The Brookings Institution and Center for Strategic and International Studies
Vying for Talent Podcast

"How to safeguard America's national competitive edge in STEM talent"
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Episode Summary:

In the second episode of "Vying for Talent," former Energy Secretary Steven Chu weighs in on U.S. science and technology innovation, the political outlook for STEM immigration reform, and why he is optimistic about America's talent base. In discussion with co-hosts Ryan Hass and Jude Blanchette, Dr. Chu calls for government action to safeguard our national competitive edge in STEM talent.

CHU: I feel very strongly that we should remain a place which would educate people, especially in advanced degrees, because in the end, the history is enormous benefit to the United States because most of that talent stays.

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BLANCHETTE: The United States has long viewed itself as a magnet for attracting the world's best and brightest. Look at the leadership of many of America's cutting edge technology firms, or walk the floors of its most advanced laboratories, and it seems obvious that foreign born talent still wants to come to the United States to live and work. But just how open is the door to foreign-born workers? And is the U.S. government taking sufficient steps to ensure that the United States can remain a leader in STEM fields?

Hi, my name is Jude Blanchette from the Center for Strategic and International Studies.

HASS: And I'm Ryan Hass from the Brookings Institution, and we are co-hosts of the Vying for Talent podcast, a podcast exploring the role of human talent in the unfolding competition between the United States and China. Today, we're delighted to bring you a conversation with Dr. Steven Chu—a Nobel laureate, a former secretary of Energy, and one of America's most distinguished scholars. Chu has thought deeply about how America can nurture its advantage in attracting talent from around the world.

BLANCHETTE: We're really excited to have Dr. Chu on today's episode. His unique vantage point gives him a perspective from academia, government, and the private sector. Fewer are in a better position to evaluate how the United States is doing in attracting STEM talent as he is. And so with that, let's get to the conversation.

HASS: Professor Chu, thank you for joining us on the Vying for Talent podcast today. You are well known as a Nobel laureate, as a former secretary of energy, and also as a preeminent thinker and scholar at Stanford. But before we get to the present, can you tell us a little bit about your past? What was like life like when you were growing up? And what did you want to become when you grew up?

CHU: Well, I grew up on Long Island. I was born in Saint Louis, but my family moved shortly thereafter to Long Island. My father was a professor at Brooklyn Polytechnic in Brooklyn.

And so what he did, they did, my parents did, is they wanted to go to a good public school, which usually meant a more upper class neighborhood or upper middle class neighborhood. And as is not atypical, they were immigrants. They went to graduate school here in the U.S. during the war. And with the China Revolution they couldn't go back. So they were here. And so they scraped every penny to buy the poor, one of the poorest houses in an upper class neighborhood. It was a town of about 25,000 people. There may have been one or two other Chinese families in this town of 25,000. So, we grew up essentially being, if not the only Asians and certainly one of the only Asians in our school system.

My parents also spoke to us only in English because they wanted us to do very well in school. That was the top priority, and to assimilate. My father spoke, when I was growing up, of prejudice against Chinese during those days in the fifties and sixties. I didn't see it personally in my own life, but I didn't appreciate how deep it was until I grew up and I was much older,

in middle age, and realized that, for example, my father's oldest sister, who is a brilliant organic chemist, before the Revolution she was a professor of chemistry at Tsinghua University, and I came across a book talking about chemistry in China and says she's the most significant female Chinese chemist before the war.

When she came to the United States, again as a refugee, a woman, a scientist, could not get a job of any distinction like what she had in China. So she settled for teaching in a small girl's school. It's a prep college to train young women to be school teachers. Yet she was so good she got NEH funding for the next couple of decades. She's the only person, and it's a small college, and that a research program but a continuous research program and published significant papers. But had she been transplanted in a place fitting of her capability and everything, it would have been very, very different. And so I didn't know about that until much, much later in life, in my fifties and sixties.

My grandfather on my mother's side, first he was a civil engineer, he went to Cornell. He got his PhD, my aunt went to Michigan. That was the tradition at the time—you go abroad, you study, you get a PhD, you come back, you're a professor. And so, he became a professor, but very quickly rose in the ranks and became president of the university at age 30. 1949 comes along, he too has to escape for his life because they all would have been killed, all the intellectuals. So, they all had to flee in 1949.

Again, he's not going to get a job as a president of a major university at age 50, and he had to actually retrain himself as a civil engineer and became a practicing civil engineer, starting all over again. And it's a transition to go from a scholar, a professor, being a president in a university, back to being a practicing engineer. But he made the transition and he actually went on and was successful. He got the highest award of the American Society for Mechanical Engineers for his work on concrete.

But again, in those days, you don't get a job, you start at ground zero all over again. You have an accent, all these other things.

So, I was unaware of those things when I was growing up in high school, in college, in graduate school. In fact, once I made a joke that I said, you know, I have Chinese heritage and a fellow Nobel laureate looked at me and started laughing and he said, "I never thought of you as Chinese." So, it's a very, very different sort of experience than my grandparents or my parents or their siblings.

HASS: It's really fascinating to hear you talk about the history of your family. You clearly come from extraordinary lineage, a very distinguished family. And I think that you've already answered this question, but if I understand it correctly, it sounds like your family came to the United States after the Chinese revolution in 1949. And it's interesting because the first guest on our podcast was Morris Chang, the founder of TSMC, who came to the United States at a similar period for similar reasons.

CHU: Yeah, my parents came during the war, but were expecting to go back. But then the revolution, they couldn't. And the people who were in China at the time had to leave. And so, yes, it's a very similar experience—in times of upheaval intellectuals aren't trusted, they're troublemakers.

BLANCHETTE: Dr. Chu, if I may, I'd like to ask you about a recent public letter that you were a cosigner of calling on congressional leaders to do more to attract top global talent. And just as a first initial question, I wanted to ask, what motivated you to sign this letter? And I wonder if you could just give us a little bit of a level set of how do you see the talent environment for the United States right now as we're positioned to try to innovate in some of these industries of the future?

CHU: Okay. So, let me start by narrowing the definition of talent. We're going to be talking about STEM talent, especially, intellectual talent, broadly speaking. It could be architectural, it could be music, it could be many things. But I'm going to level to intellectual talent versus sports talent. And I think if you look at the history of the United States, although we've had some stellar homegrown people in technology and science, I would say beginning in the late twenties, early thirties, we've had these gifts: Nazi Germany, fascist Italy, Communist China, these were all "gifts." And during the same time, the United States did something extraordinary: instead of trying to punish the vanquished in World War II, the way it was done in World War I, where France and England especially started drawing arbitrary maps and really wanted to punish what they viewed as the aggressors in World War I, which set the stage for World War II, essentially, in my humble opinion.

We've had a few other gifts that don't stand out as much. Tiananmen Square was one. The Russian oppression, especially of the Jewish people in Russia, was another one. And so this we've had all these gifts. People come to the United States, and given this Marshall Plan and the United States plan of trying to make Europe a better place, but also given the Cold War, which is part of the Marshall Plan, and Sputnik, the United States decided, rather than investing a lot in arms, Eisenhower took this incredible position—President Eisenhower—that the country would invest in science and engineering. Science and engineering education, science and engineering in colleges and universities, in the whole infrastructure. Because he went and did a very famous, a month after Sputnik, gave a speech that said, Don't fear militarily, even though there's Sputnik, we're okay. But this may be short lived because the Russians are training many, many engineers in a very concerted effort. And our response is to train many engineers and scientists. But this is not a short term thing. It takes time.

And so I grew up in this Sputnik era out of many science programs in grade school, high school, college, and beyond. And that not only trained Americans who were born here with an emphasis on science, it also made it very attractive for foreign scientists to come here and foreign students to come here and stay here. And so that wasn't a gift, that was something we did in a proactive way, which I thought was fabulous. Our dominance in science is due to these confluence of events, in my opinion.

And if we now fast forward to today, I would say that we're not the only game in town. We were, after World War II, the economic power, and we had the leadership that had a long term vision of where we were going, both Republicans and Democrats. And that seems to have waned. China over the last decade or two, two decades really, are looking at the American playbook and said, we want to do the same. We're going to invest heavily in science, science education, and grow talent, and try to attract foreign students. Now, the foreign student attraction has not worked as well. The great thing about the United States is, even though there were times, prejudice against immigrants, each wave of immigrants would experience this, there was still this overriding thing, especially after the war, that this was a place of opportunity for science and education. And so we weren't only attracting immigrants from poor countries, we were attracting Brits.

And so, if you look back at this long arc, we benefited immensely. And that's where I think a lot of our preeminence comes from. It's this combination of gifts and leadership, political leadership.

So, one could say, well, rather than trying to import intellectual talent, why don't you just grow our own homegrown talent, things of that nature. But it's not an either or situation. You want to do both. Even though the post-Sputnik era was to train American-born people, it ended up training lots of PhDs, postdocs, and attracting a lot of people to the United States. So, it too played this dual role.

If you look at where our economic preeminence comes from, there's a couple of things. We have incredible natural resources: minerals, fossil fuels, agricultural resources. It's an amazing place. That's a major gift. But there are other things, if you think about computers, the internet, semiconductors, this whole stuff was born out of science and technology and engineering. And that is another part of our economic success. And it's not only just another part, I think going forward it's going to be, has to be, a major part of our economic success.

So, being an American and wanting the best for my country, I'm saying, why do we want to turn this off? So, I feel very strongly that we still want to remain an open, welcoming country to train, especially, graduate students and postdoctoral people in science and engineering. Most of those people want to stay. There was an outflux for a while in China when China was rapidly expanding and creating new academic positions. But there is a saturation of the highest quality academic positions in China in the last decade. And so you're going to second and third tier ones. But there's something else going on, and that is there is a growing concern of young people that the way the United States is heading versus the way China is heading we are going to be the more open and accommodating society.

And so still today, or it hasn't really diminished that much—there was a little blip of people going back—but most of the Chinese post-docs and graduate students that I know and personally that I see in Stanford want to stay in the U.S. So, that is not diminished.

In fact, they're concerned about where Xi Jinping is taking China. And so, again, let's not turn a potential gift into something else by trying to shut this off. So, I feel very strongly that we should remain a place which would educate people, especially in advanced degrees, because in the end, the history is enormous benefit to the United States because most of that talent stays.

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BLANCHETTE: Just a quick follow on comment related to what you just said. Yingyi Ma, who's at Syracuse University and does research on Chinese diaspora, but also looking at human capital here in the United States, just pointed out in an email to us earlier today that if you just look at the top line number of Chinese STEM graduates, what's somewhat misleading about that is the Chinese domestic labor market's inability to absorb them effectively. So, as you just mentioned, in terms of oversaturation in the Peking universities, the Tsinghuas, the Renmin universities, once you once you get out of that clump of real top tier universities, quality can diminish. And so you have this this bulge of recent STEM graduates in China who aren't finding effective matching of positions relative to their talent.

And so one of the things I'm hearing of is, I don't know if we would qualify this as a gift, but the ability of the United States to be able to siphon off some of these recent STEM graduates who aren't finding promising positions in China, or, as you just mentioned, don't see the research or the political outlook as being particularly conducive to staying in China presents the United States with a with another opportunity.

CHU: Yeah, I absolutely agree. In China, you don't get Google, you don't get Wikipedia. Now, of course, the students are clever. They do end runs, but it's a ratcheting up of end runs and more censorship, and end runs, more censorship. But it still remains, the central government is really trying to clamp down. They're also looking very hard at going back to what I would call informant type of society. We saw this in Mao's time, we saw this in Hitler's time. And we're beginning to have people planted in classrooms, students, if any professor or any student speaks ill of the president of China, they could be in trouble. And so this has appalling effect.

HASS: Dr. Chu, we may not have a gift-like moment like the ones that you described previously, but it sounds like there's an extraordinary opportunity to attract top talent right now. And I wanted to ask, what happens if we don't seize this moment? What happens if Congress does not legislate fixes that enable the United States to continue attracting top talent to our shores? Because no decision is a decision. So, help us and our listeners understand the costs and risks of congressional inaction.

CHU: Yeah, I agree completely with you that no decision is a decision, because we've set a tone and there's a confusion between awareness and a concern about the Chinese government and their aggressiveness, both militarily and also in helping companies spy on companies. There's a confusion between that and Chinese scholars who come to the United States and Chinese-American professors who have become U.S. citizens, raising their families in China. And so Congress has been a little bit confused about this or a lot confused depending on who you talk to, because the ones that I know who've come to the United States and become citizens of the United States and their families are, like me, really Americanized—as in I'm really American—there shouldn't be this questioning of potential loyalty to their ancestral home, which I hear sometimes. There shouldn't be any of these things.

And, especially at the tail end of Obama's administration—last two years—and then Trump's administration, Trump certainly turned up the flames, but this started in Congress. And confusing governmental behavior from the behavior of people is something we've done in the past before. I hope we don't do this. But it then sends this message that perhaps we're not going to be wanted or welcomed or we will be regarded with some suspicion.

And so that is something that is hard to quantify. But if you talk to people, including students and graduate students, they're a little bit torn. They really want to stay here, but they're a little bit worried. Is Trump going to be president again or someone like Trump going to be president again? But even with Biden, there was an expectation everything would be fully reversed. But it has not, in part because of Congress.

So, we have to really take very seriously that for many decades we were viewed by the rest of the world as a welcoming country. a country of immigrants. And that by the time you're here, unlike in certain countries in Europe, Switzerland, Germany, where you will never be regarded as German or Swiss—you could be even second or third generation, you won't be regarded as German or Swiss. But in the U.S., the experience is, no, by the time you're

second generation you've been assimilated and many times even first generation. So, that is what I view as the world image that the United States benefited from, certainly in the sixties, seventies, and beyond. And this is at risk now because there are mixed messages now being sent.

HASS: I'm so glad that you talked about the self-harm that that tarnishing our image as a welcoming country presents to us because it's such a critical and important issue. And it's, as you said, important that we don't repeat past patterns of history again. If I could, I'd like to ask another question about one of America's traditional sources of strength, which is its ability to collaborate and coordinate with allies and partners. Is there any unrealized potential for accelerating innovation through deeper American coordination, to pool talents and resources among our allies to push forward or accelerate innovation?

CHU: I think there is. I think, though, that some of these alliances are driven out of a defensiveness regarding the monolith of China and the huge government investments. When they look at a technology, they look at something which they think is going to be part of the future. They really go at it. And in the past, they would go at by first collaborating, or using, you know, importing industries, collaborating with the Japanese on high speed rail, but then improving upon it. And now they're one of the leaders in high speed rail. Collaborating with the Europeans, Swiss and German companies, in high voltage transmission. But they became the leaders in that.

The only thing they have failed so far is become a leader in semiconductor technology. For the last couple of decades, they tried very, very hard, tried to hire people from TSMC, all this stuff. And they haven't been able to crack that nut yet. Eventually they will.

So, these collaborations, the world works on collaboration and constructive competition. By constructive competition I don't mean unprincipled business practices, intellectual theft, things like that. But competition the way principled athletes might train or they might get together in running clubs and swim clubs and things like that.

And so the idea of international collaborations, Europe started this within Europe. It goes over to the United States and that funding agencies actually in the United States can still fund European scientists. But now it's gotten that the same funding agencies, they won't fund you if you have any funding from China. Okay. So, it's very different than it was ten and 20 years ago. Again, for the fear of intellectual property theft.

Now, what is the theft? We're not talking about company secrets. We're not talking about things that would be theft, that are trade secrets. We're talking about the theft of information and research that will eventually be published, but you don't want it to leak out before you publish it. So we're not talking about classified stuff. We're not talking about any of those things. Reagan hit it right on the nose: unless it's classified, you want to in order to spirit the greatest scientific benefit, everything will be openly published, that there should be no restrictions on work that is eventually openly published, in his NSD Directive. We should keep to that principle and distinguish it from proprietary research in companies and of course, national security research that are truly classified. Again, it's a distinction that's very important.

Now, do people try to gain access to unpublished information before it's published? You bet. That's not unique to China. That's unique to unscrupulous scientists who might want to get

ahead. But it's a minority. I hope it's a vast minority, because once you get a reputation for doing that, no one wants to talk to you anymore. And so it's a very strong self-policing thing. And if people found that there would be a mole in their group and all of a sudden things are leaking out while they're working on it, for the first couple of years, there's there would be a concern among scholars anywhere in the world. Again, it's confused with U.S.-China stuff. It's not. It's a fact of life, just as people cheat in sports.

BLANCHETTE: I wanted to talk about the issue of clean energy, and I wanted to build upon what we've been talking about earlier in terms of America's innovation capacity. What are some of the hurdles to real progress in innovation? And then if I can, I wanted to ask about where the issue of human capital and talent plays a plays a part here. I heard in a previous interview that you had mentioned for climate change we're not going to get a vaccine. There's not a one and done solution here, that this is going to be a sustained, multipronged effort involving a lot of actors, political will, and market incentives. I wanted to ask, how are you assessing where the United States is right now in terms of unlocking opportunities and developing solutions to climate change? Depending on which newspaper story you read, we're either depressingly behind or in some areas like battery technology, we seem to be making some real significant gains. Can you take stock of this and give us just a level set on how you're assessing our position in the year 2022?

CHU: Sure. It's a mixed bag. I think the United States remains a highly innovative place. A lot of the really innovative technologies still come from the United States. I think it's half a century of training people, especially in graduate school, how to get beyond textbooks, how to really think in a more daring way, and then support of an entrepreneurial system that also feeds this. So that's one of America's great strengths. And because of that, a lot of discoveries lead to innovations, lead to start companies that are part of our strength. But other countries around the world are catching up. Batteries, for example, if one looks at batteries, most of the batteries are now made in Asia. So nothing can be taken for granted.

Now, with all companies, there's going to be a competition and there are going to be alliances. And the question is, can you get fruitful alliances with each other? And that's one of the things that is being discussed, especially because certain countries will have an enormous central government help, federal help to actually help make investments where you can begin to get more and more market share because of simply economies of scale. That's certainly happened in China in the solar business. It was economy of scale at first. So, they were looking at solar factories in Germany and the United States and say, well, if we make it ten times bigger, we're going to get an economy scale we can undercut. But the more recent progress is coming out of China, where they're making ability to make high quality single crystalline that's overtaking the U.S. again. And this was actually the U.S. playbook 150 years ago: you take something, you manufacture it, you work on improving the manufacturing process, the quality, the this and that. Henry Ford did not invent the internal combustion engine, he did not invent the assembly line. He didn't invent most of that stuff. He improved on it.

So, the U.S. playbook says you're allowed to take stuff invented elsewhere and just improve upon it and improve on manufacturing. So, we should return back to that attitude, that if there's competition, we just compete harder. And competing harder could mean forming strategic alliances with other countries, as you indicated, because there could be mutual benefit in these strategic alliances.

But I go back to this, yes, other countries, including China, are catching up and beginning to be parallel in terms of creativity. But I still think some of the craziest, farest-out ideas still come from the United States. I think it's because of we're told when we were in grade school not to parrot back what's in a textbook, but what do you think about what you just read?

BLANCHETTE: If I can ask a follow up and I'm going to drastically simplify reality. What strikes me about your previous comment is right now there's an intense focus in Washington, D.C. on China's very muscular industrial policy investments in a lot of the technologies we've been talking about here. And although the outcomes are mixed, still you're seeing that even with a shotgun blast of industrial policy funding you get some winners. You make some advancements, even if there is waste.

Balancing or looking at two, let's imagine two very simplified models, one is a U.S. market-based system where you get an Elon Musk. Or China's system where I don't know if you'd want to be the Elon Musk or the Jack Ma in China's system anymore, but you have a very focused political system which understands the importance of these and is driving lots of capital in their direction. Again, simplifying drastically. Which system do you think will better achieve outcomes of sustained innovation and leadership in these technologies over a longer term? It feels, at least, I'm in Washington, like industrial policy is the way many think the United States should go. And I realize it's not an either or, that there is a spectrum and you can do it smarter or worse. But if we had to simplify drastically, which model do you think will achieve sustained innovation and leadership in some of these sectors and industries?

CHU: Yeah, I'm going to waffle on this one because I see it as a mixed bag. And the United States has subsidized a lot of nascent industries in various forms. And we continue to do this. So it's not as though we're just, wait for the entrepreneur or the Wright brothers to get it together and everything will be okay. But perhaps not at the, sure, we're going to make this technology, we want to own this technology, therefore, the central government is going to keep at it. They're going to make mistakes, but eventually, it's like products like a Microsoft or an Apple, not all the things were winners at the very beginning. Remember the Newton of Microsoft? It was the iPad. The only product that was a clear winner at the outset was the iPhone. But a lot of things are improved upon and finally get made to work.

And so, what we are seeing, and there is a recognition that economy of scale is important. And going back to batteries in the United States and also in Europe, I'm the chair of a committee that advises the Helmholtz Association, which is an energy program, it's five and a half billion euros a year on energy. And after the realization of Dieselgate and other things, they're saying, well, we're very vulnerable. We know electric vehicles are going to be a key part of the future, but they're all coming from Asia, and we need to develop in-house technology. The feeling before two or three years ago was we just buy from Asia, it's cheaper, who cares. But now all of a sudden there a recognition that there's a very vulnerable supply chain. If your sole supplier of batteries, of rare earths, of critical components and materials come from a country that views this in a highly economically competitive way.

And so what's happening is governments are trying to help onshore stuff. But it's not as complicated as that because we have certain bureaucracies and regulations that kind of slow things up. Let me give you an extreme example. When I was in D.C., in the Metro line, there is some that goes pretty deep and there's this long escalator, two floors underground. And they're working on this subway stop entrance and exit for a couple of years. China's built an

entire subway system. Okay. This company that I'm on the board of directors of, we'd broken the company up so that the central company is now separated from the rest of the companies and the Chinese parts are now their own thing, but they're still going to be manufacturing in China. And you see factories going up in a year or two at most. And you see permitting struggles for a year or two as a minimum.

And so, we lost our ability to do things rapidly. We used to not be like this. So, it's not either let American creativity spring forward and everything will take care of itself. American creativity is being dragged down a little bit by a lot of things. So, I would say it's not as simple as that.

Planned things in the end are not quite as good because they're not as agile in making mid-course adjustments because it's the bureaucracy in a planned society. So you want to capture the best of all possible worlds—safety is a concern, but the time it takes to get something done has become enormous. When I secretary of energy, the time it takes if you want to build a transmission to the time you can actually get some electricity was 11 years. And as wind and solar become much, much cheaper transmission is going to be an integral part of this. I helped to organize this thing where all the secretaries and relevant parties get together and I said it shouldn't be 11 years, it should be three. You can you can listen to all the voices, the objections, the concerns, the environmental concerns, all of that stuff. But let's try to make it three years. Secretary Salazar—Ken Salazar, Interior—says, well, you know look, if you really want to get something, someone's got to take charge. And I said, okay, I'll take charge. Then an hour after the meeting, he calls me back and says, my people, Interior, Fish and Wildlife game, don't want this to happen. They don't want transmission lines where they fish and hunt. And they're afraid if you take charge, things might be accelerated. So he said, the deal's off.

HASS: Well, it sounds like we need to draft you back to Washington to help us accelerate a few of these processes. I was reminded recently that we built the Empire State Building in one year.

CHU: Yes.

HASS: Which is just sort of an extraordinary thing to think about relative to where we are today. But Secretary Chu, if I could I'd like to, for our final question, take a step back and ask you, given what you know about America's talent base and about Beijing's plans and ambitions, do you find yourself optimistic or pessimistic about America's capacity to out innovate and outcompete China in the coming decades?

CHU: I'm going to remain optimistic. I think, you know, I'm reminded of Churchill's saying, you know, America invariably does the right thing except after exhausting all other possibilities. So, we still have a deep talent base. The open society and the entrepreneurial spirit is still alive and well. So, as long as we don't crush that, as long as we don't bow to the overregulation, lawsuit concerns that can stop everything. It's not even political—both parties use it, all sorts of parties use it, non-profits, everybody uses it, lawsuits. I think it's possible to be cognizant of legitimate concerns that people have over these things but in the end, come up with a decision that's best for the majority of the people now and in the future. And that's ultimately what our political leaders have to allow us to do. So, I'm optimistic that eventually there's going to be realization that we need to do this. And as long as the spirit's still alive and well, we'll do just fine. But don't take it for granted.

HASS: That's a powerful note to end on, and I appreciate the optimism of your final comment as well. But more even more so, I appreciate the brilliance that you've shared with us and our listeners. Thank you for sharing your thoughts and your time with us.

CHU: My pleasure.

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BLANCHETTE: Ryan, I thought that was a great conversation informed by Dr. Chu's unique position as a practitioner of science and indeed a Nobel Prize winner to boot, and also someone who has been at the very upper echelons of policymaking. And I think that gives him an understanding that while the United States is endowed with many natural advantages, it's also intentionality that matters here, and especially from policymakers. And you heard that in his call to Congress to make some key reforms.

One point I just want to highlight that really stuck out to me was his emphasis on contingency in how the United States has been able to attract talent. Indeed, his own family story, it highlights this with them coming over to the United States to escape China's revolution, mid-century revolution. And so what I take away from this is while it's great to be in a position to accept these catalyst moments where talent comes in because other governments create inhospitable environments, we also need to create legal infrastructure that really minimizes our reliance on these fortuitous events.

HASS: Yeah, I thought that Secretary Chu was very clear on the need for the United States to continue to take deliberate actions to attract top talent from around the world. And I was struck as he was reflecting upon President Eisenhower's decision after the Sputnik launched by the Soviet Union. President Eisenhower, a former five star general, could have very easily decided to respond to the Soviet advance by investing in our military. But instead he chose to invest in the infrastructure of our science and engineering, plowing money into colleges and universities around the country. And it had a galvanizing effect on attracting some of the best Russian and Jewish and other scientists from around the world to want to come be a part of what was happening in the United States. And those efforts laid the groundwork for innovations around computers, around semiconductors, around the internet, and so much more. And it was just such an incredible return on investment from that decision that President Eisenhower made.

BLANCHETTE: Yeah, and it also really highlights this asymmetric advantage the United States has vis-a-vis Beijing, whereas we have a door which untold foreign-born talented individuals are pushing on to try to get in. And our challenge has been creating a political consensus to help all Americans understand that our national security and our prosperity benefit from facilitating more inflows of talent into the United States. Whereas Beijing's challenge is it has to create somewhat complex inducements, financial and otherwise, to try to get talent to return to China, to reverse the brain drain. And so understanding how critical of an advantage we have, especially if you're defining the competition over the longer term as innovation capacity—as Ryan you often say, you can't innovate if you don't have human beings present to do the innovating. And I think through the conversation with Dr. Chu, again, it just highlights how critical of a asymmetric advantage we have here, which we need to work to increase the space between us and Beijing.

HASS: Yeah, absolutely. And I thought another important point that Doctor Chu made was his note of optimism about the United States' competitive capacity. I was struck by it and I was relieved to hear it. He still has confidence in our talent base and our open society and our entrepreneurial spirit and our ability to incubate innovation. And I think that's important for people to hear, because we're in a national moment right now where we're pretty aware of our own flaws as a country, and there are plenty of them. But I think that Steven Chu reminds us that we shouldn't lose sight of the fact that that we remain incredibly productive at producing what he called "far out" ideas. And I really appreciated his note of optimism.

So to our audience, please stay tuned for our next episode of Vying for Talent, which will be dropping in around a month. And for more information about this project, please visit us at Brookings dot edu slash Vying for Talent.

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HASS: And I'm Ryan Hass at the Brookings Institution. Vying for Talent as a co-production of the Brookings Institution and the Center for Strategic and International Studies, and is brought to you by the Brookings Podcast Network. Learn more at Brookings dot edu slash Podcasts and follow us on Twitter at PolicyPodcasts. Send feedback to Podcasts at Brookings Dot Edu.

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