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CREATING A TECH EQUITY AGENDA TO ADVANCE AMERICAN DEMOCRACY: A CONVERSATION WITH ALONDRA NELSON

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P R O C E E D I N G S

MS. LEE: Good afternoon, and welcome to the Brookings Institution. I am Dr. Nicol Turner Lee. I'm a senior fellow in Governance Studies and the director of the Center for Technology Innovation. I'm so excited about this conversation today for a variety of reasons. We all know that technology is transforming the way that we live, learn, and earn. Some of you know I'm writing a book about that. It's actually going to come out next year in 2022. But more importantly, we have policy makers like the person that is here today that is going to advise us on what we need to do to ensure a tech equity agenda, particularly as we think about how technology is really inserting itself into our American democratic process. So I'm really excited to be joined today by Dr. Alondra Nelson for a variety of reasons. I'm a fan of the work that she's done prior to coming to the White House, and I'm particularly interested in really sharing with all of you what's on her mind. Dr. Nelson serves as inaugural Deputy Director of Science and Society in the White House Office of Science and Technology Policy. In this role, she brings over science expertise including attention to issues of social inequality, explicitly into the work of federal science and technology strategy and policy. She's also a Harold Linder Chair and Professor at the Institute for Advanced Studies, an independent research center at Princeton, New Jersey. And she was the President of the Social Science Research Council when I first learned about her, and was (inaudible) national research non-profit from 2017 to 2021. And she was also a professor of sociology, and who could not love a sociologist? Dr. Nelson, thank you for joining us today.

MS. NELSON: It is great to be with you, Dr. Lee. Always appreciate the love for social scientists, and I'm looking forward to the discussion.

MS. LEE: So, I want to jump right in. For those of you that are following us, if you have questions, please share them at events@brookings.edu, and if we have time we'll be sure to get to them. And if you're following this event, follow us on Twitter. The hashtag is TechforAll, where we'll take your questions and also listen to the conversation that you're having online.

So, Dr. Nelson, Alondra, let's start here, because I think that there's some people that are probably attending this event that don't know enough about the Office of Science and Technology Policy

at the White House. So, tell us what that agency actually does and what's your eventual goal?

MS. NELSON: Absolutely. So let me just begin by just thanking you, thanking Brookings, the Center for Technology and Innovation that you lead for inviting me to this conversation. I've been looking forward to it for -- for many weeks now. And I feel really grateful to -- you know, Brookings is such a great place to talk about OSTP because so much of the work that we're trying to do is about bringing the lessons of the research community and evidence-based policy to bear in the work of government, which is what Brookings has been doing for -- for decades. So, in short, OSTP exists to advise the President on issues connected to science and technology, but in practice that has meant lots of different things, and the mission has never really been the same from one administration to the next. And in this administration, as we know, as we're all living with, you know, it began at a time that we're in the middle of a, you know, once-in-a-century pandemic, a global climate emergency, a complex kind of set of national security threats, and, you know, against the backdrop of a crisis around inequity and justice, particularly around racial and economic inequality and those intersections that affect everything. Health outcomes, educational outcomes, access to science and technology as I know we'll discuss, and the like. So, taken all together, you know, these are some pretty big problems that demand, you know, kind of really urgent solutions and, you know, President Biden really has put science and technology and the way that he's asked us to do our work in OSTP at the center of that work. And, you know, he's really made clear from the beginning of the administration that science should be a kind of guiding force in our work, that it should be a force for good, that it should make our lives more just and safer and fairer, and that it's not too much to demand that of technology. That it doesn't have to be, you know, something swirling all around us that we, you know, on a good day can control, on a bad day, can mitigate. We can actually, you know, I think have some wisdom and forethought around technology and really harness it to do the work that we want to do. I will say, often -- also different about this OSTP that's really important for our conversation is that it has been elevated to a cabinet level for the first time, so the person that I work with and for, Eric Lander, the Director of OSTP has a cabinet-level position, and, you know, assigning and appointing and nominating Eric to this role, the President sent this letter that had five questions about

what kind of strategy for the future of science and technology, and one of those questions is about how to make sure that science and technology benefit us all, that the benefits of it are shared among all of us in American society, and that's really -- you kind of suggested in the introduction, been a lot of what my work has been about as a scholar, and it really is what my work is about in the Division of Science and Society, which is a new division at OSTP that I have the privilege of leading. And so, I would say, you know, the work -- if we're going to do the work, you know, equitably, it means, I think, being honest about our history, it means being honest about the challenges of the distant past with regards to when science and technology has not served all of us all well, or equally well, or equally. And challenges of the more recent past about the politicization of science, you know, the kind of wearing thin of trust in government and so, you know, we have things in the Biden Administration like the Scientific Integrity Task Force, which I'm helping to lead. That's really helping to begin to restore trust. And I hope we'll discuss, you know, we're developing this Bill of Rights for data-driven technologies and for automated society. That's really also part of trying to engage the American public in really important policy issues and questions. So that's what we're -- you know, that's OSTP. That's this OSTP, so there's kind of two answers to your question, and you know, that's a start of some of the work that I'm up to and we've been up to.

MS. LEE: Listen, you got a lot of work to do. (laughter) Alondra, when I think about just the fact that this Administration is combining academic principles and integrity, thinking really seriously about the implications of science and the sociological implications at that, as well as sort of intertwining some -- I think some legitimacy around why we need to care about these issues as we've really gotten through this pandemic. I think that's really a valued statement on behalf of the Biden Administration.

I want to go to this Bill of Rights, though, because this is something that you published in *WIRED* magazine. Tell us what you mean by that? When we think about Bill of Rights, you know, we think about power, you know, and power is essentially for consumers. So talk to us about, you know, what the thought was behind this "Bill of Rights" and what you hope to do with it.

MS. NELSON: Yeah, so I think, as I was trying to suggest in my answer to your first

question, there are a couple of things that are some abiding principles about the work that we're doing in OSTP, and one of them is that we are trying to re-engage the public in the everyday work of government, which has been done in the past, but we're also sort of taking seriously what it means to engage the public in science and technology policy making. Which is, I think, a space in government which is often been, I think, carved off only for experts. Only for the rarest of experts. And in a moment and a time in history where science and society really touches every facet of our lives, it really has to be, you know, a sector of policy making that the American public has a voice in. So part of the Bill of Rights for Automated Society is really part of that, I think central commitment of our work at OSTP.

A second central commitment that's just the context and backdrop for this is that -- that everyone should have access to, be able to engage, participate in science and technology and engineering and medicine and the like, in the way that it works and makes sense for them. So, you know, let's have -- we just had the Nobel prizes. Let's have more Nobel scientists in the United States. So many of the, you know, Nobel laureates this year were American citizens. You know, but also let people be able to have different kinds of onramps and pathways to engaging in science and technology. So I just wanted to say that as a backdrop. So I'm really glad that you asked about the Bill of Rights for Automated Society. We're really excited about it. The process is just getting underway. And, you know, the bottom line really is that the -- and your work is so important in this regard as well. That we can use technology to alleviate injustice, to expand liberty, to expand justice, but still too often it really is compounding bias and its deepening inequality. So, you know, we're seeing this time and time again in the United States. We're seeing it in academic research studies. We're seeing it in, you know, deep reporting, and we're seeing it in certainly at OSTP, and conversations with members of, you know, various stakeholder communities who are, you know, telling us about algorithms that end up mirroring biases and inequities in our society, about, you know, devices, tools, that are introduced into society without regard for what the downstream consequences of them might be, about, you know, uses of data that might violate civil rights or may violate privacy, particularly of vulnerable communities. So, you know, I think -- Eric and I, our diagnosis in that *WIRED* piece is like, we're living at a time where there's a kind of

gap between our values and our technology. And that some of us, as a result of that, are suffering, and it just simply, you know, won't do.

That said, you know, we -- this is not just a U.S. problem. You know, every society on Earth really is having to deal with how we navigate this kind of new, digital world rights landscape. And, you know, part of what we're trying to suggest here is that this is a way that the United States can lead. Of course we can learn from other communities and from our international partners, but it's also an opportunity to really ensure that our oldest principles, the things that are distinctly, you know, the U.S. in some ways are reflected in our newest technologies. And so, you know, we can be a stronger voice for human rights and for international protocols around new and emerging technologies. When we, I think, are really honest about our deficiencies at home and are actively engaged in a process to diagnose, identify, you know, resolve some of these. There was a -- the President gave a really powerful speech this weekend, actually, at the dedication ceremony for the Dodd Center for Human Rights in Connecticut. And, you know, one of the things that I really appreciated about the speech was this -- his own talking about lessons learned. So he was kind of reflecting on having been in Congress with Senator Dodd, and, you know, and saying that in their work, that they were -- often understood sort of human rights to be different from civil rights and civil liberties and equal justice. So there was like, the things in the world and the things at home. And then he in the course of this speech drew a contrast and said, you know, that I now recognize, we now understand, and it's important that we understand that our efforts to defend human rights around the world are only stronger if we recognize the historic challenges that we face in the same fight in the U.S. And so, the, you know, Bill of Rights for Automated Society is, you know, a way to really engage a process in which we are thinking both alongside international partners but about the particular histories and challenges in the U.S. And, you know, it's also, we hope, a kind of overdue initiative to really expressly articulate a democratic vision for our uses of new and emerging technologies, which we, I think, sometimes talk about as a high level, but what does it mean? And it's a question for all of us, and we don't have -- I don't have the answers. Certainly, me, myself, as a person, doesn't have any answers. To operationalize that, what does it look like in the context of new and emerging

technologies? And then so, you know, I think it's an exciting moment because I think it's a moment to imagine together, you know, what the world can look like. And, you know, we don't know what the final product will be. It's going to be lots of consultation, you know, OSTP are -- you know, and government are really only the co-authors in this process. We're doing lots of consultation in all of our work and this work as well, and there are a few ways that the process is getting underway. So there's a request for information about biometrics, which went out on October 8th and closes on January 15th. And that's really asking people to reflect on and provide information, guidance, feedback about technologies like facial recognition technology, and about newer technologies coming online like emotion detection inferences. So these are taken together, you know, systems that use information drawn from our bodies to make inferences about us, and we're starting with those tools because they're being adopted pretty quickly and pretty widely, and also the tools themselves are evolving really quickly. So we're asking people to reach out and respond to this RFI. We're also going to have a series of listening sessions and public events to solicit feedback from different groups. So, you know, part of what we're trying to do -- verify is fairly technically sophisticated, although we're happy to hear from anybody who wants to weigh in, but there also we understand need to be opportunities for people who are not computer scientists to weigh in, because this is shaping what our world, what our democracy looks like. So we'll have listening sessions, we're going to have some public events to solicit feedback from different groups, different segments of society from folks who are affected by these trends, folks who study these trends, and those details will be coming out soon. And then we're going to sort of huddle, sit down with all of the information and the insights and the feedback and the criticism that we've received from these engagements and, you know, begin to develop some policy recommendations.

So, that's what we're up to, and, you know, we want to model in our own design process how we think about technology policy and technology creation could be done by being inclusive and deliberative, and, you know, hope to build together an automated society that, you know, really respects and operationalizes democratic values.

MS. LEE: Yeah, you know, I love all that, because people who know me know that my

work intersects race, technology, and social justice, and I think that there's something to be said about how we equitably deploy these technologies, and I love the way you said it, right? This is not just about a technology that advances efficiency, but what are the human and civil rights implications? Work that we're doing here at Brookings as well as, you know, in our little call today this person used this term, you know, we now know that bias is normative in many of these systems, right? So how do we actually work around that to come up with some pragmatic strategies, particularly in use cases that matter. So for those of you that are listening, you know, there's a request for information that's out there, and again, put your question in at events@brookings.edu or in Twitter.

There are a couple things I want to unpack, though, right? Because there's a couple things that you said, Alondra, that I want to go into in more detail. Before we go back into the algorithmic ecology for a moment (inaudible) than what I want to talk about first. To get to this area where you could actually begin to address bias, you also have to understand that the people who are developing these products come with their own values, norms, and assumptions. I'd like to hear more, because I know this is something you're (inaudible) as well about STEM equity and diversity in those respects. How do we make it not only into disciplinary when it comes to diversity in perspectives, but how do we also bring diversity in background to the table so that when we're building these products that they actually resemble and mirror us, as you said, who are part of the authory (phonetic) of the state of these technologies.

MS. NELSON: Wow, I love this question. I mean, this is some of the work we're doing that I'm most excited about. You know, I think to sort of have a different imagination for what STEM means, you know, as I was saying a little bit, you know, that it's not just five physicists, although we love our physicists and I have some amazing theoretical physicists as colleagues at the Institute for Advanced Study. But, you know, that there are other -- all sorts of ways for people to sort of be part of sort of creating science and technology in the world, and that means we need design folks, and we need, you know, human computer interaction folks, and artists as well as computer scientists and people who do coding and write scripts and the like. So there's really such an opportunity if we create the conditions that make that possible for so many people to participate, and I'm, you know, tremendously excited every day

to be working with this incredible team of experts in this work to sort of make that reality or to do what government can to make that reality. So, you know, as we were discussing, you know, this is really a time I think to put foundational design process kind of issues under the microscope because as you suggest there, you know, we know there's a connection between who is at the decision-making table and the ultimate impact of the technology. And obviously there is a lot of little -- there's things that come in between, but those things are related. And, you know, that problem and that sort of spectrum or pathway deserves the attention and the scrutiny and the sort of aid of government, and that's why, you know, the Administration and the OSTP are really engaged in considering all the dimensions of what it means to have a, you know, an equitable and inclusive and an eminent, you know, kind of STEM, you know, kind of ecosystem.

So, let me start with the technology. You know, technology has the power to, you know, alleviate or compound inequality as we've said. But where it's reinforcing bias, we really have to redesign it. And if we can, you know, make things better, or make it safer, or make it fairer, we have to do it, and for me, this is the innovation piece that I want to really sort of lean into. You know, we have demonstrated all sorts of innovation in industry and research and development, and, you know, one of the things that we're deeply committed to at OSTP is, you know, innovation for equity. How do we use those tools for equitable outcomes? And understand those as opportunities for, you know, profound innovation and creativity, not something that stifles innovation. And so, you know, the STEM ecosystem right now is pretty unequal. You know, we, you know, reporting we know the data from, you know, the STEM system elsewhere that we've got a long way to go, and, you know, that equity issues, you know, in tech, in science more generally are, you know, related to these kind of negative outcomes in the way that tech and science operate in the world. So we've been doing, again, going back to that kind of abiding principle of our work of engaging the public. We've been doing lots of things. We've got a kind of STEM equity initiative, a science and technology equity initiative called The Time is Now. And The Time is Now comes from the title of an op-ed or a policy piece that was published in *Science* magazine, I don't know, six months ago by two women of color researchers who really took OSTP and, you know, it was addressed

to Eric. It took OSTP and the government to task for, you know, around issues of science equity, issues of equity in science and technology, and the title of that was called "The Time is Now". And, you know, we took that really seriously and took it as, you know, a call to arms and a call to action, and have really -- have sort of created a kind of round-table series and a STEM equity, technology equity initiative called The Time is Now. So we've been having, you know, small round-table conversations since this summer, so over the last kind of four months or so, regularly with folks just to hear, and these have been technologists, you know, scientists, science students, medical students, you know, other kinds of thought leaders, lots of community activists to just talk about what it would mean in a blue sky way to have an equitable and inclusive and imminent and all of those things can happen together. You know, sort of technology ecosystem, science ecosystem, and what are the barriers to that and how can we think about identifying those structural barriers, particularly for communities that have been marginalized. So, we hope to come out of this experience with already gathering -- we're garnering lots of new ideas. We hope to have some commitments and we've got an ideation challenge up right now at challenge.gov, which is a -- it's a U.S. STEM, you know, science and technology equity challenge. So what are the sort of ideas, complaints, suggestions, recommendations, barriers that are preventing us from making sure that folks can fully participate with the understanding that what we do upstream, who's at the table, who's building the tools has everything to do with downstream, and also with what, you know, our society can look like and be in the future.

MS. LEE: Yeah, no, I mean I like the fact that you're thinking about a participatory model too for STEM. We have not often seen that, you know, and I think it's important that we gauge the lived experiences of communities, we think about, you know, the barriers to adoptions, we think about the systemic inequalities. I sit as a Fellow at the Center for Gender Equity in STEM at the Arizona State University, and this is for women and girls of color who are not necessarily sitting at the table of these spaces, so I'm actually excited to see what you have to do in that space, because if we can be helpful, look at us. I mean on this panel right now, right? There was somebody that nudged us to actually think about these areas more seriously.

MS. NELSON: The Center is doing really great work. I didn't know you were involved with that work.

MS. LEE: Oh, no. Dr. Scott beat me to the punch since she put out her book (laughter) before I got mine out, but her work -- I've known her for 20 plus years in terms of how she's getting young girls of color to actually start coding. But I love, like -- going back to what you said though, it's about coding, but it's also about these other verticals and it's about equitable access to these opportunities. And particularly now, right, Alondra, where we're seeing that this push towards tech and government's role is going to be more (inaudible).

Let's go back to these emerging technologies and talk a little bit about those (inaudible) and how we get people interested in those spaces, not just as consumers, right, but as producers.

MS. NELSON: And in -- you wanted to --

MS. LEE: (Inaudible) proportional impact of racial equity in that as well to sort of go deeper on the AI side. I want to push that a little bit more. There's so much you're talking about, I'm trying to keep it together.

MS. NELSON: Yeah, yeah. So what would I think, you know, certainly, you know, there are, you know, you mentioned young girls of color coding, so I think that's obviously that kind of skill, you know, math skill, coding skill, science skill, are incredibly important and there's a lot more that we can do to make sure that young people in particular have the foundation that they need for that kind of work. But we also have to create the workplace conditions, the higher education conditions that ensure that people can thrive, and so, you know, some of what we've been hearing in these (inaudible) roundtables that really began our kind of education and our kind of, on my part, a kind of listening tour with regard to this was, you know, some of the challenges that folks face, and the sometimes little things that can be done to really improve the ability for people to thrive. And so, you know, we talked to some experts and community activists that really stressed the importance of understanding that the family and the community is actually part of the educational experience for young people. So what does it mean as we're thinking about, you know, STEM programs, technology camps, and these sorts of things to explicitly

think about the grandmother, the community, the church as being part of how we do that training and how we create the conditions for people to thrive in that space. So that's certainly something that we've been thinking about. You know, also, how do we find ways to be accountable? I mean, the phrase I often use in our work is like, show your work, and so I'm very much interested in, you know, as our math teacher used to say for those of us who are old enough to have been doing math in 20th century ways, you know, make sure you show your work. So, you know, what does it mean to show our work and be accountable around federal STEM investments, around, you know, projects that are opening at colleges and universities. How can we get better? You know, some of the work that I've been privileged to lead has been the work of the Equitable Data Working Group, which is a kind of a whole of government working group that President Biden established in his day-one Executive Order on advancing equity for underserved communities. So that included, you know, a wide swath of strategies for advancing equity, including thinking really seriously about data and about whether or not we have the data to do equity assessments. Do we have the data to ask and answer questions about particularly important intersectional experiences, you know, and, you know, for the sake of our conversation at the intersection of science and technology education or a workforce and the like. And so, you know, that can be everything from, again, I think government being better at doing equity assessments and helping us to see where we are, but also, you know, using dashboards both in government and also at colleges, universities, community centers to show change over time and how we're doing well and not doing as well as we possibly could. So it's been, you know, there are a lot of great ideas out there, and we have been really encouraged by listening to them and collecting them, and we hope to be able to help galvanize some of the better practices.

MS. LEE: Yeah, what I'm hearing from you is this is sort of this very deliberate strategy too, to see how we put these things in place beforehand to reduce, I think, some of the enormous backlash we get when it comes to equal opportunity, right? Because many of these conversations really point back to these technologies sort of alter or stifle with the opportunities that people have in healthcare, education, et cetera. So if we can get more people at the table, I call it putting more people at the dining

room table. Pulling up more seats, right? We can actually try to get the outputs that actually result from technologies that may be biased or may not be inclusive or representative of even the demography that are creating these products.

MS. NELSON: Yeah. Yeah, I mean I wanted to add, you know, I think what I find so really encouraging and feel so privileged, you know, the work of OSTP in this moment is, you know, to have an administration that places advancing equity for underserved communities, and that includes rural communities, veterans, you know, LGBTQ+ communities, in addition to Black and Brown underserved communities as a kind of sort of key principle item, priority agenda item, means that the work of science and technology and the work of OSTP is to carry that through in science and technology spaces. And that's a really different way of thinking about science and technology policy. And, you know, we all know, you know, to go back to our conversation a few moments ago, that there can be, like, extraordinary outcomes when, you know, young people get exposure to science and technology early, but that requires thinking about a kind of equity lens to that, not just, you know, those who can do (laughter), and everybody else, you know, whatever happens, happens. And I think also, this sort of sense, and this is the part of me that's been a teacher, you know that like, innovation, that wonder, that discovery, that belongs to all of us, right? You know, whether or not you got to go to an elite science camp or an elite coding camp, you know, it's really never too late to get started, and you know, it's incumbent to all of us, wherever sectors we're working into kind of try to reduce those barriers. And so, you know, it's been really thrilling to try to think about OSTP's portfolio through the lens of equity and about how to embed fairness and justice in all of the work, including work to just kind of STEM access issues.

I wanted to highlight work that I've been just involved in as a member of a working group, but it's really being led by other colleagues in government through a whole of government effort around environmental justice and environmental policy, which I think is a great kind of case study for thinking about how you can think about science and technology through an equity lens. You know, there's an endeavor called the Justice 40 Initiative, which has, to my earlier point, kind of humility and honesty about the past, right? So agencies and departments have been directed to sort of deliver at least 40 percent of

the benefits of federal investments to -- for climate and energy to disadvantaged communities, but against the backdrop of really understanding that toxins, debris, chemical exposure, polluted air and water, have been disproportionately in underserved communities, and that there are higher rates of asthma, you know, and other diseases and comorbidities, so that there needs to be work here that is understanding that the past bears on people's ability to be healthy and to thrive and to have certain kinds of engagements with sciened and technology in the present.

MS. LEE: That's so interesting because I'm a technologist. I don't think of, like, technology and -- I think of my science friends as really going into that biomedical space, and going into climate, and the technology folks are fortunately, and know I'm talking to a lot of my peers out there, we tend to focus on these telecom and big tech issues, but really, what I think I hear you saying is, these are really intersectional issues, right? Even when you talked about climate change and environmental outputs, you're also talking about the ways in which we're harnessing technologies and data to make sure we get to more formidable means and ends, right? When you think about this role, that's a big charge, Alondra, right? So as you think about how this Administration is embracing this, you know, just to stay on this topic, and then I've got a couple more questions before we go to some of the Q & A that's been coming in.

How do you think the White House and OSTP will sort of embrace all of this and make sure that you have what you need, but we as, you know, policymakers that work alongside you or consumers have what they need to know that this is really a big, big issue that we're trying to solve?

MS. NELSON: Well, I think, I mean, I, you know, I would like to believe, and I hope that we are starting to demonstrate that we are walking the walk. So that, you know, programs that you see coming out of OSTP, initiatives that we're backing, you know, or that we're partnering with, and that with, you know, private sector of civil society or other kinds of stakeholders will always have, you know, this kind of equity frame that is the, you know, one of the sort of top priorities of this Administration. And it's also, I mean, I think that, you know, for me, I mean, I have, you know, clear commitments to, you know, social justice and to really working in government to -- and in service to all of us, but, you know,

particularly to underserved communities. So there is a kind of, you know, value for me, I think undergirding the work, but it also is just -- so, it's the right thing to do, but it also is the practical, competitive thing to do. You know, like, if the United States is to be -- remain a leading innovator, if the United States is to remain competitive, we don't have the luxury of leaving people behind. We don't have the luxury of not having -- not mobilizing all of the talent, all of the diversity, I mean, both in technology and in science, you know, the data is very clear about the strengths and innovation of diverse teams, and, you know, diversity kind of widely, and so, you know, one of the sort of benefits of being, you know, truly one of the world's largest and long-standing kind of multiracial democracies is that diversity is, you know, truly one of the advantages of the United States at its best. And so, you know, I think that there are both for me, I think values-first reasons for this and, you know, good government, and, you know, sort of reasons for this, but also there are very sort of pragmatic and practical reasons as well, why it's really important to be thinking about tech equity issues of technology and science that really engage and involve everybody. And again, you know, at the risk of repeating myself, that it's not just for a few elite computer scientists or elite physicists. There's really just, you know, a role for all of us and an obligation for government to play our part to help make those opportunities possible.

MS. LEE: Yeah, I mean, I love that. I mean, that's why I'm sitting here as a sociologist. There's room for everybody at the table, right? But we actually have these conversations.

But you said something that I want to pick up on, because I think it's really important because people understand this is also under your umbrella, which is the U.S. national AI governance strategy, right? Because that digital competitiveness, whether it's how we think about diversity and equity, how we think about innovation, it all ties into what our strategy is going forward. Talk to us a little bit about that portion of your portfolio, and then I've got a couple of digital questions I want to ask you.

MS. NELSON: Yeah, great. Great, yeah. So, you know, it's in the larger OSTP umbrella, not my portfolio necessarily, so it's kind of adjacent to mine. But, you know, look, it's an age of kind of intense competition. Part of that is intensified by technology and about how technology can make the world small. Artificial intelligence, machine learning, you know, new and emerging technologies, and

many of them automated, are very much a part of how this is playing out. Certainly in recent years, and I think we can, you know, one doesn't have to have a crystal ball to see that it might be true in the decades to come as well. And, you know, I think it is in the interest of, you know, the United States to take, you know, a smart approach and a multifaceted approach to new and emerging technologies and to really engage, you know, every part of government and every sector of society in leading around automated technologies and, you know, this is part of what we're trying to do with the Bill of Rights for Automated Society and giving them shape. And so, in January of this year, actually, the National Artificial Intelligence Initiative Office was stood up, so this is a new, kind of whole of government, national initiative, which some people might not even be aware of. And, you know, it has lots of different pillars, it's, you know, looking at artificial intelligence sort of innovation and R & D, it's looking in the U.S. government, it's working with external stakeholders. But, you know, I'll mention just a few things. You know, this office is investing in education and training to train more people to understand, you know, the sort of principles that are needed for AI development and ultimately to sort of be leaders in this space. But again, to do so equitably, right? So it's not, you know, there's going to be the obvious, I think, colleges and universities where you look to make those investments, but there are also places, you know, not on the coasts. There are, you know, minority serving institutions, there are community colleges and, you know, a rich and vast skilled technical work force, all of which can really contribute to leadership and equitable practice of this work. There's also work going on in this office to expand kind of AI infrastructure, so how do we make sure that there's the compute power and the clouds and the, you know, privacy-preserving data that's needed for the kind of experimentation and innovation and discovery, but again how you do that preserving privacy equitably, making sure that that infrastructure doesn't just sit in the kind of usual places with the usual suspects but that we're building infrastructure, you know, across the U.S. and in both big and small institutions. Obviously, we've talked a little bit about the sort of governance piece. A large part of this office is building out kind of, you know, trustworthy and responsible AI and making sure it's done ethically and not in a predatory fashion. We've talked about some of that. And about, you know, the work of the Bill of Rights for Automated Society, I think in trying to really think about what it might mean to

operationalize and implement that. I think we've had, as you know, Nicol, conversations for quite a few years in the U.S. and abroad about the values, and now, you know, it's time to kind of take that next step and really, you know, say what that means on the ground for folks. And, you know, these are all kind of really important strategic pieces. This work is led by Lynne Parker, who's in the Assistant Director for Artificial Intelligence at OSTP. But, you know, the ultimate goal, really, is to make sure that AI is done in a way that helps people in every sector from, you know, whether in agriculture to finance to health, is really helping people more than it's harming people and, you know, not harming people at all to the extent that we can have a role in preventing that. So, you know, it's an exciting time.

MS. LEE: Yeah, no, I think it's actually great because it's sort of like this glide path, this framework on how we should be looking at it anyway. And we all know when we look at the, you know, the trade magazines, et cetera, that we're in this race to AI to a certain extent, right? This is one of the reasons why we at Brookings are actually really digging into our AI policy across the verticals of governance and bias and national security, because we need these types of guideposts, this type of guidance, to help us, you know, hold up the innovation when it comes to global competitiveness as well. So I appreciate that. And for those of you listening, the National AI Initiative does have website. I found it yesterday (laughter) when I was actually stumbling on it, and I think it's really good stuff. And it's in -- Lynne Parker has done a great job sort of standing that up I think in the last couple years.

MS. NELSON: Can I -- let me just add, Nicol, on this, you know, I think it's currently still open. I mean, there's a federal advisory board for AI being stood up, and advisory committee, and, you know, we really welcome people to nominate themselves and others. You know, it's meant to be diverse and having diverse stakeholders, so, you know, some, you know, world-class experts in the technical pieces of this. The folks who think about civil rights and civil liberties, ethics, law, infrastructure, so, you know, we're really going to need lots of smart and dedicated folks, and I hope people will throw their hat or the hat of others in the ring for that.

MS. LEE: Yeah, no, I love this, like, this is like, getting you on here (laughter) is like getting all the information that many of us are scraping the internet for. So people are listening, then that

is another, there's a RFI, there's also request for nominations, so make sure you visit OSTP and really look into that. You know, I would be remiss, because in addition to the time that I think I thought I was one of the busiest women in tech for a minute, but now listen to me out loud, I realize I got a role model when it comes to really how much your portfolio encompasses and how important it is. I want to talk, though, about like these non-AI-related technologies before we go into Q & A. We know that we're right now in the midst of thinking about a broadband infrastructure package or a infrastructure package with broadband that is going to be the biggest that the United States has ever had. We also know that that's going to involve a multiplicity of technologies, and (inaudible) add on things like 5G and other technologies that we've been investing in in this country, as well as it's going to try to close the digital divide. How can we, in terms of how OSTP is sort of positioning this non-AI-related conversation, or do you see it much of the same as we've talked about this intersectionality, right? I mean, how do we look at, you know, those issues of accelerated broadband access in deployment for communities?

MS. NELSON: Yeah, I mean I think, you know, they're learning many lessons from the pandemic, and this lesson around the lack of broadband. I mean, you're so eloquent on this, and your work on this is so great, is one of the lessons. I mean, it really shined a huge, bright light on disparities in internet access, so you know, I spent that last two decades living in New York City, and it's not uncommon to see young people huddled outside of libraries, you know, trying to get Wi-Fi to do their homework and other sorts of things, and as much as we've been, you know, have an expansion of, you know, global phones and that technology has gotten so much better, you know, we're -- you know, we just have lived through an experience, are living through an experience, where the difference between mobile connection and broadband connection is significant. And so, you know, I think that that lesson's been learned, and the Administration's doing a lot to measure those disparities, so NTIA, which you know well, the National Telecommunications and Information Administration, which advises the President on telecom issues, you know, has this incredible mapping tool, which I hope that you've seen, which you can see the places and populations with more or less reliable broadband coverage. I mean, I love that tool because it is a kind of like, it's showing the work that I was talking about, right? I mean, often we could have

imagined government putting up a tool when the job was done and you had like, everybody's filled in and all the reliable, it's really like a -- it's a victory lap, you know. But this is sort of saying, you know, we see where there's gaps. We see that things are unreliable, and we've got work to do, and we're going to be, you know, forthright about where things are looking well and where they're not. So that actually is really important in government because you can't help communities and support infrastructure to remedy problems you don't know. So we really should be, I think, forthright about the problems. But, you know, and so there are, as you said, real commitments, and to resolving the kind of broadband inequality issue. But, you know, as you know well, Black families are still less likely to have high speed internet than their white counterparts. Latino, Latina families are also less likely, and you know, 35 percent of people living on Tribal lands lack access to basic internet access. So we -- so here we have this digital infrastructure that is key to almost everything we do, that we've learned a lot about over -- how key it is over the last 18 months in particular, and we still don't have folks who have access, and so that's crucial and I, you know, it's better -- heartening to see that message I think really be, I mean, I would love to hear your thoughts on this. You've been working the telecom space for a long time, but I don't think in recent memory we've had sort of people talking about broadband infrastructure in the way that they are now, and that's an important shift I think in our national conversation that I hope will lead to support for, you know, some of the investments that we're hoping will make our way through this bipartisan infrastructure bill.

MS. LEE: Yeah, you know, I use the example when I was in high school I was at the prom and I was against the wall and nobody wanted to dance with me, and now everybody wants to dance with me, right? I don't get it, right? Because the digital divide has sort of pushed its way up into the top ten list, and it's been going on like our friend Larry Irvin has said, for, you know, more than two decades we've known that this divide has actually existed. I actually -- I wanted to tell you, I mean, I appreciate your big heart on this, because people who know me, that I'm compelled to continue to do this work, because we need to ensure that systemic inequalities don't trail with digital inequities. So, I'm excited about that, and yes, I am working on this Tech New Deal (laughter) and if you don't know about it, go to the Brookings website. You'll find my stuff.

You know, I'm thinking before we go into Q&A, just like, this legacy that you're creating. I was sitting here writing some points that you've been talking about. One, this new OSTP sort of centering data, centering rights in many respects and making it a participatory model when we think about tech. Paying attention to what the unintended consequences are and how technology that -- I thought the way you said it makes it actually look very small and little, but then also harmonizing many of the equity concerns that we had. The challenges of civil and human rights, making sure people walk in dignity around the technology that not only they consume, but what also they produce. So I really appreciated this conversation for you to lay that out for folks, because many people just don't know, you know, the role and impact that this White House's OSTP is going to have on the future of our ecosystem. With that being the case, here you are, out of academia, out of the foundation world of philanthropy. What's your legacy as you sit in this seat, you know, what are like, two to three things that you'd like to see become the Dr. Nelson legacy as the Deputy of OSTP. It really is someone who sounds like you're doing a lot of interagency coordination on many of these issues, so what desired legacy would you like to have? I mean, I know my legacy is I go you here to Brookings. (laughter)

MS. NELSON: What a question. Well, you know, look. If I'm being honest, I will say upfront, and I say this whenever I'm asked, that this is never a role I thought I would find myself in, you know. I, you know, I write things, I teach people, the chance to be called and invited to public service by President Biden, by Eric Lander, to serve my country at this important moment where issues of science and technology and equity, the things that that kind of intersection that you, that I and a few others have been working on their careers, are really at the forefront of science and technology policy. It's, you know, it's the honor of my life, and you know, so I you know, walk through the doors of EOB every day, really in awe of the task, and really laser-focused on the work at hand and knowing that time is short, and all of that. I think if we get it right, and you've said some of the things I think, that we'll have a kind of technological -- a legacy of a kind of technological development process that's more thoughtful, more participatory, and more democratic, that we can really bring those values and principals into that work and that we can have ethical, democratic forethought in the kind of design of technology and in the rollout of

technology, and investments and procurement in technology. That we understand that innovation in technology definitely includes and needs the capabilities, but it also needs to have in mind the needs of the people it will ultimately serve. I hope that we will have really kind of unleashed a new way of thinking about innovation, so, you know, that it includes a STEM workforce that reflects all of us, that, you know, it includes, you know, young technologists, scientists, designers, coders, who really feel that they have a sense of possibility, that they're not going to learn to code and then go to an office pace or a company or a government office that doesn't make them feel welcome in the work. I mean, we're losing talent and ambition and innovation and ideas that way. I hope that we'll be able to build a bridge between kind of, you know, data, analysis, and the work of government, you know, that really can help us I think identify, diagnose, and hopefully remedy inequality and you know, I hope we will have you know, a more equitable country, a more equitable world, a more just world, and that science and technology are more likely to be aids in that endeavor, rather than barriers to it.

MS. LEE: Yeah, no. Yeah, I love that and I continue to just be in awe of the fact that we also had this conversation where you are politely smoothing in the whole scientific anchoring focus on this as well, so we're not only interested in the sociological impact, but really how it all blends together.

Listen, folks, I could keep going, but I do have some questions for you, Dr. Nelson, from the audience and I want to make sure that (inaudible) before we let you go. This question comes, you know, which is interesting. I'll read it verbatim and then, you know, please respond the way you can. What is the ideal path for tech companies to walk when it comes to inclusive technology? How do we balance the sometimes-competing interests of PNL (phonetic), government actors, and communities across America, the world, and what models exist that we should emulate? That's a big question from the person who put it. I chose it because it was at the top of my inbox here, but you know, what's the ideal path for tech companies to walk when it comes to inclusive technologies? So I think we're just talking about those tech companies.

MS. NELSON: Yeah. Let me answer it this way. I mean, we've talked a lot about innovation, and we've talked about I think how we want to think about it in new ways. I think, you know,

innovation can really open a door for a better future for lots of people, and that there are a lot of you know, thoughtful, you know, incredible, you know, enterprising companies working across various sectors to do this work, and I've been particularly sort of energized and inspired by you know, clusters of work that we might call AI for good, right? You know, so development always comes with risks, but there are ways that we can think about upstream questions as I said, and engaging communities that might be affected along the way. So there are companies that are, you know, industry that are working to do that. And there are also just like, you know, ways in which you know, automated technologies are doing incredible things in the world. So agricultural companies using some kind of AI assisted technologies to include and scale crops, to kind of try to sort of anticipate weather patterns and therefore you know, enable us to do -- have more kind of bountiful agriculture. There's, you know, space industry folks leaning on AI. There's others leaning on AI rather to sort of help people with disabilities, vision impairment, how people get along in public transport (inaudible) transit and the like. We know that AI has the potential to really help increase access to healthcare. We saw some of this during the pandemic. Decrease healthcare costs through kind of smart phone apps. You know, we want to make sure we understand where that data is going, that it's happening in a privacy-protecting way. But these systems, you know, can also have bias as well as be good. So I guess, you know, I think that the industry role is to really I think help -- help us see and help us collaborate and kind of I think really leaning into the ways that AI can be really transformative. Like, let's identify those and really pursue those as well as, you know, as well as trying to remedy some of the challenges and biases and the like.

MS. LEE: Now that, I get it and look, I'm sitting here and trying -- you should see me over here trying to keep my mouth closed, because I know we're (inaudible).

MS. NELSON: Don't keep your mouth closed. No, no. This is me in my participatory OSTP guise, so I want -- I don't want you to keep your mouth closed. I want to hear from you.

MS. LEE: Well, I'm going to give the chance to the people who signed up to just get their questions out and then I have more I want to say. Let me ask this question, though. How do you see libraries fitting into this? Especially in smaller suburban and rural communities, which we know rural is a

big concern in terms of equitable access. The person who wrote this question is involved in fundraising for a committee to public libraries, and it's responsible for communicating just their values. So where are the libraries? Because I think goes to that local digital infrastructure.

MS. NELSON: Absolutely.

MS. LEE: So that's part of the equation.

MS. NELSON: Yeah, no, this is a really great question and a really important one. I mean, libraries are crucial infrastructure. They're often like the beating heart of communities. You know, they're a refuge, they're shelter, and can be really a critical access point for social services. I mean, you know, the library of our childhood, you know, Dr. Lee, is not the library of today. I mean, libraries provide social services for students, for families, for you know, folks seeking employment, for folks seeking resources, so and the ecosystem of a community library, particularly, you know, suburban and rural communities, libraries play a really central -- they're a central node. There's this kind of central organizing role, and in rural areas where there's, you know, less access to wireless internet as we were discussing, to computers to Wi-Fi, really connect people to employment and education systems. So all of this to say that, you know, libraries, that as the question I think suggests, play a really important role in social and economic ability, and you know, I think they're too often under-resourced, and as the question also suggests, you know, we need local, state, federal government to really rally in support of, you know, of providing solutions and resources in partnership with, you know, the private sector with philanthropy and the like. I mean, you know, I think there's a way of thinking about the STEM ecosystem, technological access, broadband, infrastructure, all of that, that, you know, that libraries sit very much at the center of so many of our aspirations for the nation.

MS. LEE: So I'm going to ask this last question, because again, I want to share the stage with our viewers here. How does the White House envision achieving tech equity with children and youth? And that was a (inaudible), you know, we hadn't really talked about different subgroups, particularly when we know that digital skills trail with systemic inequalities like income inequality. We saw this with the pandemic, too, with digital equity and inequality. So, is their focus going to be on young

people in this (inaudible)?

MS. NELSON: I think our focus has to be on young people. I, you know, I think one of the manifold lessons of the pandemic was around, you know, not only access to technology, but even when there was access to technology, learning loss. So, you know, getting kids back into the classroom to address some of the challenges that came to light over the last year and a half is really one of the important focuses of the Administration. So equitable access to tech, which we've discussed, to Wi-Fi hotspots and other things. There needs to be really investment and, you know, learning and tutoring and after-school programs, but also, you know, I think what we're seeing and I think, if I'm not incorrect, earlier this week it was National Mental Health Day, like the social emotional learning piece, counseling, and these sorts of things. And you know, so there's been support for all of these things in the American Rescue Plan, in the form of allocations to states and particular relief for K to 12 schools, so you know, there is so much more to be done, and I think we're only beginning to understand the challenges that some young people faced over the last year and a half, but certainly resources have been put there and more needs to be done. And then I'll say quickly, you know, when our time is (inaudible) when you work a lot, you know, that goes from, you know, K to 12 to the workforce, and so we're spending a lot of time thinking about teachers, educational technology, innovation, and STEM and STEM teaching as well. So, yeah.

MS. LEE: Yeah, you know, Madame Deputy, I have to say first and foremost, thank you. We're out of time. But I want to summarize for people who've been watching, some things that I think are really important bullets that I learned today as well. You're busy. And being busy means that there's a lot of stuff that's out there, so we just direct people to the resources that you actually shared. But there is a framework that's going to be rights-based and participatory when it comes to AI, and I appreciate that as well, because I think it changes the equation of how we look at equal opportunities. Exposure to the careers matter, and we can go deeper in STEM. I might have to have you back or put you on the podcast. And most importantly, we've got to make sure that we close the divide so that digital access is equitable and available. We have the criterion for people to actually get involved and get engaged. You

are busy, and I thank you.

MS. NELSON: You are busy.

MS. LEE: I know, but I thank you for coming on in your busy schedule, to actually grace us here at Brookings. Thank you so much, Dr. Nelson. I encourage everybody to follow you on Twitter, to follow OSTP. I encourage you to follow this conversation. I just peeked down a minute ago, and there's the -- the Twitter conversation is live with regards to Tech for All. I am Dr. Nicol Turner Lee, Senior Fellow at the Brookings Institution Governance Studies Department and the Director of the Center for Technology Innovation. Yeah, we are busy, so we ask that you follow TechTank, which actually looks at all the issues that we talked about today, our electronic newsletter, as well as listen to our podcast, which is available every other week with new episodes touching on many of the same issues. Thank you everybody, and we will see you again. Thank you.

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