TRANSCRIPT
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U.S. Innovation Competitiveness Summit – Panel 5
“Economic Impact of Tech Transfer”

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FEATURING
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Transcript By
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Kirti Gupta: Good afternoon, everyone. Thank you for tuning in this afternoon for CSIS’ U.S. Innovation and Competition Summit as part of our project on Renewing American Innovation Project.

My name is Dr. Kirti Gupta, and along with my colleagues Dr. John Hamre, Dr. Walt Copan, and Andrei Iancu, I welcome you.

This summit comes at a time when the U.S. is facing two great challenges – first, ensuring our country’s technology leadership as a world-class innovator continues; and second, the growing divide between the high-tech sectors and the rural or belt communities that yet have a potential we must fully harness.

At CSIS we are working on various initiatives and policy recommendations to address these challenges. And we believe here we are at the crossroads of fully appreciating and recognizing the urgent need to invest in R&D, innovation, science, and technology, supported by the many bills today that the Congress is considering and passing. And yet, the role of intellectual property in driving innovation, in driving economic growth is not fully understood.

We have been trying to address this topic through the whole week, and we try to take this – address this topic head-on in today’s theme at CSIS of technology transfer. We concluded a panel this morning led by Orin Herskowitz, Columbia University’s senior vice president of IP and tech transfer, and we continue this theme today with our panel on economic impact of tech transfer. We have a perfect opportunity here to learn from world-leading colleagues and experts in the trenches from the university, from the startup community on this topic.

So allow me to introduce our panelists today briefly.

Let me start with you, Lori. Lori is an engineer, inventor, licensed negotiator, and IP strategist. She is known in our circles for her comprehensive study on economic impact of tech transfer. But early in her career Lori designed and built semiconductor lasers and detectors for AT&T and Bell Labs, and Lasertron, an MIT startup. And she was an assistant director for the MIT Technology Licensing Office, negotiating a wide variety of deals for startups and small companies. Lori, I know you’re passionate about this topic and you’ve widely presented on this. I also wanted to mention that Lori has worked with local non-profits and advisors’ companies on tech transfer, and she has published empirical studies on the outcomes of tech transfer and IP licensing.

Moving on to you, Joe – can we see the videos for every panelist? Great. Joe has served – Joseph Allen has served as a professional staffer on the U.S.
Senate Judiciary Committee to former Senator Birch Bayh during the Bayh-Dole Act. He played a key part in the successful package of that landmark act in 1980 and its subsequent amendments. Over time, Joe has served in many, many capacities in this community, including the executive director at the U.S. – at the Intellectual Property Owners Association, the IPO, at the U.S. Department of Commerce, and currently he’s the executive director of the Bayh-Dole Coalition. Welcome, Joe.

And finally, Ashley Stevens. Ashley is a director of the Office of Technology Transfer and the School of Management lecturer at Boston University. He’s also been widely known in the tech transfer community for 30 years. He’s brought various innovations to public domain from universities, including various drugs, vaccines, biological innovations, and this thing of QuitNet, the School of Public Health smoking cessation website. Joe also publishes and lectures frequently on tech transfer and has had various positions at the Association of University Technology Managers. Welcome, Ashley.

Ashley Stevens: Thank you. Let me just say, Kirti, I think you said I am at BU, and I was at BU. I retired from BU about 10 years ago.

Dr. Gupta: My apologies.

It’s all to say that all of you have decades of experience together and individually in the area of tech transfer, and we have a lot to learn from each of you. I think that it would be most helpful if we could sort of tee up this discussion by saying that there’s – I kind of started by sharing that there’s this really widespread understanding of the importance of innovation today in driving economic growth. It’s after all an input that doesn’t just scale linearly like other inputs of innovation, like labor, like capital. There are technological shocks innovation produces.

But what’s really not well understood is how do we link that innovation to intellectual property and tech transfer that intellectual property licensing creates? What role does it play in the entire ecosystem of innovation? That’s the key question here that I think you all from your depth of experience can share with us in this panel.

So maybe I should start with Joe, who has been in the sort of the ground of the Bayh-Dole Act from 1980. And for those of you who are new to this, you know, Joe, I’m sure you will explain it. It’s a U.S. legislation dealing with inventions arising from federal government funding research. It was a perfect natural experiment for us to understand what happened before and after and what role did tech transfer play in driving certain innovation.

So, Joe, how about some opening remarks starting from you on the overall theme and the Bayh-Dole Act and its impact?
Well, thank you very much. It’s really a pleasure to be here. I always appreciate having a chance to deal with our colleagues at CSIS.

And this is really a critical issue. So I just wrote down a couple thoughts maybe to kick things off. And once again, the U.S. finds its technological lead being challenged by a foreign competitor. Years ago, China set a goal of overtaking our lead and studying our model to see why we were so successful. They concluded that our system of research-intensive universities and institutions like NIH and DARPA played a critical role in U.S. dominance in technology. It’s been pouring money into replicating this system ever since.

So how should we respond? We’ve been here before when Japan and Germany threatened to overtake us in the late 1970s. We learned at great cost that one critical key to turning our government-funded research into useful products was a strong, dependable patent system. Despite hundreds of billions of dollars in funding, before 1980 few federally funded inventions were ever commercialized. We had a policy of destroying incentives to the patent system by taking them away from their creators and making them available to any and all through a virtual Marshall Plan of technology giveaways.

The results were disastrous. And there’s a simple reason why. While the government funds most of the early-stage research in this country, resulting discoveries requires significant private sector investment and effort to turn them into useful products. Even with good technologies, the odds against success are daunting. Without patent protection, companies simply cannot justify that risk. And that’s particularly true of the entrepreneurial small companies which drive our economy.

Before we changed direction in 1980 with the passage of Bayh-Dole, not a single new drug had been commercialized when the government took invention rights away from their creators under its anti-patent policies. Think about that for a minute. 28,000 government-funded inventions were wasting away on the shelves, benefiting no one. Stunned by these findings, in a remarkable bipartisan effort, Congress passed the Bayh-Dole Act in 1980, which injected the incentives of patent ownership into the system. The Economist Technology Quarterly called the law, quote, “possibly the most inspired piece of legislation to be enacted in America in a half century.” More than anything, this single policy measure helped reverse America’s precipitous slide into industrial irrelevance.

Bayh-Dole allows academic institutions and small companies to own and manage inventions made with government support. It created authorities and incentives for success and got the Washington bureaucracy out of the
way. As The Economist said, the results were impressive. The U.S. regained its lead in every field of technology. Universities became incubators of startup companies, which drive our economy. Even last year during the pandemic we started three new companies and commercialized two and a half new products from academic research every day of the year. No other country comes close to this record. And in response to the most devastating pandemic in a century, our public and private sectors came together seamlessly to find desperately needed therapies.

Unfortunately, just as China is adopting our model to use against us, many here have forgotten the hard-won lessons of the past. Our patent system has been significantly weakened, and the pillars of our economy like Bayh-Dole are under attack. We’d be well-advised to remember the basics of what makes our system work. If we weaken the foundations, just pouring more money in is not going to help. Our system works, and it’s time we appreciated and protected it. That way, we can competently meet any challenges that are thrown at us. Thank you.

Dr. Gupta: Thank you, Joe. I really appreciate it. More on that later, but this was a great sort of introduction of the issue.

While there are opening remarks, maybe I will go on to you, Lori. You’ve, you know, done comprehensive studies and empirical analysis on the economic impact of tech transfer. What can be broadly learned from those takeaways?

Lori Pressman: Well, so first of all, as I attended the morning panel and I want to emphasize that I think we all know on some level it’s what you can’t count that counts. But I’m here as the counter, so the person who can think of things to count.

I’ll make this personal and say that this started about four years after I joined the MIT TLO. The financial manager of the office handed me a printout of the expenses of the cases I managed – seven figures, millions of dollars. And then she handed me a printout of the earned royalties – five figures, tens of thousands of dollars. Why did I have a job?

So fortunately, we have diligence in our patent licenses, and we especially have diligence when they’re exclusive. So when we negotiated the contracts for the public-private partnership, we required the company to agree to commercialize and to show evidence. They had to give us reports. How many people did they hire? How much money did they spend? So simply by looking at these reports, I found eight figures. So immediately that is an answer, that intellectual property catalyzes the formation of public-private partnerships which bring investment to the regional economy. Many, many startups are located in the home state of the local institution.
And then, Ashley, this is all preproduction. This is before products are sold. And then he said – this is back in the mid-90s – gee, well, what would be a rough estimate of the sales of their products? They don’t always tell us that, but they do report royalties. So if we had a royalty rate, we’d know about what the sales of the products were. And so AUTM used to publish this estimate based on preproduction and postproduction. It was tens of billions of dollars even in the mid and late 1990s.

Fast forward. It was a homegrown model. Joe Allen – we’re up to 2009 – said, gee, it would really be better to have a more formal model, something that wasn’t just homegrown. So he put together a team of U.S. economists from the Bureau of Economic Analysis that included experts in the Leontief IO model, Dave Rosner from Georgia Tech, people from the S&E Indicators, and eventually me. And again, we used the sales, the product sales from our licenses and the BEA Leontief IO multipliers to estimate gross output, GDP, and jobs. And again, fast forwarding, the most recent report which was released in 2019 shows that over a 22-year period from 1997 to 2007 – this is all – I can send the URL around – contributions of AUTM members – there are tens of thousands of licensees – to gross output is $1.7 trillion, that’s with a T, 2012 dollars; contribution to GDP, $865 billion, and supported 5.9 million jobs over this period.

Of note, because we have, you know, time series, because we can look over decades, we can compare the growth of the contribution every year, the growth of the AUTM members licensees’ contribution to GDP with GDP as a whole and with GDP of research-intensive industries. So obviously the AUTM member, you know, this model of contribution is on the order of a few tenths of a percent. However, GDP as a whole grew about 2 percent per year over this two-decade period, research-intensive industries grew about 4 percent. And the AUTM member models contribution also, perhaps a little more than 4 percent but certainly 4 percent. What’s worth noticing is that this contribution comes from products that age out of reportability. This means they’re new products. So this is telling you that new products drive growth for the benefit of all. Thank you.

Dr. Gupta: That’s super interesting. And I think you mentioned something about, you know, how does this lead to investments in the regional economy.

I would love to hear from you, Ashley, next on broader opening remarks and anything you can share from your views from your work at BU and outside.

Mr. Stevens: So I joined the biotech industry in 1980 and moved to Boston. And it’s been fascinating to observe the impact of academic technologies on economic development. As Lori said, she and I worked together in the mid-90s on the kind of macroeconomics. And since then, while, you know, she has taken
that forward, got it blessed by academic economists and accepted, I’ve kind of focused on more specific inventions.

And over this 40-year period, big corporations have basically stopped doing basic research. The days when scientists from Bell Labs, IBM would get Nobel Prizes are long gone. And the fundamental innovations are coming from public sector research institutes – universities, teaching hospitals, government research laboratories. This has been going on for a long time. I suspect not many people going to their local supermarket realize that Gatorade was invented by Robert Cade, a urologist in the fledging University of Florida School of Medicine back in the late 50s, early 60s. Even back then before the tech transfer apparatus existed, he had to make the product and start the commercial sales before he was able to sell it to Stokely-Van Camp.

I’ll look at a couple of specific areas where there’s been massive impact. First of all, let’s look at the internet. Yes, the basic design of the internet was created by Bolt, Beranek and Newman, here in Boston. They wrote the technical specs for the DOD and RFP to create the internet, and unsurprisingly, having written the specs, won the contract to do it. So they built the basic plumbing, the wiring of the internet and created the initial systems basically to connect universities and government laboratories and then military installations.

But as you go forward from that to how we use the internet every day, first of all, the worldwide web was created at CERN, in Geneva, and then the basic tools which we use every day to guide our – to do our work, web browsers and email programs, flipping documents across the country and across the world, these were created at the University of Illinois-Urbana Champaign at the National Supercomputing Applications Center. They created Mosaic, which got bought by Microsoft and became Internet Explorer. They created Eudora, the first email program that could attach documents. And then of course, Marc Andreessen, who was so irritated by what they did with the Mosaic, he’s written that he set out to create Netscape.

And then we can go forward and look at some specific tools. I mean, Google came from a research project at Stanford and was exclusively licensed by Stanford to Google. Interestingly, they reluctantly agreed to let the guys start a company because they’d been unable to get any of the existing portals to license Google. And then we can look at things like Yahoo! and Facebook created by undergraduates and graduate students at universities outside of research programs. And we shouldn’t forget Akami Technologies, an MIT spinout still located in Kendall Square, which runs about a third of the world’s internet traffic, setting up remote servers around the world. So we can see that university research has had a massive impact on the internet.
The other area I’ll talk about is healthcare. You know, universities have been trickling out healthcare innovations for years. Perhaps the single biggest one would be insulin from University of Toronto in 1921. Antibiotics, the initial antibiotics came from university research. And when I moved to Boston in 1982, Boston was a high-tech town. There was one major pharmaceutical company around, the U.S. commercial offices of Astra, before the AstraZeneca merger. And over the subsequent 40 years, I think we’ve seen that Boston has steadily overtaken the Bay Area, where genetic engineering was created, and Cambridge, UK, where monoclonal antibodies were created, and now it’s undisputed that Boston is the center of pharmaceutical innovation. Every major pharmaceutical company in the world now has a presence in Massachusetts.

And I think this is, yes, we have five or six major universities. I think much more important is that we have four medical schools, and then these medical schools have no fewer – and I know it depends how you define them – but 10 or 12 academic medical centers, a teaching hospital affiliated with the university doing basic research and clinical research. And I think these are the fundamental drivers of why Massachusetts has overtaken everywhere else in the world to become the center of pharmaceutical innovation. So you can see the impact on a local economy that academic innovation has had.

And I think you alluded to a study I’ve done with collaborators – Mark Rohrbaugh at the NIH and various other people – on the role of academic institutions not in just doing the basic research, identifying disease targets, but in taking that information and identifying drugs. And we did one study that showed about 10 to 12 percent of FDA approved drugs had their origins in public sector research. And we have an update. That was published in the New England Journal of Medicine in 2011, and I think we had 253 drugs had been identified then. We have updated that study, extended to look at the contributions of academic institutions in other countries, and we’re up to about 364 drugs that have their origins in academic research.

And I’ll finish up by pointing to the COVID vaccines. All of the major ones – the RNA vaccines of Moderna and Pfizer, the adenovirus vaccines of J&J and AstraZeneca – came straight from academic research. We wouldn’t be where we were today in trying to beat back the virus without the contributions of academic research. Thank you.

Dr. Gupta: Thank you, Ashley.

Without changing the theme for a minute, staying on this theme, you know, you’re giving some fantastic examples of academic research, foundational research, and from publicly funded sources, that has changed our lives, frankly, with that innovation. I would like to connect the dot from that to
intellectual property, though. Because, you know, that’s what our
collection is about.

So back to you, Joe. You know, academic research was happening for a long
time. But I think you alluded in your opening remarks that then in 1980
Bayh-Dole happened, and something changed fundamentally in making that
academic research more productive for society. Could you unpack that for
us a little bit, please?

Mr. Allen:  

Sure. And I also want to go back to something that Lori said. And Lori was
very generous in crediting me with the economic impact study. She was the
driver. I just asked her as somebody who knew what was going on. So I
appreciate it. But Lori Pressman was really the driver behind that.

To answer your question, before Bayh-Dole the government policy was if the
government put any funding into research, even a small percentage, if an
invention was made, the government would take it away and make it
available through a nonexclusive license that had destroyed any incentive for
the inventor to remain involved in it. The other thing that happened was, it
created a barrier between our public and private sectors, because no
company was going to fund academic research if the government was going
to come in and take the results away. So not only did we not have much tech
transfer going. We actually had segregated our best and brightest minds in
the public and private sectors.

And you mentioned that I was on the Senate Judiciary Committee. When we
passed Bayh-Dole, we didn’t have a single company testifying that had any
interest in working with universities, because it was such a foreign idea that
universities had any contribution to make for product development. And
that changed with Bayh-Dole because Bayh-Dole said we made the rules
clear, and we said if a university makes an invention with government
funding, they will own it. And they can also – as Lori and Ashley mentioned –
strike deals with companies. So they were certainty in the system.

But even then, companies didn’t start working with universities until the
biotech revolution started. And biotech started almost at the same time we
passed Bayh-Dole. But if you look at the first biotech inventions were
coming out, pharmaceutical companies were not interested in licensing
biotech. It was too risky. It was too sketchy. So what happened?
Universities started spinning out companies like Genentech. And if you look
at our biotech industry even today, it’s characterized by small companies
spun off universities. Seventy percent of our biotech companies are still
small. So, you know, without intellectual property, that would not happen.

The other thing we shouldn’t just pass over is while the government funds
hundreds of billions of dollars of research, these companies are matching
that. And that money is risk money they’re putting out. So when a tech transfer project fails, the government doesn’t take a hit, the university doesn’t take a hit, but the company does. People lose their jobs. People go out of business. So it’s a high-risk endeavor. And without the ability to protect your investment through patenting, our system doesn’t work.

And the final thing I’ll mention is, it’s small entrepreneurial companies that drive our system across the board. And without intellectual property protection, everything they came up with would just be taken by the dominant companies. Dominant companies don’t particularly need patent rights. I mean, they have market protection. So, you know, without that incentive for entrepreneurs to protect their investment, to take a risk knowing it’s probably not going to pay off, our system doesn’t work. And frankly, what people ignore is our system is not just driven by government funding. It’s driven more by private sector risk taking. And I think that’s the form that we need to make sure you appreciate, because people right now are looking down on what the private sector’s contributing and implying they’re getting a free ride, and the reality could not be more different.

Dr. Gupta: Thank you, Joe.

Mr. Stevens: Let me jump in here if I can, Kirti. Building on Joe’s last point, Thomas Edison once famously said genius is 1 percent inspiration and 99 percent perspiration. The inspiration is the invention. That’s the bit that is funded by the government, frequently through research grants. The perspiration, the 99 percent, is the development activity, and that’s what comes from the private sector.

Ms. Pressman: I’ll jump in and say I moved to Boston to Lasertron because they had an exclusive license from MIT Lincoln Lab, which generated lots of investment and jobs and made lasers that are used in fiberoptic telecommunications.

Dr. Gupta: That’s an interesting personal anecdote.

Let me put a thread around all of these things because it’s critical. So quickly on the public-private funding, I mean, I would encourage anybody to look it up in the data that since the – like 40 to 50 years now, actually, public funding of fundamental research in the U.S. has been dropping as a percentage of overall R&D spending. Private R&D spending has been on the rise in comparison. So we definitely need to continue to invest in public funding of R&D.

But back to Joe’s point, it’s a really important point that we can have as much public funding of foundational R&D as we want, but like you’re suggesting, Lori, from your personal experience, you moved into that domain once the incentives changed. And you know, Bayh-Dole is not just a natural
experiment for understanding what happened to university research. It is a natural experiment for understanding what happens once incentives shift. If you have the incentive to monetize an idea after you’re able to own that idea or to attack that idea, your incentive shifts and a revolution has happened – a revolution that they want. We want small companies, startups, individual inventors to come up with disruptive innovation, the Schumpeterian process in this economy.

In fact, Joe, you laid out the opening to sort of the next theme I wanted to segue into. This cognitive dissonance that I think we are facing in our current policy environment today – right? – on the one hand, we have a lot of concern – I’m not going to discuss that, I’m just going to lay that on the table – it is a fact we have a lot of concern about large, big companies in the economy today, the so-called GAFAMs. There’s a lot of discussion in the antitrust community and otherwise about what do we do about the big tech platforms, is this a problem, is this not a problem, how do we solve it?

On the other hand, we aren’t concerned about making sure that the intellectual property system is maintained and protected for giving the small companies, the startups, the inventors a chance to be able to compete in the marketplace by protecting their ideas. What’s the root of this cognitive dissonance? Do you see it? Have you experienced it? What are you – you know, what would you like to share from your communities?

Lori, you seem to be wanting to jump in, so please do.

Ms. Pressman: I’ve experienced it. It drives me crazy. I – so first of all, the opposite of patents is not, you know, free exchange. It’s trade secrets. And I think that’s really not appreciated. Just to underscore what Joe has said, it gives smaller innovators, newer innovators a seat at the table that they would not otherwise have had. In terms of my favorite things to blame, our tendency to live on soundbites drives me absolutely bonkers, and the need to create, you know, a quip that gets taken out of context and then misquoted and before you know it the meaning is completely lost. So that’s one of the things that drives me crazy that I think has contributed to this.

I think the fact that they’re visible. It’s this crazy irony. Patent means open, visible, right? You can see what someone is doing. They’re not only legal tools; they’re technical tools. You can learn a lot from reading patents, and they’re useful in business and marketing. And they’re – you know, there’s no doubt that the world has many challenges, from increased competition to pandemics to global warming, and you have this visible thing. And so perhaps there is a desire to blame the visible thing. And I would say it’s what you can’t see, right? It’s the trade secrets I think that add inefficiencies that do not serve us, whereas I think patents add efficiencies that serve us.
Mr. Stevens: I think it’s also important to remember that a patent gives you control over what happens to your technology. You can license it to others, or you can say I want to keep this for myself and obtain the benefits from this innovation myself.

Ms. Pressman: Not if you’re a university, Ashley. I have to interrupt you. That’s important.

Mr. Stevens: Well, let’s look at what’s happened in the COVID debate. Within a month of the awareness of the pandemic, MIT, Harvard, and Stanford made a statement that for the duration of the pandemic, and a short time thereafter, they would license their COVID-related inventions, nonexclusively, royalty-free, and quickly. Within two weeks of that, AUTM, the Association of University Technology Managers, came up with a comparable statement, and something like 95 universities globally have signed onto that. And there was an initiative in the private sector comparably to make COVID-related technologies available.

Licensing behavior can change on a dime. It’s a business decision. Changing intellectual property treaties and laws is a very, very slow process. And I think people should focus more on licensing behavior and less on the patent system in their attempts to change things. As an example, the patent cooperative treaty, which greatly facilitated worldwide patent applications, was signed in 1970 and came into effect in 1978 – eight years later. The Treaty of London, about translation of European-wide patents, was signed in 2000 and came into effect in 2008 – eight years later. Changing patent systems is very slow. Changing licensing systems can be done in a heartbeat.

Dr. Gupta: So I would argue, Ashley, that, you know, some of us in the policy world have seen some rapid – at least rapid advances to try and change the patent system in the last decade or so. You know the ink wasn’t dry on the AIA that was passed in 2011, and we were already discussing big changes, sweeping changes in 2013, and we continue to do so. I would like to get back to that theme on the policy and how to bridge that gap.

Let me just also quickly go back to Joe, because, Joe, you mentioned something like, you know, small companies require intellectual property, and I think you said “dominant.” I’m going to rephrase that because I’m a mild-mannered economist. Big companies don’t. They might have other mechanisms to protect their ideas. What did you mean by that? Could you share why you think IP is a far more important means for small companies and individual inventors or universities than for big established companies?

Mr. Allen: Sure. I mean, if you want to perpetuate big dominant companies staying in place, get rid of the patent system. Look 20 years ago at who the big dominant companies were of our economy and see how many of them are
dominant now. Why did they get overthrown? Because a small company with a great idea was willing to take a risk.

Ashley mentioned Google. The reason that Stanford started Google was, they couldn’t find any licensees for an invention, and finally two kids from the dorm came in and said we’d like to start a company. If you look at it used to be the big three automakers dominated everything, and some poor guy came up with the intermittent windshield wiper, which those big three just took from him, said if you don’t like it, sue us, and they knew they could draw out the litigation for longer than that guy could stay alive. But he was a stubborn inventor, and he kept the suit going.

So what people need to realize is, the dynamic destruction of capitalism – and I’m not ashamed to say I’m in favor of that – is funded by intellectual property. If you don’t have intellectual property, how can a startup company get started? Because if you’re willing to do all that hard risk upfront to make sure something works, the big dominant companies can just take it away from you, as they did with the intermittent windshield wiper.

Our strongest card against China is not to have more centralized management of the economy. It’s the opposite. Have government fund that research. Let entrepreneurs take it from there. Let them take the risk. Because what’s happening right now in our tech transfer system is the public is getting a huge benefit they’re not paying for. Companies are taking that risk, and mainly it’s small companies. But without patent protection, you’re killing innovation. Again, if you want to keep the dominant people in place for perpetuity, then weaken the patent system, because what you’re ensuring is that the Bill Gates of the future, that the Googles of the future are never going to be developed. In fact, if they come up with anything, it’s going to be taken from them by the dominant companies and they’re just going to be stomped on.

Dr. Gupta: This is so interesting. So you’re saying that weakening intellectual property rights, weakening the IP system essentially directly helps the, in your words, “dominant” companies; in my words, big companies or big established sort of large vertically integrated companies because they have other ways of protecting their ideas.

This actually aligns with recent research that’s done by Johnathan Barnett at USC. He has a book called IP, firms, and the marketplace that documents some, you know, interesting observations on what kind of firms have stood up for IP protection or strengthening the IP regime, and which haven’t, or done the opposite. And in fact, you know, if you’re a large established, in your words “dominant” company, there’s sort of 80 percent of the amicus briefs in courts that have been filed in opposition to strengthening the IP regime have come from those companies, because there’s sort of – you know,
the theory in his book explains that that’s because these firms have other ways of protecting their ideas. You can vertically integrate. You can create a product based upon your idea and have a first mover advantage, for example, or have a conglomerate effect, or monetize those products in adjacent markets. All of these kinds of tools to, Lori, your point, universities don’t have, startups don’t have. And you experienced that, and that’s why you decided I think not maybe thinking it through like in this way rationally, to move to the startup only once there was a possibility for having patents and getting VC funding.

Mr. Stevens:
I think it’s important to point out that the – particularly the patent system is incredibly dynamic because of the courts. Somebody mentioned AIA. Yeah, we’ve had periodic laws updating the patent system. But there is a continuous updating system through the courts. And we’ve seen dramatic changes in the U.S. patent system over the last 30 years. I mean, the TRIPS Agreement slashed the term of U.S. patent protection from 17 years when your patent issued to 20 years from when the earliest application to which you claimed priority was filed.

Now this was done to get rid of submarine patents and so forth, and certainly succeeded in doing that. But it reduced the scope of the value of intellectual property enormously. And we’ve seen in areas like diagnostics, through the Bilski decision, the LabCorp decision, it’s very difficult to get patents in the diagnostics space, and this is just serving to entrench the big established players. And I think the Alice decision has had had a similar impact in the software industry. So I think what we tend to see from these legal challenges is a steady erosion in the scope and value of patent protection.

Dr. Gupta:
Thank you, Ashley.

Lori, you were about to say something. Let me quickly interrupt this flow and remind the audience something I should have announced upfront. We have Q&A at the end, starting at 3:00 Eastern. So please type any questions you have in the Q&A box you will see at the bottom of the panel on zoom, and we will take those questions at the end for all the panelists. Thank you.

Lori, back to you.

Ms. Pressman:
Well, I would say that, you know, the big companies buy small companies, and so I think it impacts them, too. And it’s a little bit shortsighted of them to see intellectual property as merely tactical and not only strategic. So that’s – you know, let’s not eat our seed corn here.

Dr. Gupta: Right.

Ms. Pressman: Right.
And – yeah.

Finally, with the, I don’t know, compulsively quantitative person on this call, I will say that there is a study – and I did send it in the chat, and it’s very nicely posted on the USPTO website. And I did actually change at least one person’s mind with it. I’m very proud of this. It was a university professor who shall remain nameless, that in fact things happen faster when there’s some exclusivity than when there is not exclusivity. And it was a natural experiment, a comparison of commercialization outcomes under Bayh-Dole and under Stevenson-Wydler, and Stevenson-Wydler permits less exclusivity. There’s also the fact that virtually all startups have exclusive licenses, which is highly suggestive that you need exclusivity for innovation. So, I will – but you’re right. I mean, if people have predispositions, it’s very hard to budge.

Dr. Gupta: Thank you, Lori.

I think all of those studies are things that we need to continue to shore up and try to understand what the evidence is telling us. Of course, we are going to continue to face, you know, these competing questions and evidences on this issue, and we have to – we have to put them all on the table.

I do want to go back to something that, Ashley, you prompted. Basically, what you’re prompting is that, look, the patent system on the whole should not change. I mean, let businesses be flexible. Let’s change the licensing, you know, models if needed. But if you’re constantly like pushing and pulling on the patent system, there are consequences. And I think, you know, one of the things you didn’t directly say but really alluded to is, there are many pushes and pulls on it today. One comes from legislative activities. So legislation is one aspect of the AIA and all that. One is the courts, the courts themselves, right? And you mentioned a number of decisions that, you know, many of our audiences, if you’re not, you know, patent attorneys may be familiar, but there has been a series of court decisions that have led to a lot of uncertainty and questions about what is patent eligible, what can be patented, and what cannot be patented. That has led to many question marks about some patents like Ashley was describing, or inventions that couldn’t be patented in certain spaces. And I have some examples of those, too.

And then finally, this sort of the third dimension, which is related to the patent office itself and some of its own initiatives. So I guess I’ll open the floor to all of you to answer what you seem to feel are the greatest challenges on the table today, from legislation, from courts, from what is patentable or not, from what is enforceable or not, what remedies are available to patents. What are your biggest challenges today as you try to get inventions to patent...
– and patents to mean something, to enforce them, to monetize them ultimately?

Lori, let’s start with you because you seem to be ready.

Ms. Pressman: So much to say here. You know, the inventors at universities are getting a little discouraged. They are getting a little glum and are at least in some cases a little reluctant and not as – just not as psyched. You know, I think we talk about financial incentives, but there are also emotional incentives, you know? People feel good. They feel good when something they do is appreciated and validated and when it gives them a seat at a table with an investor that they would not otherwise have had that seat at that table. So that’s what I see.

And I will echo something that Ashley said. You know, our society has so many tools. We have policy tools. We can talk to each other. Sure, there are a lot of things that need improving. But leave the patent system alone, or leave it in the hands of the scientists and engineers who can think about whether or not these ideas meet the criteria for patentability versus like locking the gate, locking it out of the starting gate by tinkering with patent eligibility.

Dr. Gupta: Joe, over to you. What do you think is the, you know, in your mind the greatest concern in your mind? Like what’s patent eligible or not? How patents are being or not being enforced, or potential legislative changes? Any and all of these?

Mr. Allen: The key to remember is we are the leading entrepreneurial country in the world. So companies need predictability. If I’m going to get in this game, what are the rules, and I depend on the rules. It took us years after Bayh-Dole passed for companies to feel comfortable that they could partner with a university and then federal laboratories because they didn’t really trust them as partners. So just look at what’s happening now. The Biden administration came in office with some of the leading vaccines in the world, actually the leading vaccine already developed and already being put into the population. What did they do? They decided to endorse a move by India to take all COVID-related IP patents and knowhow and put it in the public domain. So the companies that trusted – that participated in Operation Warp Speed that took a lot of risk, that stopped other ongoing research and put their top people on this – and remember, those companies were functioning during COVID 24/7 to come up with a vaccine, which we did in record time – a vaccine has never been developed in the history of the world as quick as we did through our public-private partnerships. What’s their reward? The U.S. government says we want to give not only your patents away, but we also want your knowhow, and give it to our foreign
competitors. Think what that signal says to our private sector. How reliable is the government now as a partner?

The other thing, as Ashley mentioned, is we've had a series of court cases questioning about patent eligibility. One thing is a small inventor can't get an injunction to stop people from infringing on their patent anymore. You can't stop them from selling it. So a big company infringes your patent; says, hey, we're going to take you to court; we got plenty of money of – plenty of money for litigation; we can drag this out forever. You can't even stop us from selling it. You better settle with us. So it's, basically, much like you're negotiating with the Mafia.

So, to me, the thing that's really dangerous is we have got – we've changed from a predictable system where people said, the patent laws are predictable. I can depend on them. There's efforts now to misuse Bayh-Dole to say if you commercialize a government-funded invention, the government can then march in after you're on the market, and if somebody doesn't like your price, they can license your competitors.

Those things are deadly to our system. If you're copying us, if you're China, less intellectual property is better. But if you're number one and you're leading the pack, uncertainty kills you and, again, where people lose track of as they talk about all these billions of dollars the government's funding, we did that before Bayh-Dole. It benefited Japan, not the U.S. The Japanese sent study teams to our universities and federal laboratories but our companies wouldn't even go there.

An innovative company cannot survive, like, the United States against our competition if, in fact, you don't reward risk takers and if the rules are unpredictable and it looks like – who knows what the rules are going to be tomorrow because look what they've done today. It just – it drives a wedge in our system, and once you lose that confidence you're not going to get it back.

Mr. Stevens: One of the issues you get with antitrust policy in the U.S. is it tends to look at the U.S. as the marketplace and ignores the global marketplace, and attempts to interfere with this have benefited our foreign competitors so much.

In 1956, the government forced an antitrust settlement on Bell Labs. Made them license all of their inventions they’d made, including the transistor, royalty free to anyone who wanted it. This was the foundation of the Japanese electronics industry. It came directly through a result of U.S. antitrust enforcement. And you can look at other instances. Now, there was another antitrust settlement with IBM, who were forced to license their patents nonexclusively for a 1 percent royalty per patent up to a maximum of five.
Attempts to use antitrust legislation to overrule the effects and the genius of the patent system, I think, have benefited our foreign competitors enormously.

Dr. Gupta: That’s a great point, Ashley. I think what we are zeroing on here is that the IP system is under attack from multiple fronts right now, from legislation in terms of enforcement of patents, from courts in terms of what is and isn’t eligible to be patented, and I have also – you know, I think some of you gave examples – I have seen examples in our industry, where 90 percent of patents, like, in areas like 5G and AI that are critical areas of technology for national security where the U.S. is leading are affected by these decisions directly, and it’s harder to get patents in these areas today than it was a few years ago because of these core decisions.

And finally, antitrust. Antitrust today is really concerned about big tech platforms. But at the same time, there is a systematic position to regulate U.S. intellectual property rights, and you’re right, it’s – in the – when we take a global worldview, it is a gift to our foreign competitors who are competing to lead in these critical technology areas with us today aggressively.

These are all fantastic points. I think I would like to quickly invite you all to give your closing remarks on what you would like to see and jump to Q&A from our participants.

Let’s start with you, Lori. Let’s start in the order we opened.

Ms. Pressman: – more specific about what we would like to see?

Dr. Gupta: Where do we go from here? What would you like to see in terms of tech transfer patent policy development in the United States?

Ms. Pressman: Well, in a perfect world, patent policy would be – we would go back to before these unfortunate decisions and the gate of patent eligibility would be wide and let all the other parts of patent law – 102, 103, 112 – do their job. And, you know, the criteria for granting injunctions, enforceability, a return to the predictability, and I’ll call it pro-U.S. competitive system, earlier.

I would like patents to have a good name so that people aren’t apologizing for them, and to appreciate that they’re an extraordinarily valuable and democratic tool. They are an expiring monopoly. What more democratic tool is there than that?

Dr. Gupta: Thank you, Lori.
Mr. Allen: I think – unfortunately, I'm old enough that I've been through this cycle before. But it's interesting coming around and you're thinking –

Dr. Gupta: The pendulum is swinging always.

Mr. Allen: – wait a minute. Wake up. I've been through the anti-patent thing in the '70s. This is when I came into it. I really wish people would realize how fragile our system is. It can be destroyed overnight, and the critical thing is once entrepreneurs lose confidence you don't get it back again.

People really lose track of our system is driven by private sector entrepreneurs. The government plays an important role, but the government's not driving our economy, and I think people – a lot of people have lost sight of that.

You've had law professors, the same people who didn't like Bayh-Dole, unfortunately, now are being listened to again, the same people who said we should give our intellectual property away because it's more fair, that – you know, that we're going to succeed no matter what. I mean, it's “Animal Farm” economics. You keep –

Dr. Gupta: Yeah.

Mr. Allen: – you keep taking away from the horses and giving to the pigs until finally the horses drop dead. And that can – that's starting to happen right now and the frightening thing to me is people have – seem to have no idea how we got to where we were, that it hasn't always been like this. And once it collapses, it's going to be very, very difficult to rebuild again.

So I just wish people would stop listening to theorists and listen to people who've actually got dirt under their fingernails, who have actually commercialized a product. When you talked about AIA, AIA was a battle between the IT companies and the big pharma companies.

Well, where were the – where were the small companies that drove – where were the inventors? Where were the small people that drive our company? They were – they were frozen out. People were literally told by the staff, either you get on board or you're going to get run over.

So that's not how our system should operate. That's not how our legislative system should operate. It's not how our economy operates. And, unfortunately, I think we're running out of time. So the bill is going to come due pretty soon, and like Lori and Ashley, we're doing everything we can to just tell people to wake up. But, unfortunately, I think we're sailing into a headwind right now.
Dr. Gupta: Interesting. One-way street. This is a one-way street.

Ashley, what do you have to say for yourself?

Mr. Stevens: I think I'd kind of reiterate what Lori and Joe have said. We need predictability.

Dr. Gupta: Yeah.

Mr. Stevens: You know, in – at the university sector, we only license about a quarter of the invention disclosures we receive. About half of the initial patents we file actually get licensed and at least have a shot at development.

So it's very easy for inventors to get discouraged. And if the ones – the 50 percent that we decide to get patents on, it proved extraordinarily difficult to get a patent issued. I worked with a professor at MGH who'd invented a superior – an AI-based way of converting surgeons' case notes into a billing statement for the insurance company. It took him 12 years to get the patent issued on that and he didn't get 17 years from when it came out. That meant there were only eight years left on that patent when it came out.

So I think we need to stop whittling away at the grounds for patentability. We need to make it predictable. And then, of course, they have to be enforceable and the courts have to be willing to enforce them and impose substantial penalties to infringers.

Dr. Gupta: Thank you, Ashley.

Quickly moving on to some of the questions from our audiences. So please type your questions in the Q&A box on the bottom of your screen. First question. An argument is made by some that innovation happens irrespective of IP. Indeed, some say that innovation happens despite IP, which suggests that IP, on balance, is a barrier to innovation.

What do panelists say in response and what's the evidence for it? Isn't the experience before and after Bayh-Dole direct evidence that IP hurts innovation?

Joe, you want to go first?

Mr. Allen: I don't even know how you get that question, to tell you the truth. I mean, the evidence is so clear.

Dr. Gupta: Yeah. Right –
Mr. Allen: Why did the Founding Fathers put the intellectual – why did the Founding Fathers put the intellectual property system in Article I, Section 8 before the Bill of Rights? Because they realized that for a country to succeed it’s got to protect know-how. I mean, our system is driven by small inventors and small companies.

If you look at the data before Bayh-Dole and after Bayh-Dole, it’s obvious. In fact, some of the critics succeeded 20 years ago in forcing NIH to put a reasonable pricing clause into all of its licenses and cooperative agreements, which meant the company was going to have to promise, not even knowing what they were going to develop, that they would sell it at a reasonable price and no one knew the definition of that.

So what happened? Did we have a golden age of cheap drugs? No. What happened was companies simply walked away, and five years later, Harold Varmus, the NIH director, repealed that, saying it had achieved no public good. All it had done is killed important private and public sector alliances.

So, again, academic theorists can argue about this. They get paid no matter what. But talk to the people who commercialize products. Ask NIH how many drugs have been commercialized with nonexclusive licenses. Ask any university that. How many startup companies are founded on nonexclusive licenses? And, you know, again, I don’t know how anybody can make that with a straight face unless you’re living in an ivory tower. And –

Dr. Gupta: I appreciate your – I appreciate your consternation, coming from the university community. It’s, actually, quite refreshing. Let me put the question in context for the other panelists and for our participants.

Many of us who have lived in the policy world recognize that this is a question that’s often asked and left unanswered, and it’s because of, you know, something that Lori mentioned in her remarks, some sound bites regarding whether the patent system is working or not. What is the role of entities like patent trolls, for example, in sending letters to, you know, small businesses? What’s the role of rising patent litigation?

Many things are counted in this discussion, like the number of patents or the number of lawsuits or the number of entities that are purely patent owners, to create a narrative that innovation is happening irrespective of IP and, in fact, IP serves as a barrier. It is truly refreshing to hear from the university community that there is a consternation about this question.

But, nevertheless, it’s a real question today that we need to answer and answer definitively. I think one of your, you know, studies on this is everything that you have described about Bayh-Dole it is a national experiment. It’s a national experiment of what happens once you are giving
an incentive in the hands of inventors and before that you were not giving
that incentive. What happens before and after? And you see this rise in
investments in startups and even regional development like you and Lori
and Ashley have described.

Other impacts? Lori, is something – is that something we can answer from
your study?

Ms. Pressman: Yes. So I’m motivated by the various assertions which were driving me
crazy. It’s in the chat. It is worth looking at. I think it was a comparison of
Bayh-Dole and Stevenson-Wydler, and Stevenson-Wydler allows less
exclusivity than Bayh-Dole, and I think the data speak for themselves. It
would be great if that could be repeated with a larger data set.

I want to go back on the sound bite that, you know, perhaps intellectual
property is bad for innovation. Well, I would say that every new company,
every new product, has intellectual property associated with it. The
question is, is it a trade secret which no one will ever know about or is it
something which will eventually become part of the public domain?

I think that’s a much better question. And that the amount of the sort of anti-
patent agitation it just pushes things more and more into a trade secret
regime and creates tremendous distrust, especially, as Joe pointed out,
because of the sort of almost unimaginable specter of some of the – what
trade secrets are going to be seized for public benefit. It’s really unthinkable.
So we really are hurting ourselves by being this, you know, anti-patent out
the starting gate.

Dr. Gupta: There’s another question that’s asking – you know, I think, you know, maybe
they were able to understand it better. Can you comment on the rise of
sponsored research that locks up IP rights early in the process versus
donations to universities that allow sort of more widely spreading ideas
about IP? What’s the difference?

Ms. Pressman: Yes, I can, certainly, comment on that, and this is going on all the time, that
companies are, basically, insisting on having universities do work for hire on
their behalf where they, effectively, own the work that comes out of the
university, you know, the royalty-free nonexclusive. Oh, that shouldn’t
bother you at all.

Well, it means we can’t grant an exclusive and it also means that there’s no
diligence on it, that you have no idea what happens to it. And it’s also – I
think you underestimate how motivated inventors are, like, the actual
inventor, you know, in contrast to, you know, other scientists or engineers
that say, wow, this is really great.
But how many people will, you know, work 24/7 and stay up all night for years trying to get it to work? So –

Dr. Gupta: Actually, I think there’s another fundamental misunderstanding that I’d just particularly like us to address, you know, locking up IP rights versus, you know, more freedom to spread ideas.

I think we discussed this in a panel yesterday with chief economists from the Patent Offices that, you know, we must recognize the patent is a disclosure of an idea. Once it’s published, you can build on it. It’s an incentive mechanism designed to be able to disclose an idea for the world to build upon it and to have it for free, eventually, in return for a temporary right to exclude. You won’t have the incentive to disclose that idea otherwise. So I think that’s a fundamental, perhaps, definitional misunderstanding of what is IP we need to clarify.

The next question is, you know, can you speak –

Mr. Allen: Just to –

Dr. Gupta: Please, Ashley, go ahead, or Lori, Joe. Who was jumping in?

Mr. Allen: It’s Joe, actually. Just one more point before we go on. How many innovative countries in the world don’t have a patent system? China has adopted a patent system, which, at least on paper, looks like it’s pretty strong and, actually, the courts are pretty predictable, at least until they change.

Why has China got a patent system? Because they want to be innovative, not just copiers. So all these people who talk about how anti-innovation the patent system is, give us an example of which country in the world is innovative without a patent system.

Dr. Gupta: Thanks for that point, Joe. I think I also want to mention that, you know, China has now four specialized IP courts and a patent litigation docket that’s four times the size of the United States’.

The next question is, you know, can you speak of IP leakage in U.S. universities? That’s an interesting question, I think, both of you can take.

Ms. Pressman: Can you define IP leakage?

Dr. Gupta: I can only guess. I think what I might have understood from that is are we concerned about any kind of IP theft or infringement without being able to enforce that IP? Have universities experienced that widely or at all?
Ms. Pressman: I think by nature – well, so it’s been a long time since I’ve been full time in house at a university. But, by nature, you go with the – you know, the motivated inventors who look forward to collaborating with the office. I don’t know that anyone has time to –

Mr. Allen: I’m not sure if they mean – I’m not sure if they mean foreign scientists at universities, you know, frequently from China or somewhere like that, or professors taking things out the back door. I’m not really aware of that.

But any university researcher who’s signed an agreement, if they’re working with federal funding they will disclose an invention to the university which owns it. So that is enforceable and it has been enforced. Again, if you’re dishonest, I don’t know what you can do about that. But at least our system doesn’t just, you know, go on a promise. We, basically, say you have to sign your name that you’re going to disclose it.

So, hopefully, that’s not a system. But, again, there’s a lot of concern about there’s a number of foreign scientists and researchers in our federal lab and university system, which actually is a strength, but at the same time, you know, there is concerns about is this know-how going out the back door.

But if you’re going to have an open system and have the best and brightest of the world come here, I don’t know how you restrict that any more than we –

Dr. Gupta: Hey, Joe, you went on mute. If you don’t mind unmuting yourself.

And when you do, I just want to point out – you know, point the group to a study that the ITC, the International Trade Commission, did a long time ago, actually; it needs to be revised. It was the cost of IP theft to the U.S. economy and cross border kind of IP theft to the U.S. economy, and I think that could be a partial answer to that question, not just from U.S. universities, but it’s an ongoing concern.

Let me close with the last question that I think would resonate both of you. How do you view the value of IP to investors in the startup community? I think you both touched upon that, but any closing remarks in response to this question would be fantastic.

Mr. Allen: It’s critical. In fact, I head up the Bayh-Dole Coalition. We’ve done webinars with VCs. Without intellectual property protection, there’s nothing to invest in. And, remember, a VC is taking a huge risk. If you’re starting a new company, the odds of success are infinitesimally small.

What you’re betting on is you’re betting on that team and you’re betting on the intellectual property. If you weaken the intellectual property, no VC is going to invest in you. I mean, it would be crazy to do so. There actually
would be – it would be irresponsible, because how are you going to protect your investment?

So that's why I think, to go back where we started, our small business system is dependent on intellectual property being predictable and enforceable, and without that you're not going to get – you’re not going to get investment from anybody. Maybe your mother. But even your mother is going to be poorly advised to back you if, in fact, you don’t have something that’s going to protect that investment.

**Dr. Gupta:** Thank you, Joe.

Lori?

**Ms. Pressman:** Same. It’s absolutely critical, I think. Look for a competitive wedge.

**Dr. Gupta:** And that's why you joined a startup.

**Ms. Pressman:** Yes.

**Dr. Gupta:** Well, look, it was so fantastic to talk to all of you with – you know, in the trenches, deep experience on the economics of tech transfer. You’re absolutely right. We can only opine on it as we, you know, write reports and studies. But you’ve seen this in real life. You’ve lived it.

So thank you for joining this panel and sharing your insights with us today. We really appreciate it and we will continue the dialogue.

Thank you to all our participants. We hope to see you through the rest of the week as our summit continues. Have a good evening. Goodbye.