

## Interview



Photo by Dan Komoda

“Science and technology now sit in the center of every policy and social issue.”

Alondra Nelson, the first deputy director for science and society in the White House Office of Science and Technology Policy, talks about “a new social compact for science and technology policy” that would make innovation more inclusive and equitable, reckon with the nation’s past, and use social science to improve policymaking.

In January 2021, President Biden appointed sociologist Alondra Nelson, a leading scholar of science, technology, medicine, and social inequality, to be the first deputy director for science and society in the White House Office of Science and Technology Policy (OSTP). *Issues in Science and Technology* editor William Kearney recently spoke with her about her role in bringing social science expertise to federal science and technology (S&T) policy and the Biden administration's goal to make that policy fair and equitable for all members of society.

***You were writing a book about OSTP before your appointment there, and you've followed the ways its role in federal science policy has fluctuated over the decades. President Biden immediately heightened its role, however, when he elevated his science advisor, the OSTP director, to his cabinet. What is the significance of that move?***

**Nelson:** I started doing the research for the book because I found it such a fascinating office for somebody who is a student of science policy. In the 1970s, the OSTP was originally imagined to be a small shop, but what's happened over the intervening decades is that science and technology now sit in the center of every policy and social issue. And so it only makes sense—when I track evolution of this work with my academic's hat on—that at this moment it would be a cabinet-level office.

In answering your question, it is also important to think about the current context. Every president faces profound challenges and a unique set of historical circumstances when they come into office. For President Biden, this was a once-in-a-century pandemic combined with a climate emergency—all in the context of a growing awareness of injustice and inequity in American society, and globally. Every dimension of national and international policy, from health and education, to security, to social welfare, and everything in between, has something to do with science and technology. There's no way to tackle the major challenges and opportunities we face without engaging science and technology. From that perspective, and given the president's commitment to having a government that is evidence-based and informed by science, it follows that this would be a cabinet-level position. I think that the fulfillment of the aspirations and values of the Biden-Harris administration are manifest in the elevation of OSTP's directorship to the cabinet.

***OSTP is still a small shop compared to big agencies, so how do you coordinate science policy across the entire federal government so that it aligns with President Biden's goals and vision? Is that the job of OSTP?***

**Nelson:** Strategy and coordination are part of OSTP's founding mission. We work in parallel with, and administer, the National Science and Technology Council (NSTC)—about which I think not enough is known by the public—to coordinate interagency alignment with the administration's priorities. NSTC was established in 1993 and there is now a nearly 30-year infrastructure for doing exactly the kind of interagency work you suggest. NSTC is doing work on critical minerals, advanced manufacturing, scientific integrity, STEM equity, algorithmic accountability, and many of the other big issues we face. There are interagency folks at the table, sitting with OSTP colleagues, working to create strategy and policy.

***On the eve of his inauguration, President-elect Biden wrote a public letter to Eric Lander, who he had nominated as OSTP director, tasking him with answering five big strategic science and technology policy questions. Among them was, "How can we guarantee that the fruits of science and technology are fully shared across all of America and among all Americans?" How are you trying to answer that question? What would success look like?***

**Nelson:** The question President Biden posed to Director Lander in that letter suggests what is distinctive about this OSTP—and what I find really exciting about it. The question is the foundation of the Science and Society Division, which is a new division that I have the privilege of leading. Every day we are working with public servants, researchers and scientists, policymakers across government, and sectors of the American public to answer this question.

The goal is to build a science policy that intentionally and explicitly includes the perspectives of the American public, including seeing science and technology through the eyes of folks who are marginalized or vulnerable. This approach to policy views innovation as something that has been extraordinary and offered great progress and promise to some people, but has also sometimes come at the cost of harm and damage to other communities. And in this moment in which there is diminished trust in institutions and diminished trust in science, it means bringing S&T policy development out of the shadows. A phrase I often use is "showing our work." For the government, that means being more transparent about the past, about what we're doing in the present, and about our goals for the future. What you've been hearing in the language of the administration is an explicit effort to situate science and technology policy with democratic values, including inclusion, accountability, justice, and integrity. The challenge is to drive, design, and implement policy with those values always in mind.

**“What you’ve been hearing in the language of the administration is an explicit effort to situate science and technology policy with democratic values, including inclusion, accountability, justice, and integrity.”**

What would success look like? A STEM workforce that really looks like all of us, that reflects all of us, in the classroom and in the boardroom. Empowering new communities to be at the table of S&T policy. I think success looks like a public that feels that it can be engaged in the work of government; a lot of work we are doing in OSTP is conducting listening sessions and using other ways of engaging the public to help us think about the work we do. Success also includes a new set of rules of the road, such as an approach to innovation that is rooted in inclusion and scientific integrity. It means having a sense of responsibility to have aspirations, safeguards, and values in place that can help ensure that folks are not abused or discriminated against as new S&T comes online—to ensure, per President Biden’s question, that it really benefits all people.

***You said there’s a need to be transparent about the past. What do you mean by that?***

**Nelson:** The Biden-Harris administration has set out to pursue racial and economic justice in every facet of our work and to address head-on disparities and inequities that exist because of things that have happened in the past and continue to happen in the present. Disparities in medicine, health, and access to education didn’t just appear overnight; they congealed over time, one generation after the next, one injustice on top of another. Even those of us who might consider ourselves technophiles and science optimists grew up hearing stories of tragedies, and indeed horrors, in the past. The story that we hear most about is the Tuskegee syphilis experiments, which I often remind people was a project of the US Public Health Service, not just something that just sort of emerged or was in the private sector. That was 40 years of government research.

We need to say that we know science and technology has not equally benefited all people. We stipulate that at the beginning. As I said before, in a context of low trust in government and institutions, it’s incumbent upon government, in a very profound way, to be forthright. If we are really going to be in service to the American public, we need to have some difficult conversations. I think from honest accounting we can move into truly innovative and mutually beneficial S&T policy and outcomes.

A couple of examples are the listening sessions, which I mentioned earlier, hosted by the Scientific Integrity Task Force. The task force was established through a memorandum from

President Biden and was asked to recommend policies and practices that can prevent political interference in federal science, with the aim of restoring trust in government. Part of the work of the task force has been an accounting of lapses in scientific integrity as a necessary part of the process of suggesting a way forward. A second example is the Equitable Data Working Group that I cochair. This was established on the first day of the administration through an executive order on Advancing Racial Equity and Support for Underserved Communities Through the Federal Government. This group is attempting to identify and fill in demographic data gaps to help answer the question of whether or not government is doing its work equitably. We need to be honest that in many instances we couldn’t answer that question in the past because we didn’t have the data we need to do so.

***Almost 20 years ago you coedited a book, *Technicolor*, that challenged some common assumptions about the relationship between race and technology. What misconceptions persist about the so-called digital divide?***

**Nelson:** I’ve been thinking about these issues for a long time. *Technicolor* was framed around early conceptions of the digital divide. A stereotype had emerged, a kind of false narrative about technological evolution, that held that progress had been forged largely by white scientists and technologists, white innovators, and white inventors, and that the other side of the coin was that people of color were somehow less capable when it came to technology. I think now we are a little more aware as a society that that framing is incorrect; there is a rich history of Black and brown scientists, inventors, and innovators who’ve achieved critical breakthroughs, often against incredible odds. In that early work, we were trying to surface some of that history and explore the idea that the digital divide, at its worst, can become this kind of self-fulfilling prophecy, a kind of fiction that people of color can’t keep pace in a high-tech world. We shouldn’t accept the notion that working-class people, or people who haven’t had certain kinds of educational benefits, are less competent, less interested, less passionate about, and less innovative in science and technology. We’ve got to think in different ways about the digital divide.

In this moment what’s true and important about the

digital divide is the extent to which it offers us a prism for understanding infrastructure inequality in the United States. Certainly, COVID-19 shined a light on a range of disparities, including the inability of many to get online to work remotely or to give kids access to schooling. I've been proud of what the administration has done to measure those disparities and to also try to address them. The National Telecommunications and Information Administration, which advises the president on telecom issues, published this incredible mapping tool where you can actually see the places and populations with more reliable or less reliable broadband coverage. The Biden-Harris administration is planning to invest \$65 billion to connect Americans to high-speed internet.

***How do we change the thinking about where innovation comes from?***

**Nelson:** We know from the organizational behavior literature that it is diversity broadly—not just racial and ethnic diversity, but broad diversity of perspective and experience—that is one of the most significant drivers of innovation. When we are setting the conditions for innovation in science and technology policy, it is a shame if we are not also leveraging this one demonstrated driver of innovation. We need to get more people involved in the work of doing science and technology policy and, of course, science and technology research and development itself. The United States is this great lab of innovation, and we should be able to turn that innovation into products and practices that not only take on hard problems like climate change and pandemics but are also more equitable.

***Do you see social science becoming a bigger part of the policymaking toolkit?***

**Nelson:** I certainly hope so. This in part is why I am at OSTP. To go back to our earlier conversation, many of the tools that we need for robust government—tools for understanding the lived experiences of the American public; for assessing the equitable, successful delivery of government services, for identifying demographic trends in economy, labor, and STEM professions; for applied data science across pressing policy areas—come from social science. How do we assess whether or not programs are serving intended communities? Is this federal program serving hard-hit communities in low-lying lands that are more likely to be exposed to climate change? That, and many others, are empirical questions that can be answered when we apply social science concepts to qualitative and quantitative data. The answers we generate can then inform policy.

I think that as government becomes more analytical, it is very important to have social scientists at the table. One of the most important reasons is because we think about answering

questions with different kinds of data, produced using both quantitative and qualitative methods. And as much as the technical analysis matters, policymaking is always going to involve that social piece, that human piece, that historical piece. I hope a new way of thinking about not just S&T policymaking but policymaking more generally can be found in social science, which helps us see tensions in society, map them, reconcile them, and understand them, and recommend changes more conducive to equitable experiences and outcomes among all members of society. I believe as a scholar and researcher, and as a policymaker, that social science evidence, at its best, really can point us to better policy solutions.

***How do you communicate to the public the urgency of climate change or other pressing issues in the midst of a still overwhelming pandemic?***

**Nelson:** One of the lessons of COVID-19 is that, in some way, we all became social scientists. It is this moment, I think, in which all of us had to come to terms with the profound complexity of the challenges that we face right now, and in the coming years. There were times in the pandemic when all of us became armchair epidemiologists, making risk assessment calculations for our families, for our neighborhoods, for our workplaces and schools.

At the same time, the science and technology around the pandemic was extraordinary: we decoded the genome of the virus in a month or so, we had a vaccine in less than a year. Yet we realize we have not conquered it. It has not been for lack of science and technology that we have not conquered it, but because of the environment in which that science and technology emerged—these are profound social questions. And when it comes to climate change, we're living in a time where the impact is acute, it's urgent and existential. I want to believe that all of us in the American public are learning to face up to the complexities of climate change, and the pandemic may have primed how we think about it. I hope that presents some opportunities for courageous possibilities for both domestic and international climate change policy and for pandemic preparedness.

***Is there anything else you would like Issues' readers to know about President Biden's science policy priorities?***

**Nelson:** I would like your readers to know that the federal R&D budget for the 2023 fiscal year not only puts a priority on cutting-edge science and technology, but it also puts a priority on innovation for equity. We're proposing a new kind of social compact for S&T policy, in which it is pursued in the context of the social ecosystem it sits in, with a greater awareness of whom it's supposed to benefit—and how.