technological change has led to the common suggestion - quite valid - that we should view technology as a democratizing force, because it gives more power to the individual and permits the wider and faster dissemination of information.

To be sure, that's true. But viewing technology only as an instrument seems, to me at least, to miss the more complex relationship that exists between science, technology, democracy and competition.

It may be more useful to conceive of them as the four corners of a square, with all the corners connected by a web of diagonal line, rather than thinking of technology as a force that propels democracy along the straight line from past to future.

In other words, democracy and competition are not merely propelled or strengthened by technology, or even the underlying science that produces new technology.

Rather, democracy and competition are themselves products of the core scientific method.

Because the pursuit of modern science depends on the existence of individuals empowered to discover the truth. It renders hierarchies largely irrelevant. And from that basic change in the manner in which truth is discerned, individual
choice is enhanced in the scientific and less scientific realms of politics and economics.

Think for a minute about why the Scientific Revolution arose where it did, when it did. And not, for example, in China, Islamic culture or Classical Greece, despite their considerable scientific advances.

There are many theories: The arrival of technology in the form of the printing press; the growth of universities; the enhanced status of scientists; the emergence of religious pluralism. Let's focus, however, on the relationship between individual discovery and hierarchy.

Everybody here knows the story of Galileo Galilei. But let me tell you that story from four different perspectives.

For many historians, the starting point of the Scientific Revolution comes with Galileo, who was born in Pisa in 1564, and died in 1642 (the same year that Isaac Newton was born).

In 1609 Galileo used a telescope to observe the planets and became convinced that the Copernican theory of the universe was true - that the planets revolved around the sun and that the earth itself moved. Galileo's observations contradicted centuries-old dogma.

Few took him seriously. In fact, a number of Aristotelian scholars refused even to look through Galileo's telescope to see the moons of Jupiter, insisting that nothing they saw would have any real meaning. This is very important. These scholars felt that if there was a conflict between what they believed and what they saw with their own eyes, what they believed must take precedence.

Galileo took a different view. He believed that he could learn from what he saw.

This represented a fundamental shift in world view.

The authorities decreed the Copernican theory that Galileo had endorse "foolish and absurd" and declared it "formally heretical."

In 1633 Galileo faced the Inquisition. Convicted of heresy, he was ordered to renounce his opinions and sentenced to prison.

Galileo's inquisitors, and those academics who refused to observe the universe for themselves, preferred the revealed truths offered to them by the Greek and Roman philosophers of the past, rather than the discovered truths now available
to them if they would merely come to believe that a single individual could discover scientific truths not derived from recognized authority.

In other words, the trial of Galileo was a struggle between two ways of divining truth. And while the philosophers of the past won the battle, Galileo and the forces of scientific inquiry won the war.

With the Scientific Revolution, truth was no longer the preserve of a political or religious hierarchy.

In the realm of the scientific, it became "findable" by anyone.

This is the beginning of a profoundly "democratic" tradition: Think of it as Galileo the "democrat." (Small "d").

So I don't believe that it is a coincidence that the Scientific Revolution - the era from Copernicus (1473-1543) to Newton (1642 - 1727), was soon followed by the great 17th Century philosophers of the Enlightenment: Voltaire, Rousseau, Locke, Kant, and Hume, from whose ideas in turn arose the great democratic movements of the 18th Century, including our own American Revolution. 1776 was a key year, marked by both the Declaration of Independence and the appearance of Adam Smith's The Wealth of Nations. In many ways the political and economic achievements of 1776 were the legacies – the intellectual heirs – of the Scientific Revolution.

Reflecting on why he was drawn to the study of physics, Stephen Hawking once noted that in science, "It doesn't matter what school you went to or to whom you are related. It matters what you do."

Hawking's sentiment is a clear and unequivocal confirmation of the Scientific Revolution's democratic implications. By employing the proper methods of experiment and observation, anyone, from anywhere, can lay a claim to discovery. Hierarchies dissolve.

In the Medieval world noble blood imbued the King with divine rights and an unshakable claim on truth. Once the King lost his place as the unquestioned source of even scientific authority, other ways of finding the truth would soon - and inevitably - follow.

Democracy, innovation, competition.

They are all ways of finding truth.

And so, not surprisingly, the idea that any person could discover the scientific truth was followed by the idea that people other than the King could discover
political truth - first a small group of white, male landowners, then an expanding group to whom suffrage and civil rights were too slowly extended.

From this, we should conclude that the Scientific Revolution changed not only how we view our world, but how we govern ourselves; how we make economic decisions and how we encourage technological innovation.

There is a second way, however, to consider the story of Galileo.

Suppose, for a moment, that Galileo had been living in a democracy. Suppose there had been a dignified and serious debate about whether the earth revolved around the sun and, after a fair campaign. Galileo’s findings had been put to a vote in which the majority of voters concluded that Galileo was wrong. But Galileo wouldn’t go along.

In this way, Galileo, who in our first story, is a force for democracy, becomes Galileo the "dissenter."

So the political legacy of the Scientific Revolution includes not just democracy, but also the role of dissent in a democracy. Individual rights versus the ability of the majority to discern the principles of political science, which brings us to James Madison.

Our founders very consciously created a republic, not a pure democracy.

In The Federalist Papers, Madison pointed to two ways in which a republic is distinguishable from a democracy: first, in a republic, government is delegated to a small number of citizens elected by the rest; and second, a republic may be extended – Madison believed -- over a greater number of citizens and a broader expanse of land.

The first difference, suggested Madison, has the effect of refining and enlarging the public views by "passing them through the medium of a chosen body of citizens, chosen for their superior wisdom and love of justice."

Madison also believed that the sheer size and geographic scope of the United States – even when the country consisted of just the 13 colonies -- would make it difficult for sudden majorities to overwhelm the rights of a minority.

Why? Because in the 18th and early 19th Centuries information traveled slowly; very slowly. When Thomas Jefferson was president, the journey from his home, Monticello, to the White House was an arduous trip on horseback that consumed three days.

Perhaps the limits of technology seemed so obvious that Madison felt no need to
acknowledge them, but he was implicitly relying on the state of technology as a counter-majoritarian protection, not - as we so often think of it today - as a force for democratization. Because he thought it would take so long for information to travel from Massachusetts to Virginia or Georgia.

Today, the technological filter between the governors and the governed is rapidly eroding. Today, Monticello is a two-hour air-conditioned car ride from the White House. Fax, television, or e-mail make even that distance largely irrelevant.

Soon there will be nothing preventing a fisherman in Anchorage from carrying on an extended, real-time debate with a farmer in Dubuque, or a teacher in New York City, or a rancher in Wyoming. Location will lose its meaning. Living on the East Coast will confer no special privilege by virtue of being closer to the "center of power." Although I, for one, hope there’s never an adequate cyber-substitute for making a trip to Aspen in the summer.

And as a matter of political structure, Madison’s views have gradually eroded. The people, not state legislators, elect members of the United States Senate. And the next time the Electoral College overrides the popular vote to elect a president, it will almost certainly be abolished.

Of course the independent judiciary and the Bill of Rights stand as important protections of dissent and difference. Still, the world of politics and government must continue to confront the political legacy of the Scientific Revolution - democracy and the role of dissent in a democracy.

Because on the Internet, no one has the power to decide what news is fit to print. On the Internet all information is equal - even if not equally true.

The Internet might very well erase the last structural vestiges of Madison's counter-majoritarian protections and remake the United States as a kind of cyber equivalent of the Greek City-state. With the Internet we can have an instant plebiscite on any topic at any time.

Gun control. Abortion. The death penalty.

Maybe that’ll work.

But what about fiscal policy?
Would there be any value in having a referendum every morning on whether the Prime Interest Rate should be raised or lowered a quarter of a percent?

And what will this do to the idea of leadership?

Some of the implications of this are explored more fully in Elections in Cyberspace: Toward a New Era in American Politics, published by The Aspen Institute.

Speculation on the role of technology in our society brings us to a third view of the Galileo story. In 1609 word of the telescope, a Dutch invention, reached Galileo, and he set about making improvements on the instrument. That’s what he used to observe the moons of Jupiter later that year, which led to his new view of the earth’s place in the cosmos. This is Galileo the "technologist."

It was once widely believed that technology would be the handmaiden of totalitarianism, enabling governments to tighten their power over the individual. That’s the theme of George Orwell’s 1984. Ironically, 1984 was the year that Macintosh unveiled a television ad proclaiming that its computer was shattering IBM’s once impenetrable market dominance. The ad captured the spirit of innovation and excitement in the computer and technology industries in the 80s and 90s.

Today we understand that technology doesn’t prop up tyrants, it knocks the props out from under tyrant and they come crashing down.

To recap: I believe that the three versions of the Galileo story illustrate how the Scientific Revolution produced democracy, a role for dissent in a democracy, and technology. To give these legacies greater form, let me briefly address a couple of current examples: The Communications Decency Act and the opening of monopoly markets.

The Communications Decency Act came about because individuals acted in a very democratic way. They discovered offensive material on the Internet. They demanded and got fairly swift and decisive governmental action to uphold a social goal.

But the right to dissent got in the way when the Supreme Court struck down the CDA as an impermissible limitation on the right of the individual to make his or her own choices.
This was no accident: The Internet, after all, is extolled as a medium of unparalleled individuality.

The failure of the CDA – from the perspective of technology – was its fundamental failure to account for how technology affects the relationship between democracy and dissent, by failing to acknowledge first, how the Internet actually works and, second, how technology can further individual choices - even the choice to avoid offensive material.

As the Internet becomes more and more a part of our daily life, such issues will arise with greater frequency. Which is why public policies relating to the Internet need to be based on three principles:

First, public policy should be market-friendly and industry led. Because innovation is best fueled by private initiative, spurred by competition.

Second, policy makers must understand the unique nature of the Internet. Because, as the fate of the CDA demonstrates, the traditional means of promoting social values do not necessarily fit the workings of technology in cyber-space.

Third, the seamless flow of information on the Internet must be encouraged. Because the faster and more efficiently that information flows, the better the Internet will drive economic growth.

We need to address the economic legacy as well. This is a place for government to play an activist role: opening monopoly markets to competition. Because monopolies don't tend to evaporate.

This, by the way, is the fourth version of the Galileo story. I noted earlier that Galileo made improvements on the Dutch invention, the telescope. Well, it seems that some people believe that Galileo falsely claimed to have invented the telescope and then went on to exact monopoly profits because of its value to governments seeking better means of detecting invaders. Galileo’s scheme collapsed when telescopes from other parts of Europe flooded the market, destroying his monopoly.

But not all monopolies disappear so easily.

Here the political legacies – democracy and the role of dissent in a democracy – agree. Because monopolies stifle the freedom of the individual to make market choices and squeeze out dissenting competitors.

So whether you embrace the Madisonian view of republicanism -- or the brave new
world of the cyber city-state – one thing is clear: open markets mean freedom for the individual.

I like to compare economic competition to a game of leap frog. If you're a big fat frog blocking the path, there's really very little impetus to leap. No one can get around you. They can't come through you. So until somebody figures out how to jump over you, you'll probably stay put.

Sometimes technology - like the Internet - offers competitors a way to leap ahead. But governments can speed up the process by intervening to widen the path, so that others can get past.

By opening up closed markets, governments can complete the arc that begins with the Scientific Revolution, because open markets are a further expression of individual choice – the ultimate legacy of the core scientific method. Monopolies, in contrast, represent the hierarchical form of truth-seeking rejected by the Scientific Revolution.

One final point. At the middle of the square, bounded by Science, Technology, Competition and Democracy is Dynamic Change, which is the only constant.

In 1887, two scientists, Michelson and Morley, discovered that light always travels at the same speed.

This was a big deal, seen in retrospect as a key ingredient in the unraveling of Newtonian physics.

But that didn't stop Michelson from saying in 1903 that, "The most important fundamental laws and facts of physical science have all been discovered, and these are now so firmly established that the possibility of their ever being supplemented in consequence of new discoveries is exceedingly remote."

Two years later Albert Einstein used the fact discovered by Michelson and Morley to introduce the special theory of relativity, which abolished the Newtonian view of absolute time and absolute space.

From this example one thing becomes very clear: Change, which is the only constant, is also a legacy of the Scientific Revolution. And the most persistent problem with change is -- as it was for Galileo’s critics -- simply our reluctance to integrate that change into our world view.

We can't predict the future (although we may be able to do a better job than
Michelson), but we do know that these four corners of the square, with their complex and reinforcing interrelationships, are the key elements of change will continue to strengthen science, technology, democracy, and competition.

Science enables technological innovation, which furthers democracy, which favors open markets. But the relationship is far more complex than that. Each of these elements is fueled by the others and each promotes the others. Together they form a critical check list against which to measure any public policy initiatives, so that we can ensure that governments are acting in the current and long-term interests of the citizens they serve.

Thank you.

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