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BROOKINGS CAFETERIA PODCAST

TECHNOLOGY COMPETITION BETWEEN THE U.S. AND A GLOBAL CHINA

Washington, D.C.

Tuesday, May 5, 2020

PARTICIPANTS:

Host:

LINDSEY FORD
David M. Rubenstein Fellow, Foreign Policy
The Brookings Institution

Guests:

CHRIS MESEROLE
Deputy Director, Artificial Intelligence and Emerging Technology Initiative
Fellow, Foreign Policy
The Brookings Institution

TOM STEFANICK
Visiting Fellow, Foreign Policy
The Brookings Institution

Closing Remarks:

FRED DEWS
Managing Editor, Podcasts and Digital Projects
The Brookings Institution

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P R O C E E D I N G S

FORD: Hi. This is the Brookings Cafeteria, a podcast about ideas and the experts who have them. I'm Lindsey Ford, a David Rubenstein Fellow in the Foreign Policy Program here at Brookings. And I am back today for another special "Global China" episode of the Cafeteria podcast.

This is the second of two special episodes discussing U.S.-China technology competition, which is the subject of a new series of papers by Brookings and Georgetown's Center for Emerging Technologies published last week. I am really pleased to be sitting down with two of my Brookings colleagues today: Tom Stefanick, who's a Visiting Fellow here at Brookings, and has had a long career providing advice and consulting to the U.S. Government on defense technology issues; and Chris Meserole, who's a Foreign Policy Fellow and the Deputy Director of Brookings' Artificial Intelligence and Emerging Technology Initiative.

So, Chris, Tom, thank you so much for joining me today.

STEFANICK: Thank you.

MESEROLE: And thank you so much for having us.

FORD: I think this is a really important moment to be talking about tech policy, not just because it's become such a central element of the broader conversation about U.S.-China relations right now, but also, because with the coronavirus outbreak that we're looking at, there's been a lot of discussion recently about how countries are going to leverage technology to manage and, hopefully, work our way out of this crisis. And I think that really throws into stark relief some of the questions and issues about how democratic and authoritarian countries use technology in different ways.

And, Chris, you actually have a new platform here at Brookings, I think, where you are

looking at some of these questions. It is called Techstream, yes?

MESEROLE: Yeah, that's correct. The AI Emerging Tech Initiative, we just launched Brookings Techstream last Monday, and we've got some great content looking at exactly the kind of questions that you just laid out. And one in particular being how do we leverage technology to respond to the COVID crisis and allow us to reopen? Surveillance is obviously a huge part of any kind of contact tracing that needs to happen, but we also need to make sure we do it responsibly and in a way that's in accord with our values. And so, we've got a couple of great pieces, one by Ashkan Soltani and a few colleagues of his on contact tracing.

We also have a piece in response to what China's done. David Bandurski from the China Media Project has a great piece looking at the way in which Chinese citizens have been responding to some of the censorship and surveillance that the Chinese state has imposed as a result of COVID.

So, if you're interested in our topic, come on over to Brookings Techstream. We've got a lot of great content for you.

FORD: Fantastic. I want to come back to that conversation at the end of the episode, but to start with I actually want to back up a bit with you guys to the 30,000-foot view. Because you can look at the new batch of Global China papers that we've published and the different topics. There's a huge array of different topics, everything from 5G networks to fintech and digital payments, artificial intelligence weapons. Tom, you have a piece we'll talk about in a few minutes looking at technology and the national electric grid.

So, sometimes when you look at all these different topics it can be sort of confusing to understand the bigger picture. So, Chris, if you can start, I just wanted you to briefly walk us through how and why the tech competition has become such a hot topic and maybe the central

driver in the bigger debate these days about U.S.-China competition and the U.S.-China relationship.

MESEROLE: Yeah, so it's a great question. And I think one of the things that's happened over the last decade or so is whether it's the global economy or the kind of global politics writ large, a lot of the major fault lines now rest on what are fundamentally technology issues. Those technology issues aren't always driving the kind of conflict and geopolitical competition, but they're the fault line where what's emerging as a U.S. or democratic bloc and a Chinese bloc on the other side are coming into conflict and competition with each other.

So, a great example would be something like 5G networks. Most of the world is about to rebuild its entire telecommunications infrastructure. And that's going to be one of the defining stories of the 2020s. And the big question is not just in the United States and Europe or just in China, but for the 5 billion people outside of those two countries even, what kind of systems are they going to be relying on? Who's going to build them? And in particular, what kind of governing structures and policy frameworks are we going to put on top of these technologies? So, that as technology becomes the driver of everyday life, one of the ways in which people connect and work, what kind of governance are they going to experience? And what kind of protections are they going to have for human rights?

All of those questions are very much at play right now. And the world that we've kind of lived in over the last half-century where democracies have kind of been at the forefront of building out the technical infrastructure of the global economy in the world, that might look very different in 2030 or 2040. And how different it looks will really depend on what we do now. So, that's one of the major reasons this issues have kind of come to the fore lately.

FORD: It's a great way to put it. I mean, when you think about after World War II, I

think, the U.S. built a global architecture, and a lot of that, I mean, is focused on a lot of things that you can look at on the economic side: trade, global finance. And it wasn't just rules, but it was a lot of the actual institutions and tools and mechanisms that the United States help put in place, but I think have really sustained American leadership and economic vitality over the last several decades. And increasingly, it seems like what we do in terms of technology is going to really shape the world in the 21st century in the same way that a lot of those economic and financial decisions that we made post-World War II shaped the 20th century.

MESEROLE: Exactly. And one thing I would just add to that is that one of the really interesting things is that China, I think, has noticed how much effort the U.S. put into building post-war institutions and infrastructures and the way that the United States kind of helped build out a global infrastructure, both at the technical level and also in terms of the global institutions that we built, and the way that those two kind of fed into each other.

And one of the things that China's trying to do now is really begin to build out the same kind of influence in terms of both, on the one hand, the technical infrastructure that countries use, but also having a greater seat at the table in some of the international institutions that set the standards by which those technologies are developed, as well.

FORD: That's a great point. Tom, I want to come over to you for a second. When you hear people talk a lot about tech competition, people use the term "emerging technologies," but that's not a monolithic category of just one thing. It actually -- we're talking about a whole array of different technologies.

Can you help talk to us about some of the specific technologies that U.S. policymakers are focused on and concerned about right now when it comes to competition between the U.S. and China? And from your perspective, where you see China making some of the biggest

advances at the moment.

STEFANICK: There are a few technologies that are reiterated: 5G, AI, quantum computing, quantum key distribution, autonomous vehicles related to AI. These things are all areas of specific focus. AI's a perfect example of something where the Chinese came out and said we are going to be the world's competitors, depending on your translation, world leaders or be up at the top level at least with regard to those kinds of things. They also included that in their Made in China 2025 declarations.

Well, I think what happens when they do that is there's a focus here in the United States that they're going to beat us in this race. So, it gets pretty quickly cast into a technology race. Who's going to win in 5G? Who's going to win in AI, quantum, et cetera?

But if you really step back a little bit at how we emerged as a major influencer in technology, it was through a whole range of things: open standards, formulating standards, and convening standards, so that everybody would have interoperable systems; sharing; instituting a good patent regime and sort of sticking by it. And then, also, a broad array of levels of training tends to be an emphasis in these discussions of these tech competitions, the focus on the emerging technologies, so when we talk about the personnel that we need to do this, we'll tend to be doing things like counting Ph.D.'s or counting papers and things like that. Whereas to innovate and actually get something from an idea to a working system and then get that integrated, it takes a very wide range of abilities and training, and we've developed all of that in a way that China really doesn't have.

I mean, China has a weakness in that they don't have as many sort of lower level technicians as they need. I mean, they're working on those sorts of things.

But while we do get into these races on these emerging technologies, I'd say where we

are going is a competition in a much broader front. And that's where we, I think, need to keep our eye out.

FORD: So, Tom, in listening to you, what's interesting is for people like me, who are not tech experts and check out *The New York Times* or newspapers and read about tech competition between the U.S. and China, if I'm just reading that on a daily basis, my impression of what's going on could range from anything to the U.S. is losing horribly. China is beating us in AI. They're beating us on quantum computers. They're winning on 5G.

But I hear you saying something that sounds a little less breathless and slightly more measured in terms of where you think the U.S. is in this broader tech competition. That we're not necessarily losing, but also that we need to think about the competition in a much broader way than simply where do we race to win again advantages in specific sectors?

STEFANICK: That's right. To use a historical case, very quickly, to go back to the U.S.-Soviet competition, we had kind of a one-on-one competition. I mean, who had the first fission bomb? Well, we did. Who had the first fusion bomb? We did. But then the Soviets got theirs within a year.

Who had the artificial satellite? They did. Who had the first man in space? They did. So, we really, really focus on these one-on-one competitions.

But if you look over the broad history of the Cold War, it was a competition of systems. And, you know, we all knew that, and it became clear that our system of governance, that you very carefully laid out just a moment ago, Lindsey, that showed dominance even though in particular areas the Soviet Union whipped us. I mean, they had a man in space first. They had a satellite, Sputnik, in space first. They had a man go around the Earth 25 times before John Glenn went around 3 times.

Now, those things certainly make headlines, but it's the long game that really matters. And as Chris pointed out, China certainly understands that, so their Belt and Road Initiative shifted initially from infrastructure to more of pushing technologies and technology standards and integrating with other countries through electrical grids. They have a major plan to wire up electrical grids across Asia, Africa, and Europe. And they understand it's a very long game where some of the technology developments are more about integrating technologies and setting standards than they are having more AI papers than the other person.

I mean, I'm not discounting all those things. They matter, too, but there are a lot of other things that matter.

FORD: That's a great point. When we're talking about thinking about technology competition as a long game, where on any given day the U.S. may make gains in one area, China may make gains in another. Part of the challenge here, I think, for policymakers is trying to think about how you develop policies that both, on the one hand, protect the advantages that the United States may already have, but also you don't sort of like rest on the laurels of defending what you have, but actually move forward. So, how do you promote also innovation and advantages in new areas? And that's a balance.

And, Tom, I want to come to you again for a second. But you spend a lot of time thinking about sensitive technologies through your work over the years. And a lot of people talk about what they now call sort of a "small yard, high fence" approach to protecting sensitive technologies. Walk us through what that means in practical terms.

STEFANICK: I think I'm going to start with another not analogy, it's actually within the context of commercial technology competition. So, internal to the U.S., but I think this also, to the extent that we have allies that we can compete with commercially and collaborate with

commercially, it's useful.

And commercial and technology competition, it's partly technology driven, but it's largely, you know, what's the market? Let's use the term "market" more broadly. What do people and organizations really need? What do they value? And it's a constant feedback between understanding what the needs are, understanding how their governmental systems work, and how people want to use technology, and then adapting your own technology or innovating or making new or completely new technologies or adapting things that are already out there to meet those needs.

If you excessively put up those fences and emphasize protecting your own technology, in the commercial sphere that looks -- putting up lots of patents around your own technology, the expense of innovation and adaptation, you just don't last long because everything is constantly changing. And I think the United States, again, has this kind of long-term advantage here.

There are certain technologies that emerge that become recognized as critical, especially in intelligence or military areas that you have to protect. You can't reveal their capabilities or, more importantly, you can't reveal their vulnerabilities. So, you put the absolute highest fences around those that you can.

But in general, we tend internally to the United States, and also externally, we do best when we have an open, competitive environment. And the government helps oversee that. The DOD, for example, when they're competing for DOD contracts, they work very hard to make sure that there's some sense of competition there.

FORD: Chris, coming to you for a second on how we continue to innovate, which Tom has really made the point that if we're not doing that, we're dead in the water if it's just a defensive strategy. There's a paper in this new series that's coming out that Michael Brown and

Eric Chewning and Pavneet Singh wrote and they used the phrase "superpower marathon." And the idea I think they're getting at here is that this sort of economic and tech race going on between the U.S. and China is something that's probably going to last for multiple generations.

So, when you look at U.S. tech policy today, what do you see as the most important kinds of investments the U.S. needs to be making today to put us in that more competitive position for the future?

MESEROLE: So, the paper that you referenced is a really great one. One of the things I really like about it is the way that it really frames this as a long-term issue. And I think to the extent that we can frame our policy discussions now about what we should be doing and this competition around what kind of world we want to see in 2030 or 2040 or even 2050, I think it'll massively benefit us.

I don't think it's a question of who is winning the race right now. It's more a question of over the next 10 or 20 or 30 years, all the little decisions we make along the way are going to lead to varied diversion outcomes. And I think we want to make sure that we're in the best position that we can be in in the long term, which for technology in particular, especially given everything that Tom just said, to me it really boils down to one thing, which is the talent that you have.

And so, I think for us to invest in making sure that we're always at the cutting edge or nearly cutting edge of technology and that we have a robust technology ecosystem, not just in terms of our security sector, but writ large throughout our economy, we really need to invest heavily in education and immigration. There's really just no way we continue to maintain either the leadership or parity that we currently have if we're not doing that. In my view, it's actually probably -- historically, it's been one of the singular advantages the United States has had over

its competitors, whether it's in technology or elsewhere.

And I think back to the investment that we made in the education system in the 1960s and also in our immigration policy in the 1960s allowed just a flood of new talent to come in. And the way that I think about it it's really compounding interest over time. The dividends from investing in education and immigration policies that are sound and smart and effective really compound over time.

And one of the things that I worry about right now is that we're now at this kind of new -- we're not fighting the Soviets anymore, but we are in a kind of global contest for talent and competition with respect to technology. And there's no way that we succeed in that competition without the best minds in the world engaging with us.

We have some of the best talent in the world coming out of our schools, but we need to continue investing, A, in our domestic education systems all the way down from -- not just at the high-end university system, but even K through 12. And concurrently to that, we also really need to a foster immigration system that allows the best minds from around the world to come study at American universities.

I was talking with a colleague of mine who did her graduate work on quantum computing, and I think there was something like of the 20 students or so in her cohort, only 2 of them were born and raised in the United States. The rest of them were all from around the world. We need to continue those kind of policies and invest in them more. And without doing so, I don't know that we'll really be able to remain competitive.

I can speak more to some of the specific kind of programs and technologies that we might want to prioritize, but the bigger picture is it doesn't matter what specific programs you're prioritizing if you're not investing heavily in just education and sound immigration policies

overall.

FORD: So, you are advocating for both of those things. It's a hard moment, honestly --

MESEROLE: Mm-hmm, yeah.

FORD: -- to make some of those arguments, getting harder, in particular, I think, on the immigration front.

MESEROLE: Mm-hmm.

FORD: So, you know, the counter argument that some people would make is we don't need to have as much immigration because now we have foreign students taking those spots, learning everything they need to know about these new technologies, and taking it back to their own countries. This is essentially, I think, an argument Senator Tom Cotton was making just this past week. We should be teaching these things to American students instead.

What's your response to that argument? Which I think has gained traction in some circles recently.

MESEROLE: So, I'm glad you brought up the comment that Senator Cotton made. It's an important argument to engage with. It's certainly one that's gaining in popularity and I think I can kind of understand a bit the most generous readings of it. But I, again, would really push back strongly.

And I think one of the issues, you know, Senator Cotton's comment was really about high-end students, students who have extraordinary capability and will be going to some of the leading universities in the world and working in some of the most cutting-edge technologies that we have. And he's afraid that they're going to go back to a place like China and that they'll not only not stay in the United States and kind of invest in companies in the United States, but that they'll go back to some of our competitors and help advance their interests.

There's two points that I would make. One is that there's actually fairly little evidence that they're doing so. In fact, the evidence that I've been to see suggests that a lot of the top talent from places like China is actually staying, you know, if not in the U.S., then certainly within kind of the ecosystem of Western technology companies.

The second point that I would make, to some extent it's a more important one, is that for these technologies to stay at the very cutting edge of them, this is a numbers game, but not in the way that the U.S. historically played it. Education, and when you talk about numbers and numbers seen in education, generally speaking that means investing in math education because you want a literate workforce, you want a numerate workforce. And you're thinking in the terms of millions or tens of millions of students.

With some of these high-end technologies, whether it's semiconductor manufacturing or whether it's even kind of the developing the next algorithms in AI, you're really talking about a small handful of people around the world that are advancing the state of the art. Down into the 10- to 20,000 people who are really kind of at the cutting edge pushing forward the science.

And it's really -- if you want to have a healthy economy and if you want to be able to kind of stay at the cutting edge in terms of security implications of these technologies, you need to have as much of a share of that small, whether it's a few thousand or whether it's kind 10- to 20- or 30,000 folks, you need to have as much, depending on how you count it, but you need to have as much of that share as you can.

And right now, the United States is still doing pretty well in terms of keeping the top talent without that circle. I suspect that China looks at the U.S. and is envious of the talent that we have. But we cannot stay there over the next 20 or 30 years unless we invest heavily in ways of getting to top talent to come to the U.S. and work for either American companies or

universities. And the best way to get that talent into our ecosystem is to bring them in as graduate students and have them stay in the United States.

We went through a similar issue, to be perfectly candid, during the Cold War. And I think we found that it paid dividends, even though there were some risks involved. But in my view, I think both financially in terms of the economy and certainly on the security side, even though there are risks that some of these students are going to be going back, the benefits still, in my view, outweigh those risks.

FORD: It's a great point, Chris. I'm glad you brought up the Cold War because, you know, I think as we're having this debate, it's not like it's the first time that we have had to think about some of these issues before. And the U.S. has reaped the advantages of having extremely smart mathematicians, scientists coming from elsewhere in the world that have come into the United States and really helped make some of the most important technological advances, both on the economic and the security side, that have put the United States where it is today.

MESEROLE: Exactly. And I think one of the things that I'm afraid of is that we're going to lose that over time, and we won't notice until it's gone, and we can't get it back. I mean, I think one of the things that's really interesting to me is that right now you'll see kind of China, less so in the United States, but in many other parts of the world, they're investing heavily in bringing students from those regions to China and having them study at China. Meanwhile, we're kind of doing the opposite.

And in the next few years, whether it's 3 to 5, 10 years, the U.S. probably won't notice that we've lost out on some of that talent. But we will notice, really dramatically I think, in 25 or 30 years that a lot of the leadership around the world or the leading experts in some of these fields are no longer in the United States. And by the time -- I think one of the issues with

education, in particular, that the dividends pay off over such a long time horizon that once they're gone or you notice that they're gone, it's not something you can fix overnight. So, it's really something that takes a generation to build up.

It's unfortunate, in my view, that we were really wise, the generation that held the reins of power in the '50s and '60s and '70s were tremendously wise in terms of how they brought talent to the United States. We've reaped the benefits of that for, you know, 40 or 50 years now and it would be a shame if we let go of those rewards.

FORD: That's a great point. Tom, I want to switch topics for a second and come back to you. In this whole conversation about tech competition, one of the questions here is basically how you think about risk and how you think about vulnerability. Right? Do the U.S. and China have any degree of tech integration? Does it expose us each to mutual vulnerabilities? Which I think, yes, the answer is that it does, certainly in some areas more than others, and then how you manage that and how you sort of balance the risks associated with that.

And you've written a really interesting paper for this new "Global China" series where you take a look at electrical grids. So, sensitive domestic infrastructure and how technology and technological innovation is perhaps creating new vulnerabilities for this infrastructure not just in the U.S., but for China, too.

Can you sort of talk to me for a minute about some of the main arguments that you're looking at in that paper?

STEFANICK: Sure, and thanks for the plug. Speaking of things that you don't notice until they're gone, electrical power is really the ultimate. I mean, it's everything from this phone call, the Internet, to, of course, the supply chain to bring food to our grocery stores, to the refrigerators, and operations. They're so fundamentally woven into just our basic needs -- water

supply, hospitals -- that the Chinese government has, of course, focused on electrification for years.

But they recognize that the ability to provide reliable, secure electric power to their people is a core element of their, I do believe, number one priority, which is to keep the Communist Party of China in power. I mean, that's what the organization does, that's what they focus on. And they haven't always gotten it right; we haven't always gotten it right. We've had power outages as they have, but they spend a tremendous amount of time from the top down doing that.

And, of course, we saw, both the U.S. and China saw, the effects of attacks on the grid in the Ukraine, twice actually, in 2015 and 2016. And with a relatively highly trained group of people that could not only turn off the power, especially in the second attack that was made across the Ukraine's power grid in 2016, the Russian group was able to develop methods that would actually destroy, without physical kinetic attack, using electrical power to destroy very large, very expensive, hard-to-replace electrical components that make the grid work. And that would lead to long-term breaches (phonetic) that would a devastating effect on humanity.

So, you both put that on, you know, both sides. They wrote about that, are concerned about it. Simultaneously, the Chinese had seen from the Snowden revelations just what could be done, just in particular what the U.S. could do via the Internet and new information memes, so saw that as a matter of survival they had to protect their electrical grid.

Now, their electrical grid is not just providing basics to the people, but the Chinese also use it as a way of outward expansion of geopolitical power, too. They have a major program called the Global Energy Interconnection, or GEI. They are integrating a lot of solar and wind power. They have explicit plans to reduce carbon and shift to renewables. This gives them, of

course, leverage in international discussions, for example in the United Nations, becoming seen as a major force and leader in global green power. At the same time, of course, the United States is pulling back on that.

The security, the need to secure that on both sides is well-recognized. The United States, I think Angus King submitted some language for U.S. grid security. So, it's a big deal on both sides. And if we narrow it down to that, that very specific concern, I think we've got an opportunity here for both sides to talk and make agreements that the surveillance of each other's electrical grid, which, of course, could be discovered over time, and/or the actual attack on each other's grids, which the United States (inaudible) off, those are unproductive and destabilizing activities that are in neither country's interest. And, therefore, there's an opportunity there for the beginnings of some sort of discussion. So, that's kind of what the paper goes towards.

FORD: It's a great point, I think, that as this tech competition continues to play out, there are going to be areas where the U.S. and China may recognize that they need to fence off certain types of issues from the risk of escalation. Right? And attacks on domestic electrical grids might be one, where perhaps can we recognize that this is an area where we can put in place certain types of an agreement that might fence this off from being something that we might seek to use militarily to attack the other country.

So, I think it's important that you're bringing up in this paper, you know, where are the places that we might be able to look for opportunities to manage these types of risks and vulnerabilities, as well.

I want to just turn for a second with both of you to, I guess, the big topic that's on everyone's mind today, which is obviously the coronavirus crisis. And just ask you looking forward, as you're thinking about where tech competition and tech policy conversations are

heading, what do you see as some of the ways that those conversations may get shaken up by this current crisis? Whether that means that perhaps there are really interesting innovations on the horizon in the future or some really important policy changes that we may need to make in the next couple of years.

Tom, let me start with you.

STEFANICK: Sure. I tend to just fall back to the real experts that have pointed out to us numerous times now that there's a preparation stage that we have to have. Now, technology can help with that. It's a logistical problem. Of course, technology's used widely for logistics, but maintaining the right kind of supplies, the right kind of information, collecting the information.

I don't actually think that the solutions will come from the technology area, let me put it that way. Let me give you a concrete example.

Dr. Haseltine, who was just interviewed by John Allen at Brookings last week, mentions one thing that he felt that nobody was really talking enough about, and it was the step after contact tracing, after we've traced back of somebody who is known to have COVID symptoms or test positive, who were they in contact, tracing back, finding those people. And then the one thing that Dr. Haseltine really emphasized, I thought, was that the follow-on step is to quarantine those people. And that's going to be an essential part of if not this pandemic, God forbid a follow-on, where the fatality rate perhaps is higher. Maintaining some kind of humane method for keeping people out of the human contact network after they've been traced, that's a governance issue, that's a legal issue, that's a human rights question of humanity. We have to prepare for that.

Technology can maybe assist with that as it's done in Taiwan, where they actually monitor where people are and whether they're staying in their quarantine or not. But in Taiwan,

for example, the technology worked because people trusted the government. And that's the essential piece.

FORD: That's a great point, Tom.

Chris, let me come over to you for the final word.

MESEROLE: Yeah. I would just zoom out a little bit in terms of the effect of COVID on tech writ large. And I think there's probably two points I would make.

One is that I would really expect to see, things are turning in this direction anyway, but I think an acceleration of the uncoupling or at least disentangling of technology supply chains within China. Even before the crisis hit the U.S. and Europe, there was this moment in January where I think a lot of companies, they weren't expecting the crisis to leave China, but they noticed that they could no longer produce their products because all the Chinese factories had shut down. And I think it made them acutely aware of the vulnerability of maintaining just one kind of dominant supply chain or having a supply chain reside primarily in China. And I expect that when the economy starts to reopen again that there will be a lot of interest in diversifying their supply chains to the extent that they can.

The second point I would make is that one of the really kind of dominant storylines prior to COVID was the use of technologies and cutting-edge tech, like AI, particular for digital surveillance and deconstruction over what are effectively called digital authoritarian states. And China's been very successful in developing some of these technologies, deploying, say, things like facial recognition technology domestically at scale and also, increasingly, starting to export those systems around the world.

One of the real big debates was if you are in a democracy and you care about keeping your people safe, but you also care about making sure that we have things like robust data

privacy protections, how can we leverage some of these technologies in a way that even some of the benefits that they bring forth, things like security and public safety, how do we manage the balance between how these technologies should be used for security while also maintaining our basic commitment to privacy?

One of the things that's changed now is that we've already started to see a bit of a rethink in terms of what kind of data protections we need. There was a strategy document that the EU released in February, just weeks before most of Europe shut down, that kind of argued for placing significant restrictions on the kinds of data that could be collected and used in machine-learning applications. And one of the things that's interesting even in just the last month or two is that there's starting to be a rethink in terms of what kind of restrictions should be placed on data in light of the fact that for a lot of these data it'll be useful for public health and will be vital in some ways for reopening the economy.

One of the interesting questions that I think will come out of this is to what extent do Western societies in particular begin to renegotiate their kind of fundamental contract between the population and the state and the role of surveillance within that contract? I think there's ways that we can balance democratic norms with the use of increased surveillance, but it's still an open question about what kind of systems we'll put in place and what kind of restrictions folks in the U.S. and Europe are willing to bear.

But I think that's probably, to me, the most interesting question coming out of this from a tech perspective is, again, where do we want to draw the line between privacy and security with respect to our data? And who will be allowed to have access to it? It's kind of central question going forward and one that I don't think we've fully resolved yet.

FORD: Yeah, it's a really important point. I mean, I think this question of data privacy

was one that people were already wrestling with and this crisis really threw some of those questions and choices into much more stark relief. And policymakers are sort of having to work through some of these really big existential questions in real time as we figure out what types of contact tracing and technologies we're going to have moving forward and that we need to be developing today.

So, Tom, Chris, I just want to thank you both so much for joining me today. This has been a fascinating conversation and I've enjoyed it.

And I hope everybody will go to the Brookings website, check out the new "Global China" tech papers that are up there, as well as the early articles. It is great reading if you are all stuck at home, which we are, and you want to dig in on some interesting foreign policy debates.

So, thank you both and thank you to everyone for joining us and listening today. Stay safe, stay well. I'm Lindsey Ford. This has been the Brookings Cafeteria.

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Until next time, I'm Fred Dews.

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