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QI Panel:

Rekindling the U.S.-China S&T Relationship: Challenges and Opportunities

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Marcus Stanley 0:42

Hello, everyone, and welcome to the Quincy Institute webinar on challenges and opportunities in US China, Science and Technology Policy. And happy new year. So as as folks may know, in december 2024 the Biden administration renewed the science technology agreement between the United States and China, and this continues a long tradition, a now almost 50 year tradition of US China science and technology cooperation. This was really one of the initial pillars of us, the US China relationship, beginning with the opening to China in the 1970s so this continues, this, this current renewal of the Science Technology agreement, continues a long tradition, but in light of the tensions in the US China relationship, this kind of cooperation has become controversial in a way that I think it almost never was before. And we saw people in Washington, for example, the select committee in the House actually criticizing the renewal of this science technology agreement based on arguments that China was benefiting too much from science technology cooperation with the United States.

So we, I think we can expect this to be a continuing area of debate in Washington, DC, and we have three very well qualified experts with us today to discuss it in alphabetical order. Mark Cohen is currently the technology consultant to the Asia Society. He's also affiliated with the George Mason University Law School. And prior to his current positions, he served as the first US representative to China for the US Patent and Trademark Office, and was also senior counsel to the USPTO on the US China Science Technology relationship. Denis Simon is a non resident Fellow at the Quincy Institute and a senior lecturer at Duke University. He previously served as director of corporate partnerships at the University of North Carolina business school, and also was a professor at Duke University's Fuqua School of Business, and he has Dennis has a 40 year career of academic contribution on US China, technology cooperation and policy. Caroline Wagner is currently on the faculty of the John Glenn School of Public Affairs, and is an advisor to the Battelle Center for Science Technology Policy. And prior to that, Caroline was a policy analyst working with the RAND Corporation and other government affiliated institutions, and she was the deputy director of the Science Technology Policy Institute at the RAND Corporation. So I'm going to hand it over to our panelists for initial presentations to start. Then I'll be asking them a few questions as moderator, and then I will open the the floor to all of you virtually to submit your own questions. You can see that there is a a tab on the bottom for Q and A, and you should, you should enter your questions there. So again, let's, let's do it in alphabetical order. Mark, do you want to start us off?

Mark Cohen 4:46

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Should I start or I think Dennis should be starting, right?

Marcus Stanley 4:50

Okay, that's fine, Dennis, why don't you? Why don't you kick it off?

Denis Simon 4:58

Okay, well, first. Let me thank the Quincy Institute for providing a platform to discuss this. Recently renewed US China science and technology agreement, as Marcus indicated December 13. It was renewed by both governments now the it's interesting that the term renewal was used by the State Department. But in reality, from everything that we know, it was really a major revision of the existing agreement that was first signed in 1979 and had been renewed every five years up to August 2023 the last renewal, interestingly, was under the first Trump administration in 2018 so this has been an ongoing relationship that, in many ways, is been one of the linchpins of the bilateral relationship. In my opinion, at least the existing relationship had become somewhat obsolete, and so far, it really did not address many of the key issues affecting bilateral S and P cooperation, issues such as data security and privacy, personal security, reciprocity and access, equal access, and, of course, IPR ownership issues. The previous agreement we must remember, was put in place during an entirely different international political and economic environment. It's very important to recall, I think that the initial s and t agreement when it was established US policy towards China could be captured in an often used, yet very simple phrase, quote, a stable modernizing China is in the interest of China, the United States and the rest of the world. This set the tone for both the breadth and the depth of the cooperation that was to follow. And simply stated, there was an initial two to three decades of S and T cooperation between the two countries, and there was not much expectation, frankly, at the time, that the distribution of benefits would be symmetrical, nor was there much aspect expectation that there would be substantial gain to the United States from the cooperative relationship.

After all, we must remember when that agreement was signed, China had just come out of the turbulence of the Cultural Revolution, and by many assessments, was 20 to 25 years behind the United States and most of the important fields in science and technology. Today, the complaints that we hear that somehow, someway, China has gotten the best of the deal in terms of the science and technology aspects seems almost counterfactual, when in reality, the US intent was to support the modernization of the Chinese economy as well as the science and technology system. And in fact, by all reasonable measures, the US cooperative relationship with China in s and t has been a great success. The US experience has served as a model or as a guidepost for several important developments in China. First, the configuration, I mean, the reconfiguration of Chinese universities away from the Soviet model and towards more closer alignment with the model of our one comprehensive research universities in the United States has been a big success. The establishment of the China National Natural Science Foundation strongly reflects the structure and operation of the US National Science Foundation.

Third, the ideas currently in place in China, surrounding peer review, research ethics, technical standards, etc, owe a great deal to us influence and finally, the dramatic improvement in the management of high end scientific and technical talent derives in many ways from the American experience. Moreover, current Chinese efforts to establish a more diversified global talent pool within its own country reflect a deep understanding that diversity and multicultural teams can be important assets on the road to improving creativity, research output and productivity. And this doesn't even include the many fields of cooperation in science and technology that have yielded results, such as in climate, clean energy, data science and work on the human genome. So all of this interest in supporting China's overall science and technology modernization started coming to an end at the tail end of the Obama administration, the writing was on the wall when the US China in the innovation dialog, which had been started in 2007 I was a member of that initial working group. The dialogue was hijacked by the US so that the US government could use it to extract concessions from the Chinese over a growing number of important trade issues. The dialogue ended in 2017 right before the onset of the launch of the so called Trump induced trade war in. What is interesting to me about what has happened with respect to this so called revised s and t agreement is why it took us so long to recognize the continued strategic importance of science and technology cooperation with China. The transition of China from a so called Innovation laggard to a so called Innovation juggernaut has helped to amplify concerns about a so called rising China threat stimulated by growing national security concerns, geopolitical tensions, the after effects of the pandemic, and even calls for technological and economic decoupling. I believe the delays have more to do with the fact that we have consistently over exaggerated the risks and understated the tremendous opportunities for having from having a sustained relationship in science and technology with the People's Republic of China in September 2022 the NSTC, the National Science and Technology Council under OSTP issued its second report to Congress regarding US International S and T cooperation.

The report was extremely critical of the failure of the United States to do a better job in managing and leveraging the potential opportunities political and scientific from our cross border S and T relationships and partnerships in February of 2024, the third report was issued, and I'd like to seize upon a key quote in that report, quote as the United States works to address the great unsolved challenges of our time, including climate change and global pen and global pandemics, international s and t cooperation is more important than ever. Unquote, the report goes on to say that for the United States to be in the strongest position to compete and collaborate internationally, it must renew and deepen established bilateral alliances and partnerships, forge new relationships with other countries and strengthen its impact through multilateral S and T fora.

And finally, the report goes on to note that while some progress has been made since 2022 to improve the US position, much more work needs to be done to better manage international S and T engagements. I quote these reports to suggest that perhaps what has gone awry in the past with the US China s and t relationship has much more to do with our inability to manage the critical transition that was incur was occurring with regard to China's growing s and t capabilities and modernized R and D system than we've been willing to admit. Based on my

own research, I would pinpoint 2012 as the point where this transition was happening in China, and where China went from this position of laggard to on the way to becoming a juggernaut. There's no doubt that there are a vast array of complexities associated with the ongoing and future S and T cooperation between the US and China, and if not managed correctly, there clearly are multiple risks. The new agreement has inserted in it a range of guardrails and controls to minimize these risks and limit the scope of cooperation to select fields like climate change, clean energy, global health, in other words, much more in the direction of basic research. The fact that a joint commission has not which had been an integral part of the bilateral relationship for three plus decades, seems to have been discarded in favor of a dispute resolution mechanism leaves me a bit concerned about how new initiatives will be managed that recognized.

However, I'm extremely happy that we finally have an agreement in place, because not only does it carry with its symbolic importance, namely that it implies the blessing of both governments that s and t cooperation is a good thing, but it also can serve as an effective mechanism for rebuilding trust between the two countries. Suffice to say, there is no global challenge issue out there whose meaningful solution can be found without substantial cooperation and collaboration between the United States and China, and I'll stop there. Thank you.

Marcus Stanley 14:25

Thank you Dennis - Mark?

Mark Cohen 14:29

Caroline is next.

Marcus Stanley 14:31

Okay, sorry, Caroline?

Caroline Wagner 14:38

Yes. Thank you, Marcus, and thank you for organizing this timely meeting. It is so important that we discuss these issues and also engage a much larger community to talk about it. I agree with Dennis's assessment that calling this agreement over. Renewal is a bit misleading, since the agreement itself between the US and China is quite substantially different from the agreements of the past. And I would suggest that part of the reason that the agreement has been so difficult to renew is due in part to the fact that US motivations for engaging in an formal agreement with China had some underlying desires that science and technology would liberalize China and and and perhaps shift some of their government towards greater openness and more perhaps western style organization. And the disappointment that that hasn't happened is part of the reason that it took a while for us to renew the agreement.

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In my view, if we look at the cooperative relationship between the US and China, as Dennis said early on, it was quite asymmetrical. The US was the world power in science and technology, and we looked at our collaboration with China as a magnanimous kind of opening up and giving this wonderful resource to to an aspiring nation, but China learned very quickly and very well and put in place a number of very important policy actions that that built the underlying supports for a science and technology system, including the patent system, which Mark will address research and development spending and encouraging their researchers to go abroad and study and work and learn from the best in the world. This is the pattern we see throughout history countries that wish to develop their science and technology system, send their best and brightest to the World Center to learn science and bring it back. Now we know that in China's case, a lot of people came to the United States and stayed. A lot of Chinese nationals came and stayed in the United States. Increasingly, they go back in terms of percentage shares, but the large there's a large number of people that have stayed here. China views those people as a resource. It's a scientific diaspora. And again, this is not unique to China. Many nations have used a kind of diaspora. In the United States to help build their home science and technology system, that that's a very common pattern. So we see that China has used their resources people here in the United States.

And when we looked at this and counted it, we found that about 25% of US China collaborative articles was what we might call China, China collaboration, a Chinese person in the United States was working with a Chinese counterpart in China and collaborating in oftentimes at the frontiers of science and technology. This helped to build China's capabilities over time, and has raised China's status in science and technology publications in 2013 China, Chinese collaborators became the top country. China became the top country, collaborating with the United States, knocking off the UK, which had been our top partner for decades and decades, and remains our top partner. Even though we see the numbers of collaborations dropping off, the drop off began around the time when the administration put in the China initiative and began scrutinizing, adding scrutiny to US China collaborations, we see that it's continuing to drop in my view, and my as a result of my work, I would not say it's the China initiative that caused the drop off. In and of itself. China also was beginning to consider the need to build domestic capabilities. And so we see that we're in 2020, about 25% of all China's publications in science were international. Now only about 19% are international. So we see a drop off in China, and we see a drop off in the relationship with the United States, although not so much with the with Europe.

So that's an indicator, I think, too, of relationship to policy. So we see that China's put in place a lot of the underlying policies that support a system, but at the same time, a number of the technologies that are being developed and developed quickly, like quantum computing. Shooting nanotechnology, different kinds of electronics, are supporting what some people consider autocratic government, authoritarian government, as well as military buildup in China. And so these things are causing concern, and we see many nations, including the United States, putting in place new security regulations and restrictions related to research and development, and this is a very new development to a great extent, aside from export controls around dual use technologies in the military, this hasn't really been a theme that we've seen in science policy, but now we can see Japan, Canada, Europe, United States, Australia are putting

in place rather severe restrictions on research and development, particularly focused on China. But people talk about countries of concern, but the main country of concern is China. So we see that China has reached frontier levels of science and technology capability in many areas. These would be areas where it would make sense for the United States to strategically seek collaboration with China, since they're working at the leading edge. It would make sense to connect with them on those areas. But right now, at least, things are in flux, and I think policy remains unclear as to the extent to which we'll continue to participate in these kinds of collaborative activities. So with that, I'll pass, oh, you're muted.

Marcus Stanley 21:45

Thank you, Caroline. I've been so eager to call on you, Mark, and now I finally get to you.

Mark Cohen 21:52

Thank you very much and really appreciate it. And it's a pleasure to be here and to participate in this great panel with some very dear friends and experts in the field. I'm in the woeful position of being the lawyer at the end of the discussion about wonderful prospects for cooperation. We all know how that goes frequently in transactions, and the STA as Dennis and Carolina spoken, has many wonderful aspects to contribute to the US, to China, to the world at the same time. Just to clarify things a bit, there's some things about how this version of the STA have a bit of a smell. It was negotiated in secret. It may not be that different from past Stas, but nonetheless, that gives rise to suspicion it was executed in the waning days of the Biden administration, and we all know how Republicans might feel about that. The full text has not been released to the public. Generally, the attorneys in charge of stas have not been experts on foreign law, which is a concern to me, and typically not on intellectual property issues or issues like IP theft of the type that Caroline has just addressed data on outcomes of science and technology cooperation, particularly patents, scientific publications, new products and ventures, contributions to humanity since the last renewal have generally not been made available, or not been made available in a comprehensive format. They haven't made the case on how the SDA is a very valuable sandbox, in my view, for developing new science technology and IP policies in China.

So a lot of the positive side has also been admitted. It appears, in many respects, like a bureaucratic snafu in its original meaning, having said that I am a strong believer in the importance of renewing the STA I understand that those who have negotiated the agreement are worried about the incoming Trump administration wishing to seek to terminate it. If I were in the Trump administration, I would argue at this point that notwithstanding these various issues, sta renewal is important not only to the planet and to American science, but it's also an opportunity to expand IP and other protections and to demonstrate our case to other countries how such an agreement can be optimized, and such a relationship we need, as Teddy Roosevelt would say, to be in the arena. The basic problems, in my view, of the STA are two fold. One of them is the text.

And of course, we don't have the original text, the new text before us, but I'm, I'm going to guess based on press releases and the like. And the second is oversight. We've heard a bit about that already. Let's begin with intellectual property in the text and technology. The text is based on a 1967 definition of intellectual property that is singularly frankly pathetic. What has happened since 1967 well genetically modified organisms, production of traditional knowledge, genetic resources and bio prospecting, use of big data, the role. Of AI and scientific discovery, open source models for innovation, patents for software and fintech software, copyright, regulatory, data protection for pharmaceuticals, semiconductor layout, design conventions, new plant variety protections and an increasing role of the private sector and innovation in the US to name but a few. These are systemic issues in addition to the security issues that Caroline has mentioned, but and they're not China specific issues, the issues that need to be reflected in a modern agreement. A 1967 basis does not give us a modern agreement, and they're not abstract issues.

To take an example, the National Cancer Institute has a program in Kunming, China, which is based on research involving Chinese genetic resources and application of Chinese traditional knowledge to develop new cancer treatments. I don't know how they have navigated these emerging IP issues in a way that treats the US contribution fairly. In 2018 the Trump administration chose to ignore one of these issues involving ownership of CO developed technologies, which was then being adjudicated at the WTO. As I said at the very beginning, scientists often seem very disinterested in the law, and often at their peril, the agreement does have some China specific problems, and these are long standing. There's a Chinese regulation regarding ownership of IP created outside of China by China researchers. It's been on the books since 1986 it generally requires ownership of patents by overseas researchers to belong to China subject to certain limited legal exceptions, and it requires that the researcher report and disclose the invention to the Chinese Embassy and advance the filing for a patent. This is a huge intrusion. It should not be on the books. Another problem is that China permits anonymous filing of patents, and I don't know another country that has has that procedure in place, and this facilitates the conversion of a trade secret into a patent theft of a trade secret into a patent against the rights of the legitimate innovator. In other words, the STA through its silence, in a sense, condones the kind of legalized IP theft, at least with respect through the patents that may be filed by a Chinese innovator in China that are filed anonymously a Chinese collaborator, the policies are reversible.

These are other policies. And in fact, the STA is a great forum for bringing up some of these outdated issues and problems. And to that extent, I commend the STA as a way of not simply identifying problems, but resolving them. The new agreement also addresses issues involving US researchers in China being illegally detained, as as I stated back in 2016 when the STA was under consideration for renewal and it was, this was in a GAO report, a ministerial level document has no binding effect on other agencies. I therefore question the validity of such a commitment, although I don't question the good faith interest in resolving that issue, and I think we need more engagement, not only with the Ministry science technology, but other ministries to clarify these types of concerns. Now, let me talk a bit about oversight. Much of the work product from the STA materializes in academic papers, not patents, but there have been about 1000

patents. USG should provide regular oversight for review of sub agreements and their implementation, as well as the monitoring reporting of patent filings and publications, this type of information should be made proactively available to the public and to the many concerned USG agencies operating in a black box is not the best way to elicit confidence. As another example of lack of oversight. Chinese researchers routinely file patents in the US, but the US government does not fund filing patents in China. At least they have not. There is a vehicle in place, through the Bayh Dole agreement, where there's US government supported research, but there's no activity in terms of filing patents in China. This is also due, I believe, to a lack of oversight.

Another example is the current framework for publishing papers needs some adjustment. Differences in grace periods, that is the amount of time you have to file a patent when something is disclosed in the academic literature between the US and China makes it difficult to prosecute patents in China once they have been disclosed in a publication, so that aspect also needs to be carefully managed. Our revised model sta could help to modernize us scientific collaboration, not only with China, but with other global partners. Better implementation could also ensure that the US remains into. Nationally engaged, which is indeed, as Caroline has noted, where some of our best research occurs. In summary, the focus now needs to be on how to better manage our collaborative efforts. And the proper question is not whether we should renew the SDA, but to more effectively manage it. Thank you.

Marcus Stanley 30:21

Okay, thanks to everybody. And I am going to ask a couple of moderator questions to the panel, but after, after I do that, we will be opening it up to folks. So please do feel free to enter your questions in the Q and A box that should be at the bottom of your screen. So there are a couple of really interesting things that themes that kind of came up in in in folks presentations that I want to explore a little more. Caroline, you mentioned what you call the Chinese scientific diaspora in the US. And you said that this was was typical of how many countries, not just China, had developed scientifically, is that they sent their citizens and scientists over to the World Scientific Center to learn. I think in Washington now, there are people who view that Chinese scientific diaspora as sinister, in a way, a potential sort of base for espionage or for, you know, almost a fifth column within us, science and you yourself, said that the Chinese do view this diaspora as a resource? What? How do you think the US should view the Chinese scientific diaspora, and what would be the cost to us if we started to view it in a purely negative way?

Caroline Wagner 32:00

Yeah, thanks for that question Marcus. And actually, it would pick up on something that Mark was talking about in terms of improving an STA relationship and and particularly making it more codified the many, people, Chinese scientists, many who have become American citizens, have contributed almost untold amounts of incredible capability, wealth, knowledge and help to build the US science system. This is not unlike what has happened with other countries that were developing their science system. So, for example, in the 1960s many Egyptian scientists came to the United States, many, many stayed, became notable scientists in their own right, and

would work with people back in Egypt to help build up their science system. And of course, in the 1910s and 20s, US sent our scientists to Germany, and the top scientists in America learned German in order to stay at the forefront of science. So this is not unusual at all. It's how the science, the International Science system, works. I think the difference and the concern with the Chinese is, in fact, the systemic way in which it appears China has used its diaspora to bring back certain very specific kinds of strategic knowledge that was viewed as perhaps adding to a military and, you know, offensive capabilities in science and technology.

And people have studied this. I haven't, but others have looked at this to see, you know, what kinds of knowledge is being, kind of picked to be carefully brought back to China and instantiated into the science Chinese Science system, as Dennis said, you know, the basic science cooperation that goes on between the US and China is a great strength to the United States. But in many, many areas of science and technology, it's the space between military application and other kinds of commercial and civilian applications kind of is getting closer and closer and closer, right? So the space between basic research and application in many fields is very narrow. So this also adds to the strategic challenges and tensions between the US and China, since our systems are indeed so different in the political and military sense, and people's have a feeling that any research that we're doing with China is contributing to to their to strengthening their geopolitical position.

Marcus Stanley 34:56

So another question to you, Caroline, but I think. Now, Mark and Dennis, you may wish to chime in on this as well. I thought it was striking you. You started off your discussion by saying that there's this sort of backward looking regret that we have that Chinese scientific and technological and even economic development did not lead them to liberalize and become closer to the United States in perhaps the way that we had envisioned in the in the 70s. And to what degree do you think that people are looking at science, technology, cooperation and issues in kind of this backward looking sense that, oh, you know, darn it, back in the 80s, we helped them develop, and that was now we regret it, and now we're letting that regret color our policy choices. Now, instead of sort of looking to the future and the current situation, where potentially, we have things to learn from China, through through cooperation.

Mark Cohen 36:08

So to some extent, this is an enlightenment idea of centuries development, right? That I think Thomas Jefferson said liberty is the first daughter of science, right? In other words, you know, the openness and the experimentation, the willingness to upend our worldview, is very much built into western kinds of concepts of science. And so I think this sense was and with, if you look at the scientific leaders of the world, they tend to be liberal democracies, and they have civil rights, and they have, you know, academic freedom and so on. And these are values that very western values, let's say that that are highly valued and thought to be endemic to science, and that as the, I think the idea was that as China developed a science system, they would also develop these other aspects of, you know, open societies and be open to, again, academic

freedom, civil rights and so on, in the same ways that the West is. And that just has not happened. China has developed, really almost a new model of how to develop a science system, and, you know, using even with an autocratic government, which was thought by most theoreticians to not be really possible. So China's really accomplished something very unique. I think we need to readjust our own understanding and our own expectation in light of that. We need to and be much more strategic about it, rather than, in my view, closing up and trying to protect we need to run faster, be more aggressive, be more strategic, and use our relationship with China, perhaps in the same way that we feel now that they've used us. But perhaps it's a good thing that we all work together at certain frontiers, but perhaps with greater understanding and communication that Mark called for**.**

Marcus Stanley 38:06

Mark and Dennis, did you have anything to add on that on the back?

Dennis Simon 38:11

So I think, you know, we need to be very careful what we say we didn't accomplish, because it all depends where your key one is. So if you're like Mark and I and you began back in the late 70s, early 80s, looking at this relationship, you might be very impressed by the things that have occurred that most people at the time said would never happen, for example, the level of international engagement and the continued commitment, even of Xi Jinping, to maintain China's openness to the outside world, that they have not retreated from that despite all of the political tensions that have gone on between not only us, but China and other countries around the world. Second, if you look at the level of autonomy of the scientific community in China, again, it's not perfect, and I would not at all praise the current situation, because there are difficulties in terms of of the mobility and limits on on speech for the scientific community, but again, compared to where we were to where we are today, The extent of improvement in the treatment of intellectuals, particularly when China came out of a period the Cultural Revolution, when intellectuals were called the stinking ninth class, we are really in a dramatically improved state for them.

And then finally, just in terms of creativity, the notion had been that, oh, in our authoritarian society with no academic freedom, et cetera, you could not have creative expression, and therefore you could not have much innovation. And even in the as late as 2013 I think it was, the Harvard Business Review had an article entitled, Why China can't innovate. But I will tell you that system, as Caroline, says. Essence, maybe it's a new model. Maybe there's some secret sauce. But I think we have to understand China is a network society. Networks are the mechanisms that make China work. So whereas some people treat these relationships between overseas Chinese and Chinese back home, etc, etc, these are very natural things that happen both in the business realm and the economy realm, as well as in the science and technology system. It's very comfortable to work with someone who you can speak your own language with, share the same cultural background and even enjoy the same Chinese food with. So you know, I think that we've got to be rather careful about condemning where we are today. It isn't as bad

as it might have been, it isn't as good as it could have been. But I think if you look at the impact and the influence of the United States on the trajectory of Chinese Science and Technology, there are many things that have happened that are very positive, and we would be foolish. It would be ignored. As I said before, our successes in reconfiguring and re molding Chinese society in the S and T area.

Marcus Stanley 41:10

Yeah, there are sort of two things going on. One is the question of whether China became a more open society, and if you compare it to the 1970s certainly in the Cultural Revolution, the answer would be yes. Then there's the other issue, did China become a potentially more formidable rival to the United States? And that may be where some of the regret is coming from, because the answer to that certainly is yes.

Mark Cohen 41:37

I wanted to just piggyback on what both Carolyn and Dennis said, I think that a lot of the expectations of China were based on not well examined assumptions, and really a lack of strategic thinking that fed into that were Based on those unexamined assumptions, you know, an intellectual property which is my main area, you'd have the same kind of discussion as you had about science, which is that China needs IP to have a market economy. They have to have a rule of law to join the global trading system. And intellectual property will be good for for everybody, and it will help change the Chinese economy, and they didn't look to even then, existing models like the Soviet Union, which had one of the 10 largest patent offices in the world, North Korea has a patent clause in its constitution. Nazi Germany was a great reformer, and the patent system, any of these things can be molded to enhance the power of autocratic leaders in autocratic states. And that gives to the ultimate point here, which is Carolyn said, and let me just underscore it, I think it was a failure of strategic oversight based on optimistic assumptions about how science or technology or IP would change the society, including assumptions, you know, like the internet is jello, as President Clinton famously said, that somehow that would change things. And we didn't look at things strategically. And this is the opportunity, I think, with 2.0 if you will, of an STA to have that kind of strategic oversight, not to retreat entirely. That would be, I think the worst outcome, the best outcome is really to handle this with a thoughtful bureaucracy, thinking strategically, with greater transparency, greater oversight and reporting so we know what we're getting into and we can manage it well, and frankly, we'll get a lot of respect out of China for handling it better.

Marcus Stanley 43:41

So Mark, I want to follow up on that, because it relates to something that you raised in your presentation, which I thought was really cool and interesting, and I have not seen it raised in the DC debate before, even though it seems highly relevant, where you seem to suggest that we could use S and T science and tech cooperation as leverage to reform Chinese patent law more broadly, in ways that could help American companies and creators. And is that an accurate

perception of what you were saying, and how does that relate to that strategic oversight perspective you're talking about.

Mark Cohen 44:23

Well, first of all, you know, this is a sandbox. It's not the full IP system, it's not the full s and t system, it's just the STA agreement, which is basically bilateral cooperation, which actually makes it a very useful sandbox, because it's users of the system we're talking to we're not talking to policy logs. We're really talking to people who are actually scientists and engineers who use the IP and patent system. And I remember very well, I think Dennis was there when in the innovation dialog, we had Minister Wang Gong, and I mentioned to him that, you know, you that China had this antiquated. Regime where China owned all improvements to technology that was transferred into China based on a 2000 law that the STA was in conflict with. And he looked at me, is that still in place? I said, Yes. He says, That's antiquated. We need to get rid of that. He understood it from the perspective of a scientist and a scientific agency using the system. And I think many of these other problems that we've identified can similarly be addressed through, you know, users, smart users who understand the system. Having said that, you know, kind of the secret story on bilateral engagement with China over the past four years is that the USPTO has been able to maintain regular engagement with China, including meetings up to the Vice Premier level. So there's one narrative in Washington DC about decoupling. There's another story that hasn't been fully explored about whether that decoupling is really taking place in science and technology, and how much engagement is still going on, whether on a government or non governmental level. But I think the STA itself is a very valuable tool, because it's a little bit delinked from some of the other trade narratives.

Marcus Stanley 46:14

So so you mentioned decoupling, and before turning to the questions from the audience, that was the last question I wanted to get in. And I just ask folks to the three panelists to bottom line their answer to this one, because I know you go on a long time, and I do want to get to a few, a few audience questions. But so on decoupling, we've, we've heard a lot about the US, China decoupling in general. There definitely is pressure for decoupling across all areas. But a two parter, do you believe that decoupling has happened in the US, China, science, technology relationship, that it has already happened, and do you believe that it should happen?

Denis Simon 47:05

I'll start. I'll start. So I'm, I'm actively involved in some another project called the US China higher education dialog, and part of that is the looking at the research collaboration between universities and obviously, scientists on both sides of the Pacific, and it's very clear that a black cloud has entered into the picture, and that many Chinese Americans, established scientists in their field and their Chinese counterparts back in China are extremely nervous and apprehensive about re engaging with one another post COVID, the China initiative has put a damper on a lot of activity, but also just the fear that there may be a China initiative too, has

helped to create this kind of decoupling on the on the academic side, And of course, that's where the bulk of this kind of basic research is being conducted. So I would say yes, we're not at the point of full decoupling. And I know some people use the term de risking, and if you take de risking to its logical conclusion, it means yes, continue cooperation, but try to pull out of this as much of the risk factor as possible. I think we do have a choice here now, and I think that the fact that we do have a new sta as Mark has strongly suggested, you know, provides us now a mechanism to put those issues on the table and how to allow both countries and the leaders and with both countries go to sleep at night and get a restful night's sleep.

Marcus Stanley 48:53

China remains the top partner with the United States, just country to country level. So, but it's dropped off considerably from where it was. So we do see a considerable drop off, but some of it is because of the pandemic. So it kind of confounds our the way we count things, right? Because the pandemic has really disturbed the system in general, but we saw the drop off begin before the pandemic, you know, as a result of the both the China initiative and policy statements in China as well. So you know, China's desire to have, you know, greater self reliance. So, yeah, there's a number of factors there. And then, in addition, the, as I mentioned in my initial remarks, the United States and other countries are putting in place rather significant infrastructure to scrutinize the relationship and look at particular collaborative collaboration. So that's going to put a damper on things, as Dennis mentioned.

Mark Cohen 49:56

Let me just add in that there's all kinds of decoupling. There's trade decoupling, there's investment decoupling, the science decoupling. I'm just going to talk briefly about decoupling and intellectual property. We had a trade war around intellectual property, allegations of trade, IP theft, whatever that means. And from what I see of the data, and we're a little it's a little bit less transparent these days than four or five years ago. There's been no decoupling in intellectual property. Intellectual property is a long term asset. Past patents are 20 years. Trademarks collapse forever. Americans still file patents. In China, Chinese have filed more patents and trademarks in the US, and in many cases, they're the principal foreign filer, I think litigation also remains high. During about four or five years ago, we reached a milestone with China, where it exceeded Taiwan and many other countries in terms of many countries, in terms of technology transfers to unrelated parties. So actually, tech transfer is up, legitimate tech transfer, not, you know, IP theft. So, you know, I think the market is kind of saying that there may be some interim measures at play, but at least the IP market generally remains decent for for these kinds of things, it seems to suggest a degree of perhaps cautious optimism, at least for the moment.

Marcus Stanley 51:26

So I'm going to move to to audience questions now, and I'm sorry for taking so long to get there, although I think this has been a really, really good discussion, I'm going to try to ask these

questions two at a time, so that folks can can respond and we can move it along a little more quickly. One question is from Philip cau who's a Chinese American working at the State Department. And his question is, how will the renewal of the Science Technology agreement shape our ability to engage in greater science diplomacy. Will the STA create more opportunities for the US to leverage science diplomacy around the world? And a second question is from young Chen, asking whether Chinese European or Chinese, Japanese science and technology cooperation has also dropped off. I know Caroline mentioned that there were more safeguards or more security concerns in a range of countries. So anyone who wants to take either or both of those questions.

Caroline Wagner 52:37

Just quickly respond to that. The latter question, which is that when we looked at the numbers, the drop off is more dramatic with the United States, but and it hasn't been nearly as dramatic with Europe and Japan, but we do still see a drop off. So China has dropped as retracted a bit from international but most dramatically, I guess, with the United States.

Mark Cohen 53:04

Yeah, the first question you know, you can look at treaties and force to see how many treaties and agreements the US has with other countries on science and technology, and has always been an office at the US Embassy in Beijing. As far as I know, that's environment, science, technology and health. So this has really been a a core area that I think an expanded or more strategic approach to science could, could only help and further further fostering that being said, you know, there have been problems in the US approach to science. That is that the State Department, the legal department, handles the science part and the negotiations. We used to have a technology administration in the Department of Commerce that no longer exists. And there also was the Office of Technology Assessment, which Dennis was once a part in Congress, and that was defunded a long time ago. OSTP is actually a very small agency, and if you look at just who gets hired by many of these sub agencies that are involved in science policy, like the Office of Foreign Assets Control, or bureau of Industrial Security commerce, which handle export controls, they're generally not hiring stem people. They're hiring people with poli sci backgrounds or legal backgrounds and the like. And even in this area that I just spoke about, about science and technology agreements, USPTO, my former agency, was not on the clearance chain, and I dissented from a certain renewal back in 2018 on the basis that there were some legal problems, and it was only by the grace of USTR that I was called into a phone call to talk about the legal issues, because they were unfamiliar with them. So this and USPTO, by the way, as the largest team of STEM educated people in the US government. We're talking about 10,000 roughly, scientists and engineers and service patent examiners. So we really have to rethink how we manage science and technology in order to handle it effectively with the bureaucratic resources we have.

Marcus Stanley 55:14

Thank you. So a couple more very relevant questions here, one from William Jones, who asks, there is much concern these days about recharging the Science Technology potential of the US. People talk about doing this only through cooperation with allies. Someone even called for a science technology NATO. But is it realistic to think that the US can recover its reputation as a science technology powerhouse, while restricting or eliminating cooperation with Russia, with China and Russia that are also major science and technology powers.

Denis Simon 55:53

So it seems, it seems to me, that if we pursue our science and technology cooperation like we pursue military alliances and us against them, kind of mentality, then, yes, we will cut ourselves off from some of the most important science and technology developments going on in places like China. It is critical for us to have engagement in order to have access the one thing that we need to avoid is scientific or technological surprise, and the one thing that will ensure that we will succumb to that is the fact that we de link, decouple and disengage from working with other countries like China. One of the things that does happen when we have our scientists go there, and their scientists go here. We're just as able to talk to their people about their situations as they are to talk to our people when we go in these places. I I just think that creating a kind of wall between us is not going to help us either, push the frontier together, solve the problems that can only be solved through collaboration and to help us keep abreast of what's going on so we don't get caught short on our end.

Marcus Stanley 57:08

That's that's an interesting framing, that the key is avoiding scientific surprise. That makes a lot of sense. So there's an interesting question from Shiloh Yang, who asks about this new sort of Republican conservative coalition that's arising. And he calls it the coalition between effective accelerationism, represented by the tech right like Elon Musk and the tech allies of Donald Trump and the new sort of MAGA conservatism of Trump, and what could the implications of that new constellation be for science and tech cooperation? I don't think anyone knows the answer to this, but I think it's it's really interesting and new development. Would any of you like to comment on it?

Caroline Wagner 58:06

Well, I'd be glad to comment on one aspect of this, in terms of policy. Sure, even in this discussion, we're treating science and technology as if it's a national asset that can be managed and controlled. In fact, it's an intangible good. It is knowledge that flows rather effectively from place to place, depending on the capacity of a region to absorb it. And so what we see is, as countries develop they're absorbed with capacity to to know and understand science, they're quickly able to work with the best in the world. And so what we see then is this kind of international network, let's say a global network of people that work together regardless of political affiliation, right? And in fact, scientists and technologists tend to not pay too much attention. And I think Mark talked about this in his comments. They don't pay much attention to

the law or the political and geopolitical wins. They're interested in solving technical problems, and so that's what drives them.

And to a great extent, we've had an open system allowing people since 1980 let's say, and the fall of the Soviet Union, where people were released into this kind of great cloud of collaborative activity in science and technology, and we've all benefited greatly from that. To the extent that we try to re nationalize science or technology, we will all lose, in fact, science and technology will slow down in terms of acceleration, because unless you're working this is just the point just made. Unless you're working together with the best in the world, you are not working at the frontier. And that's why you see at the most elite scientists are working internationally over and over. Again, you see this to be a fact that people work internationally because they're trying to seek the best in the world and the latest and most interesting science. So the extent to which we have this tension now in the political system where we're thinking that, well, Science and Technology is our national asset, and we're going to pull back on it, it misunderstands the nature of a knowledge system, right out of a knowledge based system. In order to manage a knowledge based system, you have to take that networked approach that Dennis mentioned, you have to take that strategic approach that Mark mentioned, and make that and kind of really inverse. And you know, like invert the kind of relationship that we have with the world than what is being presented now.

Marcus Stanley 1:00:47

That is a great point, and I think a great point to end on that that you you cannot just sort of hoard science in your basement and stick it behind a wall and expect it to perform for you, because it's, it's, it's a human dynamic process of learning and creation so that that's, that's a real danger, and trying to decouple scientifically. So I want to thank our panelists. I thought this was a fantastic discussion. You could really tell that we had many decades of thinking about and reflecting on these issues between our three panelists. So thanks to to everyone for participating today. Thank you.