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TRANSCRIPT

Event

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# (Panel I) National Security: Innovation, Intellectual Property, and International Competitiveness

DATE

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FEATURING

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Walter G. Copan: Kirti, thank you so much. Dr. Hamre, thank you for your kind opening remarks.

I'd now like to invite our first panel to come up onto the stage, make yourselves comfortable. And we'll just get ready to begin momentarily. Delighted to have our terrific first panel. Professor Jonathan Barnett, Patrick Kilbride, Gillian Fenton, and Fabian Gonell joining with us here on stage. (Pause.) All right. Great. Thanks.

So let me begin with just a few introductions to our panel, and then a couple of thoughts of framing this part of the conversation today. So Jonathan Barnett, who's just been seated, is the H. Webb professor of law at the University of Southern California School of Law. He's the author of many publications, including "Innovators, Firms and Markets: The Organizational Logic of Intellectual Property." He's published very, very widely on issues related to antitrust, intellectual property law, and policy. There's a new book coming out that Jonathan is editing, called "5G and Beyond: Intellectual Property and Competition Policy in the Internet of Things." Very much looking forward to that latest of your works, Jonathan. And with our panel today, we will have, I think, some interesting opportunities to have conversations about the future of the high-tech sector, antitrust, the role of intellectual property, and standard essential patents.

Next, Patrick Kilbride, on stage right, is the senior vice president of the Global Intellectual Property – Policy Center, rather, at the U.S. Chamber of Commerce, GIPC for short. Patrick served in the Chamber's International Division prior as head of the Americas Policy Team. He was founder of the Coalition for the Rule of Law and Global Markets Efforts. Before joining the Chamber, he was deputy assistant USTR for public liaison in the George W. Bush administration. Patrick, we're delighted to have you with us in the conversation today.

Next, Gillian Fenton, here stage left, is presently special counsel for innovation and government collaborations at GSK, the global pharmaceutical biopharma company, where her practice supports GSK's vaccine pipeline and platform technologies. Prior to that, Gillian was vice president, associate general counsel, and chief IP counsel at Emergent Biosolutions. She has been a member also the Licensing Executive Society since 1992 and served as the society president from 2020 to 2021. Very much focused on intellectual property, commerce, and especially in the life sciences sector. Gillian, thanks for joining us this morning.

And then Fabian Gonell. Fabian is senior vice president licensing strategy and legal counsel of Qualcomm's Technology Licensing Division. His responsibilities include developing the company's licensing strategy, negotiating licensing agreements, and overseeing the company's compliance

with the rules of standards organizations. Prior to Fabian's joining Qualcomm, he was litigator at Cravath, Swaine and Moore, LLP in New York, and served also as adjunct professor at the Fordham University School of Law.

So, awesome panel. Once again, thank you each for joining with us today. I'm just going to have a seat with this august group. And just a few comments as we – as we get going. We've heard from Dr. Hamre the essential linkage between economic security, economic vitality, and innovation with national security interests. The U.S. has long been recognized as the global innovation leader by many, many measures, including intellectual property filings, the value of intellectual property commerce itself through licensed transactions within nation and also globally. And we have seen important policy changes in the United States over the past years that represent a sea change of focus on the future of U.S. innovation leadership. The bipartisan infrastructure law, the CHIPS and Science Act, the Inflation Reduction Act all include important provisions to drive innovation and, in particular, to incentivize innovation investment.

At the same time, we've seen policy changes, policy proposals that actually have a risk associated with them, or risk of actually undermining these leadership positions with regard to U.S. innovation. And our panel will be unpacking many of those challenges with us today. And harkening back to Kirti Gupta's comments, what should the innovation community within the United States do? How should we respond? How should we interact with policymakers? What is the education that's necessary to provide clarity? Dr. Hamre mentioned in his opening remarks that the community that actually understands the intricacies of these issues is relatively small in the United States, and also internationally. And so it's important for this community then to have an amplified voice in sharing the implications, and then working on policy-driven solutions.

The United States, together with other nations, participate in a private sector led consensus standards process. And we're delighted that we have representatives of the standards community here with us today. The situation that we've seen is not just what appears to be a bifurcation in the standards landscape, but what almost looks like a trifurcation with the United States and many of its allied nations, the European Union and its trade bloc and interests as a community in standards policy and leadership, together with the ascendance of China, and with China, having exerted a very important voice globally with regard to intellectual property and the standards landscape.

The role of standard essential patents, those intellectual properties that are required to actually bring a standard into practice globally, are in a very unique type of position, because they are seen in some quarters as a tool that

promotes antitrust types of behaviors for a competitive advantage. China has exercised what are called anti-suit injunctions. And then there are multiple cascades of injunctive activities with, interestingly, the Chinese policy being focused on controlling global market pricing through the action of anti-suit injunction, specifically around standard essential patents. What an interesting time too, when Huawei comes out with a series of statements with regard to what global pricing should be in the high-tech sector. And so, de facto, attempting to set prices globally for the – for the high-tech innovation community.

I believe that our panelists will be discussing some of these topics with us today. We're also at a time in the United States across market sectors where we have seen challenges with respect to our trained workforce, the availability of people who are prepared to take on the role of leadership in the economy of tomorrow. And this ranges from the advanced manufacturing sector, we've seen it in the critical materials space, where there is a dramatic gap between the number of people who are available for the workforce and what we're projecting for the future as well as those who are actually being trained and prepared for careers in these sectors. And these trends cut across all sectors that are important for the technologies of tomorrow, including the future of quantum, quantum engineering devices, quantum communications and computing. These fields require, in many cases, specialized skills as well as a labor force to support them of the skilled trades, where the United States currently has a substantial labor force gap.

The U.S.-EU Trade and Technology Council has been an important body that's established between the U.S. and the European Commission around cooperation in critical and emerging technologies and looking at joint economic and security needs between the U.S. and the EU. And that group is also part of the international debate about the future of standards, the role that standards and intellectual property will play not only in our collaboration as trade partners, the role that we have jointly in supporting research and development in critical and emerging technologies, but also then looking at their implications for innovation and national security.

So I was formerly the director at NIST, the National Institute of Standards and Technology. And one of the initiatives that I had the privilege of leading was called the Return on Investment Initiative, that brought together a national conversation around U.S. innovation, the role that the public sector, our universities, our research institutes would play, the role that the federal government will play as well in supporting R&D, supporting the private sector, supporting the innovation process, technology transfer, the journey from the laboratory to the commercial marketplace. There were a series of legislative and regulatory proposals that came out of that work. Some of those are still pending.

And so I'm pleased that the conversation is ongoing within the United States as we're looking at the critical role that the U.S. universities play, but also the role that our federal research institute's play in the innovation landscape. It's interesting still that some of the legislation that underpins U.S. innovation through the Stevenson-Wydler Act has not been updated in over three decades, well before the digital economy and many of the issues that we're dealing with here today.

And so as we look to the future, and the future of the Stevenson-Wydler Act, it's important to keep in view that the federal government does have this critical catalytic role with regard to not only the funding that's provided, but the research that's carried out within these institutions, and facilitating the transition of technologies from these public sector organizations to private sector innovators, to breaking down barriers to entrepreneurship and enabling these technologies to see the light of day instead of, as we've seen in the days before the Bayh-Dole Act, still having these important technologies sitting on the shelves of the government.

The administration has recently made a proposal in the beginning of December, a new framework under the Bayh-Dole Act which is so important to U.S. innovation, enabling our universities, our research organizations to actually hold the intellectual property rights that arise from federally funded research and, in the public interest, to license those technologies to existing corporations, to new startup companies and, in so doing, supporting the innovation ecosystem. It is a time in the United States where there are concerns about the cost of health care, the costs of pharmaceuticals. And clearly the United States is a world leader with regard to biopharmaceutical innovation, but also the cost structure has now become a political lightning rod.

And so we've seen action taken, including by my former agency with regard to a new proposed framework, on the government's ability to march in and to force the relicensing of intellectual properties that are in the hands – then under the stewardship of a corporation. And with the debate being around the cost of products in the marketplace, including the special focus on biopharmaceuticals, to be able to exercise those march-in rights on certain conditions, to force that relicensing of intellectual property or convert an exclusive license to a non-exclusive license, and thereby enable new competitors to enter the marketplace after a licensee has been already successful.

Those march-in rights, of course, have been established so that corporations would not just sit on technologies, that they would have a diligent process to bring them into the marketplace and to be able to demonstrate that diligence. But at this time, the focus on pricing and opening up the door to a new framework on march-in rights has created some substantial concerns

because of the importance of clarity of intellectual property ownership driving the early-stage investment in technologies by the corporate sector, by the venture capital, and the seed and early-stage investment community.

So I'm confident that Gillian will have some comments, especially, for our group on the role that that march-in rights play. But we're at a time quite clearly with these types of actions and also the proposed waiver under TRIPS to expand beyond the vaccine space and the WTO that there's not a clear understanding by policymakers in the United States about the importance of the linkage between intellectual property investment and the journey of innovation economic impact. And so how do we consider these issues? How do we provide insight to policymakers about the importance of these underpinnings? And then, how do we drive the kind of change that would maintain the vitality of the United States within the global innovation ecosystem?

So with those happy remarks, I really would like to turn it over to this wonderful panel. I've asked each of them to provide a few minutes to share their perspectives on the topic of the day, the linkage between national security and innovation, intellectual property, and international competitiveness. I'd like to start with the far right – to my right of this panel. Patrick Kilbride, GIPC, have a very broad perspective on what's going on within U.S. industry and innovation. Patrick, what thoughts would you share with this group?

Patrick Kilbride: Thank you, Director Copan. I never want to be in a room with a director without saying thank you for your leadership at NIST with unleashing American innovation. And, you know, really you framed for all of us for, you know, years to come how we should be thinking about these opportunities for investment and innovation. And that work was so important. I want to thank Kirti Gupta, and Chris Borges, and the whole team here at CSIS for having us, for having me. This is really important.

So when I think about national security, I always believe, you know, especially in America, that it begins with economic dynamism and technological leadership. If any of you saw the IP Principles document that the Chamber and several dozen co-signers released at the end of last year, national security was number one on that list of – the shortlist of real deliverables from our intellectual property system. You know, why is that? I think it plays into five things that we do well, and really better than anyone else in the world.

You know, number one, we foster competition. And I don't mean antitrust, although that certainly plays a role. I mean, creating the opportunity for many, many stakeholders throughout our economy to compete together on a level playing field. You know, second, we enable risk taking and we

encourage failure. Third, we provide and respect private property rights. Fourth, we make markets with those assets that are created through our respect for property rights. And, fifth, we surround those assets and those markets with the rule of law. And we do these things better than anyone else.

And when you take those five things, and you combine them with our university system, with our federal research infrastructure, with our financial markets including venture capital, private equity, all of the different elements that go into creating a versatile and liquid financial market, then you get an innovation ecosystem that is the envy of the world. And that ecosystem represents an enormous set of stakeholders in all sorts of different industries that spans a continuum, you know, on the innovation lifecycle from education – you know, so knowledge advancement, knowledge diffusion, technological development, technology transfer, technology diffusion, that, as Walt said, spans that gamut from funding of early stage scientific research all the way through to the commercialization.

And I hate that word, "commercialization," because it sounds so commercial. I like to think in terms of realization of new technologies, products, and services that benefit everyone, right? And you get this robust ecosystem that, in times of crisis, as Gillian knows better than any of us, can act quickly to provide real-time solutions to existential challenges. As we saw in the – in the COVID pandemic, for instance, with the unprecedented development of vaccines and therapeutics in record time. Building on decades of investment, you know, in intellectual property creation.

So, where does this take us? You know, we need to foster this ecosystem. And the role of government, you know, Walt said, you know, early-stage funder, catalyst. I couldn't agree more. I think that's a really important point. But also steward. I was in Chicago last week – last week, week before, I don't know – for the Center for Intellectual Property Understanding did their IP Awareness Summit. So I took the opportunity to quote Milton Friedman, of all people who said: The role of government in business is to determine the rules, arbitrate – or, I guess, determine, arbitrate, and enforce the rules. Which I thought was a remarkable statement from – you know, from Milton Friedman, who we think of maybe not liking rules so much.

But, you know, we see that that regulatory structure is an important part of making markets, and enabling investment, and fostering competition. Where we don't want to see is going overboard. You know, I think carefully, and I'm a little concerned about the direction of industrial policy in the United States today. I think, you know, we have a tendency, instead of focusing on those things that we're doing well, that we've done well, better than anyone else, maybe we're trying to beat the – you know, the Chinese at their own game. We're never going to out-subsidize China. We're never going to, you know,

be better at grabbing resources by the neck and directing them in the direction we want.

This is a market that's driven by economic reality, first of all, but also psychology, right? We're creating the conditions where private capital can be mobilized, where it can be shared. And it's our intellectual property system that enables the allocation of those scarce resources to risk taking, and then helps people like Fabian to actually collaborate and share, because of the legal certainty that we've built into our system. So when government instead of, you know, approaching this ecosystem from the front end, and saying we're going to create the condition, instead circles around and starts to intervene on the back end, then we have a problem. Then we're trying to do what China does far better than we do.

That's not a winning formula. So I just want to, you know, conclude by saying, let's focus on what we do best. An industrial – not an industrial policy, but an industrial strategy that helps us to enable success, to mobilize resources, and to be, you know, the technological leader that provides security not only for ourselves but a global order that provides security for the world.

Dr. Copan: All right. Patrick, thanks so much for those framing comments.

Fabian, over to you next. I really appreciate your being part of this, and also the role that Qualcomm plays in the global high-tech community, and with products and technologies that are sold around the world, including those that are supported by standard essential patents. So, Fabian, look forward to your remarks.

Fabian Gonell: Oh, thank you. And thanks, CSIS, for hosting this event.

And we've already heard a lot about America's technological leadership and how critical it is to national security. And, you know, my point of view, and my remarks will be focused on standard essential patents and telecommunications because that's where my expertise is. And to me, it's been a remarkable development to see both in Europe and in some voices in the United States a suggestion of the West surrendering technological leadership. And what do I mean by that?

So, in the – in the debates in Europe in parliament over the standard essential patent regulation, some members of parliament stood up and asserted that devaluing intellectual property is good for Europe because Europe is a net taker of intellectual property and not a developer of intellectual property. And I don't buy into that at all as a premise. But even if that premise were true, seems to me that devaluing intellectual property is exactly the opposite way to go. You are then surrendering, saying we will

forever be behind, is what you're saying if you – if you proceed down that path.

And even in the United States, some of the – some of the submissions to the USPTO on standardization and on patents suggested, well, you know, standard essential patents are owned a lot by Chinese companies and European companies, and only some by American companies. And so, Commerce Department should really think about that factor and the interest of America being in lower royalties. Again, that is – well, as Michael Jordan said in that documentary, I took that personally. (Laughs.) Because in telecommunications we have – we, the United States, has the most valuable patents in the world. We have led the world and technological development. And so the notion that the United States is behind, you know, let alone should surrender and forever be behind, is incredibly misguided. And, as I said, personally offensive.

The technological leadership requires – has been born of and has developed from markets, underpinned by a stable set of rules, the rule of law, that has led to the allocation of capital in such ways that sometimes has succeeded, sometimes has failed, but in the net aggregate, has led to technological leadership, has led to the creation of companies and institutions that enable things like mobilization for national emergency, and I'm sure we'll hear about. And devaluing that is basically sacrificing the long term, sacrificing long-term national security, long-term competitiveness, long-term prosperity, for some short term basically shifting of money from one pocket to another.

So with that overview, let me talk a little bit more specifically about open standards and how they contribute to national security and competitiveness. Because, you know, we saw – and the TTC was mentioned earlier today. There was a portion of the TTC that talked about 6G, the next generation of cellular standards, which is of course near and dear to my heart and my company's heart. And in that section, there was broad agreement between the United States and the European Union about the importance of technological leadership, the importance of open standards, as both an engine for prosperity and an engine for security. So I wanted to just put a little finer point on that and discuss how open standards actually contribute to national security, and tie those things together. Because really, there's two primary ways.

First, open standards create and enable an ecosystem that allows for innovation and allows for return on investment, both through licensing and through product sales of innovation, that leads to greater innovation. That's the broad standards – standardization is good for – good economic policy. But it's also – but something that that perhaps is not as appreciated is that open standards enable a diversity of vendors, that can be very important for

critical infrastructure, can be very important for national security, so that you don't have one vendor or one country's vendors have control of critical infrastructure. And in a market – you know, in a market-competitive environment, which is basically what we have in the West – in a controlled economy, the government can dictate who wins the contest, who buys, whose equipment gets installed.

In a market-driven economy, right, individual actors make those decisions. And you want – if you want – if you don't enable a lot of vendors to be potentially competitive, then they won't have a choice. And by default, it'll end up being – it'll end up being one country's vendors or one set of vendors. And if one country starts to subsidize its vendors, it becomes even more of a short term versus long term issue. And in the short term, people are going to make rational economic choices. And you'll end up with national security issues because of – because of rational economic choices.

Open Standards give away out of that. If a standard is truly open and there's ways for vendors to come in, then you can create an ecosystem that enables choice. And stable IPR rules – stable IPR rules are essential to open standards, are essential to markets, are essential to allocation of investment. And that's – the stability is really, to me, what's the greatest risk right now. You know, I see in our – in our company, in our – in our own industry, people are starting to think about, well, what do we do about our 6G investments or our standard essential – our investment in standards, given the growing uncertainty about government regulation of IPR rates? What do we do about that?

And there's – you know, there's choices from more proprietary solutions, to different ways of doing standardization, to other things. But there's going to be an effect. Industry does react. It might take a long time, but industry does react to changes. And industry does not like instability. Instability is – instability in the underpinning rules deters investment because it adds risk. It adds risks to an already risky endeavor. So, you know, so not to take too much time, I'm going to end on an optimistic note.

And that is, you know, in this – in this room, we have, as you said, the kind of core experts in the field. And it is incumbent on us to help educate policymakers. And a lot of this to me is a choice between a short-term and long-term view. In the short term, right, people might say, oh, yeah, no. If we lower IPR rates, or if we – if we make certain drugs more widely available, lowering the drug rates, well, then that'll be good because more people right now will get these things, right? OK. But that's basically borrowing from the future, you know, to give benefits now, right?

And it's – we know that. And people in the field know that. But policymakers don't know that, by and large, enough. And it's incumbent upon us to educate

them. And the hopeful note I'll say is, I do think policymakers are open to that. And I do think policymakers, once you demonstrate that that tradeoff is being made, can and do make more sensible choices.

Dr. Copan: Great. Fabian, thanks so much for those really, really helpful insights. We'll come back to many of these topics.

Jonathan, over to you. What thoughts would you share with this group?

Jonathan Barnett: Thanks very much. And I'd like to thank CSIS for the opportunity today to share some insights that I'd like to convey to you. What I'm going to try and do in my brief few minutes is to try and distill almost two decades of research into the economic history of the U.S. innovation and patent system and the globalization of that system around the world to deliver some policy insights that are actionable and relevant to things that are being discussed in D.C. today.

And I'd like to start with a story that goes back to roughly the late 1970s, where two scientists at the University of California and Stanford University, Cohen and Boyer, made a breakthrough that has changed everyone's lives in the room and has expanded access to new healthcare technologies and treatments that would never have been possible previously. And that's the invention of recombinant DNA technology. Now, it just so happened that shortly after that discovery, Cohen and Boyer, and the University of California, decided to go for a patent on that technology. That was a pushing the envelope decision at the time. It went against academic norms. And it wasn't entirely clear that the invention was patentable.

It also so happened that in the ensuing years, the late 1970s, the early 1980s, we get a convergence of farsighted legislative and regulatory decisions in Washington that are among the most successful combinations of policy actions that have ever been taken in the innovation space. We have enjoyed the fruits of those decisions until this very day. Unfortunately, over roughly the past two decades or so, numerous branches of the federal government and policy makers have wrongly viewed some of these decisions as being erroneous and have sought to unravel them.

What were those decisions? First of all, the USPTO decided to grant the patent. That wasn't obvious at the time. The European Patent Office pushed back against biotech patents and their industry struggled to get started. U.S. biotech industry immediately flowered after the issuance of the Cohen-Boyer patent. In the early 1980s, we got the Bayh-Dole Act, which removed decades' worth of limitations, under which federal funding agencies had labored and complained about for decades that they were unable to translate taxpayer-funded basic research and get it out into products that actually can help patients.

The second action was the Federal Courts Improvement Act, which established the Federal Circuit. And while it did not have this specific purpose, it's so happened that the case law decisions that were issued by the Federal Circuit in the ensuing decade restored patent protection. We forget that from roughly the end of World War II until that innovation malaise, a common term in the 1970s, it was very difficult to enforce patents in this country. The Federal Circuit corrected that.

And one of the main ways in which they corrected it, I would say the most important way, is that they restored the confidence that if you are a patent owner and you demonstrate before a federal court that the patent is valid, you defend the presumption of validity, and you show it's been infringed, just like every other property right, you are entitled to an injunction which enables market negotiation of prices to take place. The making markets function that was just referred to.

And those actions – the removal of limitations on the ability to patent federally funded research, the restoration of confidence in the ability to enforce patents, and the Chakrabarty decision right in the same time window in 1980 which interpreted patent protection broadly, it introduced stability to the patent system. These decisions were wide – and these actions were widely attacked in the thought leadership community at the time, and for a decade or more afterwards. What were the fears? That there would be a patent thicket. That there would be an anti-commons. That innovation would get stalled inside transaction costs and litigation.

Let's look at the biotech industry. And let's let the facts settle the debate. What happened in the biotech industry? There was a flowering of innovation based on recombinant DNA technology and other inventions. The Stanford patent was licensed out to almost 500 firms. It resulted in over 2,500 FDA-approved therapies that are actually helping patients. We are often told to imagine in biotech and biopharma how the world would be better without patents because then everything would be cheaper. I would ask policymakers to think about a world without patents in which those over 500 therapies have not been realized, have not materialized. Why will they not materialize? For a very simple reason, because capital will not invest in markets where property rights are insecure.

There is no law of nature that requires that current levels of capital investment in biopharma or any other IP-dependent industry must stay where they are when patent protection is reduced or withdrawn. No. Capital will flee from that market. And we will have less innovation than we have today. What Stanford did with the Cohen-Boyer patent, they licensed it out to many different industries. Did this block access to knowledge, as was commonly predicted? No. The exact opposite. It disseminated knowledge and

allowed a market in ideas to form, it allows prices to form. Let me emphasize for a moment how important this market making function is, because we often think about patents as just being about incentives. They are about incentives, but that's only a T1. Let's look at T2 through Tn.

What's happening? What's happening is the same thing that you know about happens in motor vehicles and real estate. Markets form, financing forms, investment flows into that industry. What happened in biotech – and if I had more time I could tell you stories about non-biotech industries, but the same thing happened over and over throughout the U.S. and around the world in industries that were dependent on the U.S. patent system. Not only do you get more innovation, but you get more small firm innovation. Innovation and entrepreneurship go together. This is a subtle point that is often overlooked.

Patent depends – in increasing patent protection in biotech, and I can give you other industries if you'd want – if we want to speak later – patents not only increased innovation, they lower entry barriers. How's that possible? Don't patents increase entry barriers? No. They lower entry barriers. The reason they do that is because they reduce the capital cost of entry. So I'm a biotech firm. I have a patent portfolio. I can secure VC funding. And now, just like Genentech, which was the first firm that was founded based on the Stanford license, I can partner with Eli Lilly. I get my patent in 1979 from the USPTO. And U.S. patients have the first biotech FDA-approved synthetic insulin product from Genentech and Eli Lilly in 1982.

That's how the patent system works. It's a holistic system. It's federally funded basic research. It's VC money. It's partnering. And the technology gets out there to the market. This is a system that works. This is a system that should be bolstered. And I was going to say more about the rest of the world, but I think I've run out of time. I'll just end with the following. While it was mostly symbolic, the TRIPS waiver sends a message that the U.S. is no longer committed to that fundamental baseline of property rights protections. This is so important. The ability of the market, the ability of entrepreneurs, the ability of investors to rely on a simple baseline of property rights protections in this country and around the world are the essence of what has made this system work.

And it has worked. I gave you an example from biotech, but we could talk about other industries. It has worked not only for the entrepreneur, not only for the – for the investors who have earned returns on it. But it has also worked for the U.S. health care community, the patient, the consumer, at the end of the day. Thank you.

Dr. Copan: Jonathan, thank you so much for those perspectives. And thinking back on the catalytic role of the Cohen-Boyer patent decision, the licensing framework that was put in place by Stanford. So I was in my early career days

at a company called Lubrizol Corporation. We had a venture capital arm that I was part of called Lubrizol Enterprises, Inc. And together with Kleiner Perkins as the – as the lead, we were the first investors in Genentech when they got started. And why was that investment made? It was because of the intellectual property rights and because of the promise that that technology could be world changing and could lead to value creation. Without that type of framework, without the promise of a return on investment opportunity, those decisions would never been made. So thanks for sharing that insight.

Now, let's turn it over to Gillian Fenton for your perspectives on this issue. And I'm sure that you'll have more to expand on with regard to these seminal intellectual property deals, such as the Cohen-Boyer patent.

Gillian M. Fenton: Well, thank you. Thank you, Walt. And thank you, CSIS, for the opportunity. Please, audience members, be aware that the views I'm expressing today are my own, based on my professional experiences. They're not legal advice, nor do they necessarily align with the positions of GSK.

In the course of my career, I've worked with people and companies across a broad spectrum of the bioeconomy, from academic scientists, and tech transfer officers, to startups and their investors, to growing and established biopharma companies. Today, I'd like to address some current issues and controversies from the life sciences perspective. As a general matter, I applaud our current administration for their efforts to focus on advancing innovative industries, and particularly for such actions as the Executive Order on Bio Manufacturing, and legislative developments such as the Cancer Moonshot and the setup of ARPA-H.

But some of these very same actions, although well-meaning, have aspects that are harmful to our leadership in innovation and the global bioeconomy. The biological sciences are inherently collaborative and international. Scientists do their best work when they are free to work on the best projects using the latest tools and technologies, and to collaborate with expert partners of their choice. Our system of strong and predictable intellectual property rights supports brilliant advances by these scientists and engineers. The freedom to collaborate through licensing transactions between academia and the private sector and between private sector companies is also essential.

We saw fantastic examples of this across a wide range of collaborations during the COVID pandemic, when scientists and companies raced to develop novel vaccines in record time. This effort relied directly on strong IP rights and a legal framework of license agreements between actors across a range of different countries. Indeed, Pfizer has presented on their COVID-19 vaccine supply chain, and it's a great example of a complex, global supply

network. It's increasingly typical of vaccines and biotherapeutics that their development and manufacture requires the flexibility of global relationships.

Yet, some of the current administration policies directly hamper these activities. One key area of concern is the Bayh-Dole Act's requirement that products based on federally funded patents be manufactured substantially on U.S. soil. The act and its implementing regulations, having been passed over 40 years ago, are simplistic in defining the U.S. manufacturing requirement and the availability of waivers. It's no longer true, if it ever was, that manufacturing is something that takes place in a black box, in a single site, in a single facility.

Nowadays, it requires a complex biomanufacturing facility, in fact multiple facilities, to invest their expertise at a cost of $150 million or more per facility, and also the need to recruit and retain a high-functioning, highly skilled workforce to make this type of manufacturing happen. Bayh-Dole's preference for U.S. industry should be updated, or the current statute should be administered in a pragmatic way that recognizes the need for global supply chains. It should also incentivize manufacturers to position the necessary expertise in countries and regions that are of strategic interest to the U.S.

Another aspect of Bayh-Dole that has been in the news lately is NIST's efforts to update how the act's march-in rights are interpreted. In 2021, NIST proposed a guideline that pricing should not be a basis for seeking march-in. Then, last year, NIST released draft guidelines proposing the opposite – that price could be a consideration for marching in. Clearly, both positions struck political nerves, given the enormous number of comments that were received. As a lifelong biologics intellectual property and business lawyer, I feel strongly that no change should be made that upsets the stability and predictability of business activities that advance innovations that improve human health, among other worthy endeavors. First, do no harm.

If people want to bring down drug prices, they should look at other mechanisms with a higher chance of achieving that objective and not at the expense of innovation. On a more positive note, I'm excited about future uses of artificial intelligence to advance all aspects of the bioeconomy – from disease surveillance to drug design and development to advanced manufacturing. However, the law has not kept up with the rapidly increasing value of data as an asset. Data is not a recognized form of intellectual property, despite its strategic value to all sorts of businesses, which forces us as lawyers to fall back on trade secret principles and contract protections.

This is an area that's ripe for the development of new best practices, maybe even new standards. So the need is especially felt by biopharma companies where valuable data may arise from human clinical trials, health outcomes,

and the like. Here, again, the approach to policymaking should be based on the principle of first do no harm. Thank you.

Dr. Copan: Great. Thanks, Gillian. And thanks to all of our panelists for both a few rays of sunshine in your – in your commentary, but also an indication that we face certain environments of uncertainty and, hence, risk. So how are we seeing that U.S. corporations are addressing this environment of uncertainty, both here and abroad, with regard to intellectual property, standards, and innovation risks, to maintain a position of global competitiveness?

Patrick, let's start with you.

Mr. Kilbride: Sure. I'll take that one. I think it's a great question, because what I see – and rightly or wrongly – I see a lot more reliance than ever on trade secrets. And I see a dichotomy between the industries whose intellectual property tends to live in the product that's out there in the marketplace that's vulnerable and industries where the intellectual property may live behind firewalls, in their technological platform that's never necessarily exposed to competitors or customers.

In Gillian's space, in the biopharma industry, that then is exacerbated by the requirement for those companies to file with the FDA for regulatory and marketing approval. They have to prove the safety and efficacy of their product, a compulsion that doesn't apply to, you know, many industries in the technology space. So what you see – and I hate the word "incentive." I don't think it should apply to patents at all. A patent is not an incentive any more than your title to your house or your car is an incentive. You know, your patent is a documentation of your ownership, period. But just, sorry, I'll get off that horse.

Where incentives and disincentives do come into play, however, is with our patent system. There are incentives to use the patent system. The requirement to file for proven safety and efficacy of your product in the pharma industry. There are disincentives likewise to using the patent system for other industries. We have to create – when we think about, you know, our laws and regulations – create the incentives to use the system. Because patent disclosure is a good thing. Trade secrets certainly have their role, but patent disclosure is a good thing.

I'll also say, because Gillian made such an important point there about data. You know, we talked about it as the new oil. I think you need to expand and adopt that point. Know-how, skills, data, information, analysis – these are the new shale oil. We know they're there, but we haven't always been able to extract the value from them because we haven't recognized and protected them as assets. That's really one of the next frontiers for intellectual property is to enable firms, individuals to own those types of assets. And I think it's

absolutely critical in an AI world where we risk, you know, sort of being beholden to the owners and keepers of AI, that we as individuals are able to retain ownership of intangible assets like our know-how, our skills, our data, our information flows, our analysis.

Dr. Copan: Great. Fabian, what are your thoughts? How are companies – and any insights from the Qualcomm world with regard to addressing this environment of risk and uncertainty?

Mr. Gonell: So I'd say from the point of view of companies operating in the SEP space in telecommunications, I think – and for other industries and maybe, I'll say, targeted in a way that I'll explain in a second. I think one thing that we are very cognizant of, or one way we think about these issues, is in general, although patent rights – the notion of intellectual property and patent rights – has been criticized and, in some sense, under attack for decades, right, and will continue to be. And it's a worthy debate. I think it is generally accepted and understood that patent rights are critical to promoting innovation, and to developing a robust economy.

So patent rights, as such, are less under attack than specific sectors or types of patent rights that are – that tend to be disfavored, or that are easier targets for attack. So standard essential patents are one such. You know, basically biopharma patents that – where people can tell, you know, heart-wrenching stories about bad – people's health are another way. And one thing we see with, you know, specific regulations targeted at those types of patents, either through application of march-in rights or through specific regulations, you know, attempts to control the prices of those are something that we're very aware of, and that we're – but that we see as targeted towards specific sectors.

And so there's a couple of ways companies can approach that. One is, well, is there a way to basically fall back on all patent rights? You know, we want to take our patents out of this category that's under attack and have them – have them be enforceable as regular patents that are less under attack, right? So for standard essential patents, that is an option, right, because we don't have to give financial commitments or do standardization necessarily, right? I think for biopharma it's different because the categorization is different. But I do think it points to – I think companies that take a long-term view, point to – will be pointed to resisting not just in our own space, but also in spaces like pharma, that were not in.

The notion that some patents need to be devalued for these societal – for these societal things. Because once you start – once you start taking chinks out of the patent system, you start distorting incentives, and you start setting precedents, right? Like Professor Barnett said, the issue – the TRIPS waiver, did not so much have a dramatic effect itself. But the precedent it set was

destabilizing. You know, how destabilizing it's going to be is kind of going to depend, like, when is – or, when will it next be used? Is it actually going to be seen as a one-off for this incredible emergency? Or is it now going to be seen as a tool in the toolbox for people wanting to do certain outcomes?

So that's how – that's how we think about it. To defend – we're reacting to this by defending patent rights. But also trying to fall back on them if we can, because we think there's less of attack broadly on patents and more an attack on specific types of patents.

Dr. Copan: Yeah. That's a very, very interesting perspective, because there have been overtures made with regard to climate change mitigation technologies, right, that back to the – to the other argument that no intellectual property rights should be enforceable within these areas because the globe is trying to wrestle with climate change, and mitigation technologies should be freely available.

And then the argument comes around, well, why should any company then make the risk investment in a technology that's not yet been proven, only to open the door for every other competitor and not be able to ultimately achieve returns for their – for their stakeholders? A very, very interesting point. And I think it's an important one for this community as well to see intellectual property rights as a class that apply to innovation enablement across sectors.

Jonathan, comments from you on this situation. In this environment of risk and uncertainty, what are you seeing that companies are doing to respond to maintain a competitive position?

Mr. Barnett: Yeah. I'd like to respond by building off of Patrick's observation that we see greater use of trade secrecy-based strategies in some tech industries. And as someone who has studied innovation policies, both in the U.S. and elsewhere, that response is not at all surprising. In fact, you can find many historical examples. I could talk to you about Switzerland in the late 19th century, I could talk to you about U.S. tech during the postwar decades. There's a pretty consistent pattern. The way that industry responds when the patent system or other IP equivalents become more difficult to enforce in court is either capital will flee from that market towards other sectors where returns are higher, or they will shift to non-IP-based strategies in order to capture returns.

Now, that second observation is often relied upon by skeptics of the patent system as evidence to show that the patent system is unnecessary. But that conclusion is usually not well founded, because that alternative non-IP-based strategy gives rise to other social costs that wouldn't otherwise have existed. Let me illustrate this for you with an example. During that multidecade

period where patents became very difficult to enforce in the U.S., did innovation collapse in the United States? No, it did not. But where did it take place? It took place through heavily government-funded private entities such as Bell Labs, GE Labs, DuPont Labs. The percentage of business R&D between 1957, which is when NSF started collecting this data, through 1980 that can be attributed to small firms – firms with 1,000 or less employees, 5 percent. Holds like that throughout that period.

As soon as the patent system is restored, by 2006 roughly one-quarter of business R&D is being done by small firms. That's the cost of weakening the patent system. You distort firms' business strategy choice set. They go to trade secrecy. And what do you get? You get innovation inside the walled garden. You've raised entry barriers. You have hurt entrepreneurship. And so can firms in some industries outside pharma adapt to a weaker IP system? Some of them can. But they tend to be firms that are larger. They tend to be firms that are incumbents in the industry. With a stronger patent system, you allow the market to choose the business strategy that fits, which will differ in many different ways and responds to many different factors.

Dr. Copan: Yeah. Great, great. Gillian, any comments on this issue?

Ms. Fenton: Yeah. Thank you. I'm definitely aligned with the other panelists on the idea that a weaker patent system forces us more to fall back on trade secret protection. Which is, you know, also something that is difficult to communicate and to build a culture around within a large company, especially where you're dealing with a strong scientific workforce who've been raised academically on the principle of publication and developing their reputations.

I'd also like to say, another distortion that takes place when there are weak patents rights is really the situation that is to be addressed by PERA, the Patent Eligibility Restoration Act. In recent years we've seen a strong erosion of value from the U.S. medical diagnostics industry and other areas of technology innovation that rely similarly on capitalizing on natural relationships. But I think medical diagnostics is an area where the U.S. has really, sadly, fallen behind. And that situation could be rectified by passage of a new law, such as PERA.

Dr. Copan: Well, thanks for those perspectives. Audience we're going to be opening up to questions here within just a moment. So think about what you'd like to ask. We'll have a microphone available. I'd like to ask our distinguished panel here today, as we're looking at the global realities with respect to intellectual property and standards policy, we talked about the unique position that the European Union is playing, as well as China. Many corporations with a U.S. base of operation are global players. Within a sort of geopolitical landscape, but in particular with regard to intellectual property and standards policies,

what are companies doing about this? How are we looking at standard essential patents, intellectual property rights enforcement globally and adapting? What are the strategic implications for U.S. operating firms?

Patrick, you want to kick us off?

Mr. Kilbride: Sure. So, the chamber – some of you may be familiar with our U.S. – our international IP index. Been published now for 12 editions. It benchmarks 55 countries, accounting for about 90 percent of global GDP, against 50 discrete IP indicators – patents, copyrights, trade secrets, trademarks, et cetera. What we've seen on the whole is that countries are investing incrementally in building the national infrastructure to promote intellectual property creation and ownership at home. That's a great thing.

At the same time, we see this political layer of rhetoric that promotes things like IP waivers, forced technology transfer measures, that promotes this mindset that intellectual property is a barrier, as opposed to an enabler. And these two conflicting, you know, trends, I think, we don't know which way it will go. Innovation is not inevitable. I think Fabian and Jonathan both made this point. You know, it can go away. And we see innovation everywhere in the world. But it happens in a sustainable and a transformative basis where intellectual property laws are enforced consistently and provide that, you know, strong legal certainty for investment. So we're optimistic, but concerned. (Laughter.)

Dr. Copan: Yeah. Fabian, especially on the world of SEPs, you're seeing this, clearly. What's being done?

Mr. Gonell: Well, in the SEP world we are at a crossroads. And in some ways, it mirrors – it mirrors a kind of geopolitical crossroads of the question of, is there going to be a decoupling of the West and China economically or not? And standards, is there going to be – is there going to be a fracturing of what has become a global standards ecosystem to regional standards? You know, we think that that would be a step backwards. We think – we think that – both that we think generally – that decoupling generally is not in the interests of either the United States or China. And we think that fracturing of the standard system is certainly not in the interest of everyone.

If you have – so, how does that relate to IP? For the standard system, if you have different IP rules or IP rules that are that different from each other, then you will have decoupling because the incentives for capital allocation for investment are going to end up being different. I think people generally understand this, because the IP rules end up being just kind of part of the background rules of trade, just like the enforceability of contracts rules are. And you see – what we hope, is that countries see it is in their interest to

have stable rules that encourage investment that are harmonious, not necessarily identical but harmonious, with the rules around the world.

Because you see contract law is not identical, but harmonious around the world. The contracts are generally enforceable around the world. Yes, there are odd decisions, but there are odd U.S. court decisions too. Let's not – let's not kid ourselves, right? So you see that generally companies find enough certainty to operate contractually. And right now in the SEP space, there's enough certainty that people operate globally with some confidence that the results will be the same. We're working hard to make sure that that remains the case. Whereas, you know, others are working hard because they can – they have greater traction on some ideas in some places than others, in ways that will end up decoupling the system.

Dr. Copan: Yeah. Jonathan, Gillian, anything that you'd like to add?

Mr. Barnett: Sure. So I'm going to take us back to 1995, which is TRIPS agreement. And it did something similar to that – to that legislative cocktail that I talked about back in the '80s. It set a baseline of IP protection around the world. And Gillian talked about how complex the supply chains are in biopharma. If we look at semiconductors, it's the same thing. And what happens in both of them? Well, it's really complex if we go into the details. And I have some great diagrams I could show you. But the basic idea goes back to Adam Smith's pin factory.

Because what happened in both of these tech-intensive industries, tech is not just about innovation, right? That chip that's in your Apple iPhone or Samsung, right, there's lots of components in there. With the market is done with that stable property rights baseline, rooted in TRIPS, rooted in bipartisan USTR commitment over and over affirming TRIPS, until recently, the market can then allocate every single function of that supply chain to the firm in the country that does it best, consumer gets that phone as cheaply as can possibly be made, within current – within current technology.

We talk a lot about, in Washington today, friendshoring on the manufacturing side in semiconductors. We already have friendshoring in place at the innovation levels of the chip supply chain with our likeminded allies, in Asia in particular. And those countries – Taiwan, Japan, Korea, Singapore, Israel – these countries are reliant on a firm commitment to IP rights. Why? Because it enables the supply chain to disaggregate and it allows information to be transmitted among all different players who are all best suited for that to happen. By reaffirming the strength of the U.S. patent system, we not only preserve our own national security, but we preserve the security of an alliance of many other countries around the world who have a similar set of values to our own.

Dr. Copan: All right. Thanks. Anything that you want to add to this?

Ms. Fenton: Sure. Yeah, I'll just very, very briefly say, I'd like to introduce the concept of a different type of standards. This is something that the Licensing Executive Society has been looking into developing in recent years. Which is, business process standards. If you think about it, how could we take a well-functioning market and make it work even more efficiently, be even more rapid response capable? And one of the ways that we can do that is to think about introducing voluntary standards for good stewardship of intellectual property.

Think about all the time that gets wasted in investigating companies, in terms of conducting due diligence before deals, and also the confidence that needs to be built up in having a company perform well in due diligence and presenting, you know, a very well-managed picture of its intellectual property. What if we could make that a little easier? I think if we were able to do that, you might see companies more customarily operating at the pace that they did during the COVID vaccine push.

Dr. Copan: Yeah. Thanks, Gillian. And really applaud the Licensing Executive Society for that important effort.

Time for audience questions. Start here, please.

Q: Hi. Bill Wichterman at Covington.

First of all, let me just say how great it is that CSIS hosting this, right, and it's now inside, because it's so appropriate that we be talking about the patent strength and national security and other things. So it's really great that you're doing it.

Two quick questions. One for Jonathan: Riff a little bit more on the relative benefits of patents over trade secrets and what that means also for technological advance and international security. And I would like you to get back on that horse you just dismounted too quickly, Patrick, on the question of why patents, you said, are not an incentive, or not – that's not what they principally are. I'd love to hear that. Thank you.

Dr. Copan: And would you please introduce yourself as well?

Q: Oh, Bill Wichterman with Covington, yeah.

Dr. Copan: Thank you so much.

Jonathan.

Mr. Barnett: So, in general, why should we prefer that companies use patents or IP-equivalent-based strategies over trade secrets? Well, the answer is very simple. Because it allows knowledge to get out into the market faster, right? Patent not only enables the innovator and the investors behind the innovator to earn a return on its innovation, it discloses information. It enables subsequent innovators to build upon those, right? So the patent only covers a fairly narrow range of knowledge territory. It discloses to competitors other areas, other entry points into the market.

So everything else being equal, we prefer IP-based strategies as opposed to trade secrecy strategies, because, trade secrets 101, everything has to be done in order to not allow that information to be made public, because, of course, then you lose the protection entirely. And that's why when we distort business strategy choices by weakening the IP system, even if we were able to maintain the same level of innovation, we're probably not in as good a place as we would be otherwise because we're actually making it harder for other innovators to build upon that and to come into the market.

Dr. Copan: Great.

Mr. Kilbride: Thanks, Bill, for the question. I'll just say, words matter. And in any space, policy space, economic space, whatever, we kind of tend over time to get a little lazy about words and use words that we all understand, but their literal meaning might conflict with what they actually convey, right? And incentive is one of those words. I remember, Kirti was kind enough to introduce – or invite me to speak at one of these LeadershIP conferences when they were back at the Newseum a few years back. And I said at the time, two words I hate as a person who's relatively new to IP. One is reward and the other is incentive, with respect to the patent system.

Why? Well, rewards are inherently retrospective and arbitrary. It's a recognition, something over and above, a bonus. A patent is not in any respect a reward or a bonus. It's a recognition of value added in the economy. Nor is it an incentive, any more than your ability to own property that you invest in – you build a house, you buy land, you buy your car. You get a title to those things. It is not an incentive. Your incentive is to get to work, get to the grocery store in your car. So let's not confuse things.

And I'll give you a real-world example here. AstraZeneca was recently – their case against the price controls in the Inflation Reduction Act was recently dismissed on a question of standing. And the judge specifically pointed to their use of the word "incentive," and said that, you know, you have no guarantee of being able to do future work that will provide you value. We don't guarantee that. And he tied that to the word "incentive." I would say, no. The injury to AstraZeneca was that the present value of their long-term

investment in their innovation was devalued by the price controls in the IRA. And the word "incentive" specifically really did them harm.

Dr. Copan: Thank you for getting back onto that horse, Patrick. (Laughter.)

We have a question here. Microphone. And please introduce yourself first, and your question.

Q: Hello. Robert Schmidt from the Small Business Technology Council.

And my question is first for Professor Barnett, and then anybody else who would like to comment. You mentioned that the number of patents from small businesses went from less than 5 percent before 1980 up to 25 percent. Just to add a little more to that, now the SBIR firms produce more patents than all the universities combined in most years. So it's these small firms that are really Patents "R" Us.

But what my question is, is that in other fields – you know, in education we go from kindergarten all the way up to postdoc, and we have a bunch of steps in between. In baseball, we go from tee-ball to minor leagues to major leagues, and we have all of these different steps. And the question is, as we see how the whole defense infrastructure has combined and collapsed over the last decades of, you know, we used to have many airplane manufacturers. Now we have very few. And so there are fewer and fewer companies in this to be able to control – to be able to have this industrial base for defense.

So, you know, how do we encourage small businesses to grow, and to be able to get steps for them to be able to grow in stages? Which we currently really don't have. We have small and large, and that's about it. You know, you got 500 employees, or you don't. And so how do we get additional steps and other things to be able to grow this industrial base and make our country stronger, in the next generation, and all the subsequent generations?

Mr. Barnett: Yeah. So thank you for your question.

Yeah, the story here – the policy story here is about innovation, and it's about entrepreneurship. And that stat's exactly correct. It's 5 percent of business R&D when patents were weak were attributed to small firms, jumps up to roughly a quarter when patents are strengthened. Signaling, suggesting, that patents enabled accelerated small firm entry. And let's think about why that's the case. The reason that's the case is that with the patent portfolio in hand, the small firm is able to secure VC investment. It's able to partner safely with large corporations because it's protected to some extent from the large firm partner expropriating its technology.

We see this – I used the biotech example because it's just the clearest example, where you – where there was such a drastic change in market structure. When the patent system was weak, you mostly had a handful of large, integrated firms. In biotech, we know that's not the case. We have thousands of small firms who are partnering with large firms, sometimes vertically integrating all the way through. And I'm not an expert in some of the other policy areas you're touching on, but what I will say is that when we're talking about areas of high policy importance, defense, where I think we all recognize there's a lack of entrepreneurship, there's a disconnect between Silicon Valley and what DOD is looking for, climate tech.

In general, if an area is of high policy importance and we want to leverage our entrepreneurship capacities – because most of the – many of the breakthrough innovations in U.S. tech industry, they don't come from the Apples or the Googles of the time. They come from Hewlett Packard in the garage. Hewlett Packard needs the patent system. So if we're talking about climate tech, and that's importance, economic history, economic policy tells us we should strengthen the patent system. That's going to elicit capital. That's the fuel that the entrepreneur – that the small business firm requires, whether we're in defense or in other areas.

Dr. Copan: Great. Thanks so much.

Q: Thank you. Cal Goldman from Toronto. Just flew in this morning. I appreciate the invitation from Kirti, and others. Once again, I've been involved in LeadershIP meetings going back to the Qualcomm days.

Very interesting discussion on the panel this morning. Informative. But I'm going to make a suggestion for this organization to consider going forward in the future. I'd like your reactions to this. You bring a real international dimension, not just U.S. perspectives from U.S.-based folks. In Canada right now, and I can say this. I practice both competition law and foreign investment, national security views. I'm also one of the vice chairs on the new ABA foreign investment the National Security Committee just set up because of the importance of the area. The vice chairs are from various countries around the world.

Take a look at our Five Eyes situation. So if you want to talk about technology, you can't do it excluding what's going on in the Five Eyes, with China and elsewhere. Look at Canada next door. Right now, we have a major federal inquiry led by an appellate judge into election interference, primarily by examples from China and other countries. And they are really serious. As some politicians have said, if they interfered in one seat in parliament, that's a threat to democracy, let alone a number of them. And they're using technology. And there's all kinds of evidence coming out there. There are other issues with Huawei, TikTok, use of technology cutting across the Five

Eyes. And I wanted to suggest to you to please consider going forward a broader perspective, because some of the issues are very serious.

Dr. Copan: Yeah. Indeed. Thank you so much for those – for those great points. And a number of our comments have certainly discussed the global implications and partner nations to the United States. And very, very well taken.

We're nearly at the end of our scheduled time, and so we're going to go to a quick lightning round. And so I'd just like to ask each of our distinguished panelists for a few comments in closing.

Starting, Patrick, with you.

Mr. Kilbride: Sure. So two quick points. One, in response to the comments that was made, I think there's always value in having an international viewpoint. However, I will say you know, when I started at GIPC, my focus was international advocacy. Today, it's domestic IP advocacy. We have to get the ship right at home, and then we can worry about the rest of the world. Or we will never be competitive, we'll never be technological leaders.

The broader point I want to finish with, I think everyone in this room understands and appreciates the wisdom of David Ricardo and his point about the invisible hand of the market. But I like to offer a counterpoint to that. Everybody, please put your hands up. Come on, bear with me. Everybody, hands up. We, and 8 billion of our closest friends and family around the world, we are the market. Very visible hands making choices every day. That is the power of the markets. Its power, the U.S. economy. And we when we allow political elites to substitute themselves for that decision making, then instead of billions of people making smart choices about their own lives, you have a few people making choices that necessarily limits the wisdom – the collective wisdom that we can bring.

Dr. Copan: Great, Patrick.

Fabian.

Mr. Gonell: So I'm going to focus my closing remarks on kind of the question about small business, and some thoughts about that. And, again, I'll focus on kind of the standardization space. And one thing – you know, standards markets that are global, right, basically lend themselves towards big, big players, right? And innovation wants to be – wants to be big. But does that mean there's no room for startups, no room for innovators? There is, when there's robust patent rights and therefore the inventions that they come up can be monetized and can have a return on investment.

So in the 4G space there was a company called Flarion which was, you know, a startup in New Jersey, that developed some really, really good technology that was very useful for cellular standards. And they were able to patent it. And their patents were quite good. Qualcomm ended up acquiring them. And I think that was a good outcome. They didn't grow up to be a big company themselves, but the investors got a return on investments, employees became employees of Qualcomm, and that in itself can then start a virtuous cycle because not all of those employees stayed at Qualcomm. Some of them left and started other ventures. And you see that now in AI – the AI space too, right, where people are leaving Google and starting their own companies, right?

And so long as there's – so long as there is a pipeline for a baseline of rules that will promise a return, then people will invest capital, seed capital, and start new ventures. And some of them will grow up to be big companies. Some of them will be acquired. Some of them may be midsized companies for a while on the way to being big companies, or may be midsized companies and be happy. But the point is, all those companies have to start somewhere. And if you don't have a robust patent system, if you devalue patents, what you end up with is the big players that can already afford innovation, that have different ways to protect it through trade secrets and other things, they will more dominate the space. And we'll lose the dynamism of new entrants.

Dr. Copan: Jonathan.

Mr. Barnett: Thank you. Our panel was focused on innovation and competitiveness. And I think these things go together. The competitive advantage of the U.S. economy, and the economy of its likeminded allies around the world, is the ability to innovate. American innovation over the past decades has outshined every other country. And part of that has to do with a holistic innovation ecosystem where basic research is funded by the federal government. The federal government has an important role to play in doing that. The market cannot replicate it.

But the government is no good at commercializing, at cultivating those technologies. Legislation, such as the Bayh-Dole Act and all of the other policy actions around that, are a successful combination. And they are one that should be preserved and bolstered, not just in the biotech area, but in other areas of the U.S. tech economy. That's – again, that's good not just for the U.S. That's good for other – our allies around the world, who ultimately rely on that system as well.

Dr. Copan: Closing remarks, Gillian.

Ms. Fenton: Great. Thanks. I'd like to revisit the idea of an international approach, and weave in the idea of data and data as an asset. Following the world of

emerging infectious diseases is a really humbling, and fascinating, and salutary endeavor. This is an area where we need to be open to international collaborations and global efforts to collect data and to parse through it to determine what it means. Because, of course, a new disease threat that arises anywhere has the potential to affect all of us everywhere.

Dr. Copan: Great. Thank you so much. What a terrific panel. Thank you for your insights. I know that there's going to be a lot of conversation around these tables here today. Let's thank our distinguished panel. (Applause.)

(END.)