Anti-racism in technology and policy design

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When Kate Turner was an undergraduate at the University of Notre Dame, she kept hearing the same message.

"As a Black woman, people kept telling me, 'we need more Black

women in STEM!'" recalls Turner.

The message had some influence on her choice of major—but then, so did a global recession. And while STEM fields might have seemed to offer more stable career prospects, Turner's chemical engineering path did not at first inspire.

It took seeing the science through the lens of societal challenges and policy to really spark a passion.

"I very serendipitously met a professor who offered me a position working in his lab," Turner recounts. "He was an Earth scientist who worked on nuclear issues, specifically nuclear waste management." The issue interested Turner because, as she puts it, "you cannot divorce the policy and the social science from the STEM work."

"The questions one has to consider when designing nuclear waste management are inherently technical (structures, geologic repositories, etc.), but then you have this policy and sociological piece. Facilities that store nuclear waste are situated near where people live. You're not making decisions in a vacuum."

Turner's passion for sociotechnical issues led her on to a Ph.D. in Earth sciences at Stanford University, and to her current role as a researcher for the Space Enabled group at the MIT Media Lab, where she works with Assistant Professor Danielle Wood, a systems engineer working in aerospace who is an alumna of the MIT Technology and Policy Program and Institute for Data, Systems, and Society (IDSS). Space Enabled strives to apply space technologies to challenges here on Earth—including the challenges of racial inequity.

"So many STEM issues have a greater impact on the lives of people of color, especially Black people," Turner points out. "So why is there so

little diversity in STEM?"

Research to policy engagement

At MIT, Turner is a fellow of the Research to Policy Engagement Initiative, an IDSS effort aimed at bridging knowledge to action on major societal challenges. The initiative connects policymakers, stakeholders, and researchers from diverse disciplines.

"The initiative is a good space for people to talk in an interdisciplinary way about societal issues," says Turner. "We ask big questions, like 'How do we design policy with equity?' or 'How do we create a better pipeline so that scientific research is incorporated into policy?'"

The importance of bridging research and policy was a key lesson from Turner's undergrad experience in nuclear waste management. "You can be doing work that can technically solve an issue, but if it doesn't have social and political acceptance, it doesn't matter."

A societal perspective that examines the impact of policy motivates Space Enabled's new "Invisible Variables" project, which examines how individuals in the Greater Boston area are affected by stay-at-home advisories and social distancing during the COVID-19 pandemic. The project looks at impacts on safety, income, and autonomy while taking into account Boston-area specific factors like population density, high rents, and older homes.

"In the U.S., we have a lack of a social safety net as part of the fabric of our society," says Turner. "This project is aiming to look at how that lack of a safety net in greater Boston has impacted people in ways we're not often talking about. These are variables of a society's health, just like how many COVID cases or ICU beds there are."

Research at the intersection of technology and policy necessitates cross-disciplinary collaboration. The Research to Policy Engagement Initiative fosters these connections. "I'm hoping that the initiative can turn into a hub for people who are either working in the STEM community or the policy community to think about how to meaningfully create science-informed policy."

Humanizing difference

At the Media Lab, Turner examines how technology—including sociotechnical systems like transportation networks, power grids, and health care—can exacerbate inequities and reproduce social hierarchies. She thinks about how technology design and implementation lead to inequitable outcomes, and how innovation often occurs in spaces where race isn't considered and people of color have little to no input. Their Inclusive Innovation projects seek not only to make innovation spaces more inclusive, but also to work against assumptions that innovation is driven by a dominant, normative culture.

"In the U.S., what we think of as normative for innovation is not very inclusive. It is a broken record at this point that STEM industries like tech struggle with diversity and inclusion, but it is important to emphasize that these disparities lead to inequitable outcomes. When we have decision-makers that are predominantly coming from one kind of perspective, education, or lived experience, this contributes to the creation of inequity throughout technology's design and implementation in society. Everything from gentrification to facial recognition software not accurately categorizing faces of color—these issues stem ultimately from inequity in innovation practices. Who is seen as an 'innovator,' what kind of education or lived experiences they have, what they look like or speak like, etc.—all these factors contribute to disparate outcomes."

And when innovation happens outside of these normative spaces, it's not necessarily recognized as innovation at all. "It's not seen as ingenuity, engineering, or creation," Turner says. "Sometimes it's invisible."

Turner's work, which is also influenced by intersectional feminism, incorporates critical race theory and anti-racism directly into both technology and policy design. "When our society was founded, ideas like assimilationism, racism, classism, and sexism were normalized," she explains. "Even though today—especially in this moment—mainstream society largely rejects these values and tries to prioritize equity, we need to actively work to create anti-racism and intersectionality in our technology, policies, and norms, and in order to create and sustain equity across axes like race, class, and gender. These sort of changes won't happen on their own."

Incorporating these lenses helps to identify biases in tech spaces. Race theory and feminism expose how ideas are used to dehumanize and marginalize women and people of color. Ultimately the goal is to imagine anti-racist technology design and implementation.

"Intersectionality and anti-racism humanize difference," says Turner. Rather than overlooking or rejecting certain technology users, Turner asks: "How do the different experiences of marginalized people shape their needs? How can they inform our design questions, what sorts of products we create, how technology is used? How can we include and celebrate diversity in design, implementation, and policy—rather than erase or criminalize it?"

Though Turner's research has pivoted some since joining Space Enabled, she and Wood still work closely with nuclear and aerospace systems. An upcoming project looks within these two domains to offer a systems architecture analysis of the technology design process with the goal of producing anti-racist outcomes in society.

"I'm still very much thinking about the STEM questions of nuclear policy and equity," says Turner. "I'm hoping that adding lenses like anti-racism and intersectional feminism will lead to more equitable outcomes in those areas."

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