U.S. Senator Maria Cantwell

Speech on the Senate Floor on the Endless Frontier Act

May 19, 2021

Cantwell: Mr. President, we come to the floor today after a lot of hard work by the Commerce Committee to pass out the Endless Frontier Bill, 24 to 4 last week, and I know my colleagues from the committee will be out here to speak on this important legislation, as will the Majority Leader Senator Schumer, who authored this important legislation, and our colleague from Indiana, Senator Young. So we thank both of them for kick starting what is a very important national discussion about how much we should be investing in research and development, or what I would say is American ingenuity, or put a little simpler I just say, American know-how.

Because we are a nation of people that know how to innovate, who know how to use science to transform our economy, and we've done it over and over and over again. I don't know, maybe it came with getting in a boat and coming all the way across the ocean, you had to be an adventurer to begin with. If you had to settle the frontier you had to be innovative in your own right. If you had to continue to expand our country, you had to have a great deal of the ability to take risks, to calculate and to move forward. But somehow, somehow in the United States of America, we are blessed with ingenuity in our DNA. And we as a nation are a nation that has figured out that if we continue to partner together with those great creative minds, that the investment by both the public sector and the private sector and through our universities, and now our community colleges, and now research centers, that we can grow our economy, compete on an international level, and protect opportunity for future Americans.

So, it's been many eras of innovation. When I think about it I think about Thomas Edison and the light bulb, I obviously think about Henry Ford and automobiles, in my part of the world, we think about Bill Boeing and aviation. But innovation is so much part of our DNA that I don't think we sometimes absorb the littler things that we might not know about. People probably don't know about Nathan Stone Stubblefield, a Kentucky inventor who in 1902 demonstrated the first wireless transmission of communication using magnets. So I know we have a big wireless industry today, but people probably don't know that in 1902, a Kentucky inventor basically helped turn the page on a new generation of technology. Or that a Louisiana Professor J. Lawrence Smith invented in 1850, the microscope. When you think about how much that led to the important discussions of science and healthcare for us as a nation. Or that in Indiana, a state police officer invented the breathalyzer test, a gentleman named Robert Borkenstein, who basically just said, we don't know what's happening here and he introduced and created the breathalyzer test. That is what America is. America is the spirit of know-how and getting things done.

In fact, a report said, “Americans prioritize being a world leader in scientific achievements more than other global communities.” That is from a Pew Charitable research report done by Cary Funk and several other authors last September. The report goes on to say, “Seven in ten Americans believe that it is very important for the United States to be a leader in scientific achievements.” So clearly, what makes us different than other nations, is that we are willing to put significant American tax dollars on the table, to ensure that national investments and research in science and the development of our ecosystem takes place. That investment is matched with a good education system, capital formation, and as I said,

private sector investments in research and development, and all of that has continued to make us the world leader in science and technology innovation.

It also helps us create job growth here at home. The question before us today is how much research and development should our government be doing, given how important the practical sciences and engineering are to the next generation of Americans? And we're here to discuss this proposal by Senators Schumer and Young, who, as I said, have been working on this concept for years, because no doubt, we have fallen off the pace. That is to say, the pace of scientific research investment at least as a percentage of GDP. Even though President Bush in his second term tried to signal the importance of this investment, he issued a report basically calling America's competitiveness initiative the leading world innovation agenda, that was in February of 2006. In fact, at that time, President Bush said, “The role of government is not to create wealth, the role of government is to create an environment which the entrepreneurial spirit can flourish in which minds can expand, in which technologies can reach new frontiers.” So George Bush had it right, he knew that this competitiveness issue was starting to challenge us from a competitive perspective. And he knew that we needed to make a bigger investment.

Unfortunately, the two attempts that we've had, America Competes in 2007, and America Competes in 2010, really was a goal by us to basically double the NSF budget within a seven year window--and while we started out in the right direction, we had a huge economic downturn, and these goals were not met. If we had kept our promises to the science agencies, we would have invested $80 billion more in innovation investments over the last 14 years than we have done today. So the challenge that we face now is that after decades of not living up to what had been outlined for America Competes, we now know that it is an environment we are facing, much more aggressive competition.

We have to think about the lack of investment that we did not realize in the context of how long it takes to do technology breakthroughs. If you look at just one example, the Internet as we know it today. Literally in 1960s, the ARPANET was first talked about. You took us to the 1990s to really, with the University of Illinois and Marc Andreessen, to affect what we would later know as hypertext links and a browser. Today, what it means to us is more than $2 trillion annually to our economy. So when you think about the investments we're asking our colleagues to make today, we have to consider that in fact federal dollars for R&D is near its lowest point in 60 years as a percentage of GDP.

So I can't say that we are going to discover the next Internet, but I can say that if we continue to under invest in this. We will be shortchanging generations of innovation. It is no doubt that key investments in research and development in other parts of the world are certainly getting attention. Since 2000, research and development in China has grown by 1,600%, Taiwan and Korea by 400%, while the US, just 150%. So, that's a 20 year window of looking at this issue. So Americans believe that competition is good. We believe that competition helped drive innovation. So you won't find me as one on the floor obsessed about other nations, as much as a perspective here about what the world market opportunity represents. And if we’re not making the investments here in science and technology and innovation, not only are we missing opportunities in our own country, we are missing opportunities around the globe.

So the rest of the nation in an information age is not going to sit by idly. And we have to think about how we move ahead on critical technology that helps us in all sectors of our economy, helps us with supply chains, and certainly with national security. So what we're talking about here, with this bill proposed by our colleague Leader Schumer and Senator Young is more than doubling of NSF budget in five years. It is the start of trying to catch up. It is also $17 billion investment in energy innovation, a key

sector of our economy, where we need to make continued transformation. That represents a 28% increase in some of the projects from the Office of Science in things like RPE that could see investment.

What we're also investing in which our colleagues were very adamant about, and very convincing, is that we also needed a new tech Directorate. That is to say that our research, very good with basic, very good with applied, that we actually had to get better with user implementation of our science and spur more innovation at a more rapid fashion. So we're investing between this new tech Directorate and tech hubs, nearly $39 billion to help stimulate the faster translation of our advancements into real innovation. This is something the committee thought long and hard about. We took testimony from experts who have worked on innovation issues for many years. In this bill, we also increase the protection of intellectual property from our universities. We are helping our universities do better tech transfer, but also protect their intellectual property. In an information age when so much is published online, if other nations hungry for development can read our research, and act and effect on it because we haven't patented it, then we need to do a better job of patenting our innovations and helping our universities.

Our universities are unbelievable research institutions, and helping them spend more time on tech transfer is something that we've done in the Pacific Northwest. A new program ushered in there literally led to 20 startups from research that had been done but just hadn't been translated into new areas. We also are trying to help get more regional diversity to our research and investment dollars. There's about 25 states in our nation that previously qualifed for a program that says they should get a share of research dollars. This legislation says all the money being spent here, 20% of it should go to that, what's called EPSCoR efforts, which is expanding research and development into those states.

And for the first time, we will have over at NSF, an Office of Diversity. An office to focus on the lack of women and minorities in science, and to make real progress on this issue. People see the chart behind me, and yes it's no mistake the picture we picked. The point here is that we know from NSF's own research that we can't be passive about this. Literally the University of Washington got an NSF grant that helped them study why we're not making more progress with women and minorities in science and innovation. And they came back with, it can't be passive. You can't just put dollars on the table for STEM, you can't just, you know, put a few programs in place--that it has to be an active approach to changing many aspects to the way we educate in science. I'm very proud of the University of Washington on this point, because they made changes. And now, those who are teaching in what are considered STEM Sciences at the University of Washington, 70% of them are women or people of color. So we have changed what the face of teaching science looks like at the University of Washington. And now, we have to change some of the criteria and curriculum so that we can continue to attract more people. This bill is a very good step in that direction.

So what are we trying to achieve? We're trying to achieve what the NSF director Panchanathan is saying. He's saying that we need, in this next decade, and decades to come, we need innovation everywhere, tied to opportunity everywhere, tied to our universities. That is what we're trying to do in advancing this legislation. We processed over 100 amendments in committee, and a broad range of input from our colleagues. We will, I'm sure, hear and regular order process many more, but hopefully these amendments, which--and more of the substance of this underlying bill we'll go into in detail--we have to remember what our goals are with this investment: to stay competitive, to create future jobs, to help our economy by unleashing innovation, to protect our national security, and do what Americans know how to do best. That is, use that ingenuity to help create a better future.

So Mr. President, I will see if my colleagues want to speak but we will be coming back to expand on many other layers of this legislation. We will be back to talk about semiconductors, we will be back to talk about the new tech directorate, we will be back to talk about NASA funding, we will be back. And that reminds me, Mr. President: if anybody at home is saying, "well you know, okay that was interesting. I don't really know about this, you know, American innovation." Just Google two things: you can either look at SpaceX rocket return that they did in 2015 or Blue Origin. And both of those, the New Shepard, and the Falcon, two different approaches. Literally, engineers who said if we're going to go to space, if we're going to go to the moon, if we're going to go to back to the moon and go to Mars, we need to figure out how to have returnable rockets.

Just go Google those two clips, and you will see alive and well the spirit of American ingenuity, when those engineers see that rocket returning from outer space, and re-land, because they have pulled off an incredible achievement. You will see jubilant joy and excitement over that accomplishment. I guarantee you, we will not see everything that this bill will unleash, but I guarantee you it will unleash things that will deliver that kind of excitement for Americans in the future, and we will have to be very thankful that this Congress set the record straight on the level of investment we need to achieve to keep us competitive.