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Feature

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By Elizabeth Good Christopherson, Emily L. Howell, Dietram A. Scheufele, Kasisomayajula Viswanath & Norris P. West

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Students from the Milwaukee Excellence Charter School tour the L.R. Ingersoll Physics Museum at the University of Wisconsin-Madison in April 2017.

It's time for science philanthropy and communication to cocreate a new era of partnership with communities of color.

Photo courtesy of Bryce Richter/UW-Madison

How SCIENCE Philanthropy Can Build EQUITY

BY ELIZABETH GOOD CHRISTOPHERSON, EMILY L. HOWELL, DIETRAM A. SCHEUFELE, KASISOMAYAJULA VISWANATH & NORRIS P. WEST

In March 2020, when COVID-19 officially became a pandemic, sociologist Alondra Nelson launched a crowdsourced collection of interdisciplinary resources placing COVID-19 in historical and cultural context. In the following weeks, the Social Science Research Council, of which Nelson was president, added initiatives to develop insights about the roots of the crisis; its effects across societies; and its disproportionate effects on Black, Native American, and Latino communities. Some of the initiatives included a registry tracking COVID-19-related research, analysis of COVID-19-related misinformation, and firsthand accounts from Brooklyn College students in deeply affected communities.

"I believe we have a responsibility to work together to make sure that our science and technology reflect us, and when it does, that it reflects all of us—that it reflects who we truly are together," Nelson said after President Joe Biden appointed her in January as the first deputy director for science and society of the White House Office of Science and Technology Policy. "We have an incredible window of opportunity ahead of us to approach our science and technology policy in ways that are honest and inclusive—to bring the full strength of our communities, our experiences, our concerns, and our aspirations as we think through emergent forms of science and technology."

Meeting this opportunity and responsibility requires building diversity, equity, and inclusion (DEI) into the DNA of science—a challenge calling for unprecedented cooperation across fields, communities, and types of knowledge. Language and communication will help us build those connections, and the definitions we use draw on bridging work by the Communications Network, a professional organization of social-sector communications leaders. By *equity*, we mean a focus on advancing

opportunity for everyone by changing long-standing structural factors that benefit some social groups and harm others. By *inclusion*, we mean cocreating authentic partnerships to produce knowledge and design solutions that foster belonging. By *diversity*, we mean a reflection of society's differences, including race, ethnicity, gender, ability, sexual orientation, socioeconomic status, and religion. When we combine these factors into a DEI approach, the goal, to invoke Nelson, is to ensure that our science and technology reflect all of us. So, how can philanthropy meet this opportunity for necessary and overdue course correction?

A growing number of science-focused philanthropies are developing initiatives to strengthen DEI in their own organizations, among the organizations they support, and in science and society broadly. At the same time, new and mounting crises—including the COVID-19 pandemic, biases in artificial intelligence, and catastrophic weather events exacerbated by climate change—are spurring philanthropists invested in social justice to pay greater attention to equity issues surrounding the design and application of emerging science.

Bringing diverse viewpoints and resources together for shared learning and more effective action toward equity requires many different knowledge domains, including the coauthors' shared area of expertise: science communication and engagement with specific communities. In this article, we draw on the work of scholars, scientists, communicators, and a growing community of innovators working at the intersection of science and society to present a framework to help philanthropies elevate DEI in their support of science communication research and practice.

All kinds of diversity matter for equity in science. Here, we focus on race and ethnicity, because systemic discrimination and exclusion based on race and ethnicity are the leading causes of disparities in the United States. Advancing racial equity in science connects to work taking place across society, as protests and community organizing spurred by police violence against Black people and targeted attacks against Asian Americans are prompting organizations to reassess their responses to systemic racism.

Meaningful philanthropic change to address long-standing exclusion of people of color requires not only urgent action but also approaches to shaping actions that center DEI. The framework we propose is intended to support this kind of inclusive, equity-centered approach to both science and civic science engagement.

FIVE CIVIC SCIENCE APPROACHES

This framework refines and builds on a 2018 *Stanford Social Innovation Review* article, "The Civic Science Imperative," coauthored by two contributors to this article. The 2018 essay described a need for philanthropy to invest in civic science—"broad public engagement with issues that arise at the many intersections between science and society." In communities where successful civic science engagement occurs, "scientists play active roles as citizens, people from many walks of life access science as part of their decision-making processes, and the environment in which people communicate about science is an inclusive space for public problem-solving and discovery."

The article highlighted five approaches for philanthropy to advance new efforts in civic science: 1) supporting effective science communication and engagement, 2) capitalizing on the strength of diverse coalitions, 3) building capacity to deal with moving targets, 4) focusing on shared values, and 5) developing trusted relationships through applied research and feedback loops.

In the three years since "The Civic Science Imperative," a number of philanthropic foundations and other organizations have been building collaborative investments to pilot these approaches. In 2019, the Rita Allen Foundation, the Burroughs Wellcome Fund, the Chan Zuckerberg Initiative, the Kavli Foundation, the Gordon and Betty Moore Foundation, and the David and Lucile Packard Foundation formed the Science in Society funder collaborative. In 2020, the collaborative partnered with 15 organizations working at intersections between science and society—from science museums to media to scientific associations to academia—to launch the Civic Science Fellows program (three coauthors of this article are formally connected to the program, one as an organizer and funding partner and two as advisors). The program is testing how to build and sustain a network that can support leaders from a range of professional and demographic backgrounds—rising stars in science, media, education, civic engagement, and other fields—as they explore new evidence-based approaches in science communication and community engagement to cocreate strong and inclusive connections between science and civic life.

A central area of learning in these years is that the approaches described in the 2018 article and the language that undergirds them do not adequately address the barriers to inclusive civic science posed by systemic racism, sexism, ableism, classism, and xenophobia. Without deliberately shifting science philanthropy and communication to incorporate approaches to advance racial equity, we will not be able to build effective science communication and engagement, diverse coalitions, shared values, and trusted relationships, nor will we have the capacity and insights to adjust our work in times of crisis. Equity-centered civic science is a necessary foundation for building science and technology that reaches its potential to serve the public good—and it is also essential for ameliorating the inequities that diminish access to the public benefits of health, education, opportunity, and justice. As social-sector leader Vu Le has written on his blog *Nonprofit AF*, equity is not "the parsley garnish to the risotto of 'real work.'" It *is* the real work.

We offer the framework below as a prerequisite for the five civic science approaches. To emphasize the necessity of cocreating

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knowledge and solutions from the beginning, we do not provide a definitive path for philanthropy but rather pose a set of questions to prompt reflection. We hope these questions will inspire further exchange that will help shape collective understanding and action.

A REFLECTION FRAMEWORK

To realize the engaged, inclusive aspirations of civic science, the work and attention of philanthropy must center communities that have been historically underserved by science and technology. Doing so requires investing in networks that value equity, people who can connect different communities and types of knowledge, and engagement that leads to shifts in power. We start with an examination of these core elements. We then look at three areas of challenge and opportunity for philanthropy that cut across these considerations: increasing racial diversity in science and philanthropy, rooting our work in evidence-based learning, and creating systems of accountability.

1. How can we focus on the underserved?

Among science communication researchers and practitioners, there is growing agreement that science and science communication should be more diverse and inclusive, in terms of both workforce and who they serve. Individuals, institutions, and networks need to continue a process of identifying which groups have been excluded and to hold themselves accountable for prioritizing positive outcomes for these groups. This work is rooted in communication—in the words and narratives we use to define our priorities, imagine paths to change, and build collaborations to achieve them.

The 2020 report *Race and Racism* from the Communications Network examined one of the challenges and opportunities surrounding the need for advancing civic science: communicating more directly and clearly about racism in ways that advance racial equity. The report indicated that social-sector organizations often fail to use language designed to dismantle racist mindsets, even while going "to great lengths to describe their commitment to DEI." Carmen Anderson, the director of equity and social justice at the Heinz Endowments, says that changing communications to address racism requires building knowledge, skill, and a commitment to move through discomfort. "With race specifically, it's a topic that many well-meaning people are afraid to talk about, for fear of saying or doing the wrong thing, or they don't believe there is an issue at all." She adds that because "racism is pervasive and persistent ... we will make little progress" if philanthropy continues to be unable or unwilling to address it directly. "It may be difficult to hear the pain and often anger that is expressed from communities of color and understand what it means unless there is an authentic commitment to confront bias and hate, respect experiences different than your own, and understand current and historical data and its implications."

The report also noted that activists have "drawn a line in the sand for all of us that business as usual cannot continue without a reckoning with racism and how it presents in our work environments and is perpetuated by the decisions we make or fail to make at work." To meet this demand, the Communications Network offers tools that organizations can use to design strategy, outreach, branding, events, and research to directly address racism through communication and ensure the inclusion of all racial groups.

Science communication, including the efforts that philanthropy funds, likewise often lacks inclusive strategy when it is aimed at a "general" audience. In that case, it primarily reaches and benefits the already information-rich—demographically, those who are more white, more male, and more educated than the US population as a whole. Regardless of the intent, it can reinforce structural racism, sexism, and classism that privileges some groups of people over others. For example, science-news consumers are more likely to be male and have college degrees, science museums tend to attract highly educated visitors, and overall museum attendance in the United States is largely white—an equity issue that an increasing number of museums are seeking to address. Even media content designed to reach a larger audience than just the proverbial choir—such as the 2014 reboot of Carl Sagan's popular 1980 TV series, *Cosmos*, starring astrophysicist Neil deGrasse Tyson—rarely reaches beyond groups that have existing material and informational advantages.

The problem is not simply one of ensuring equal access to science communication. For decades, social scientists have studied the phenomenon known as the "knowledge gap hypothesis": Given the same sources of new information, those with higher socioeconomic status typically comprehend that information more efficiently than do those with lower socioeconomic status—a difference that exacerbates inequality in science knowledge. Rather than a one-size-fits-all approach, science communication research points to the need to identify specific audiences for clearly defined issues in order to connect with both their values and their preferences for receiving information.

To avoid exacerbating inequality, philanthropy can ensure that the science engagement efforts it supports engage with underrepresented communities from the beginning, including codesigning the goals and approaches of the engagement; hiring people with expertise in the values, priorities, and modes of communication within a specific community; and experimenting with the best ways to reach different segments of a community, whether through informal or formal education, mainstream or alternative media, entertainment or analysis. It takes scientists and communicators alike to change structures designed to exclude people from access to knowledge by actively incorporating their voices, work, and perspectives.

The design of these approaches requires recognizing the diverse expertise that people bring from their own experiences and ensuring that they have not only a seat but also agency at the table. Their insights then inform the observations and values that communicators reference, the platforms they use, and, more fundamentally, what questions scientists investigate and how they conduct their research.

For example, community needs have shaped the science-based communication and collaborative action of the Aceleradora de Innovación para la Primera Infancia in Mexico and the iLab Primeira Infância in Brazil—both social-innovation laboratories created by Harvard University's Center on the Developing Child and its R&D platform, Frontiers of Innovation. These initiatives develop local partnerships, pursue ethnographic inquiry, and cocreate processes to identify and effectively address community information needs. The resulting programs have incorporated technology and information built on input from community members about what they have identified as priorities. These include a chatbot that preschool teachers can access via WhatsApp to support play-based learning and early language development. Another intervention provides cell-phone-based training and

practical suggestions for early-education teachers to reduce stress arising from racism and discrimination in early childhood, particularly for Black children.

2. How can we invest in networks to accelerate greater use of equity-based communications strategies?

Philanthropy can do more to collaborate with, learn from, support, and connect to groups that strive to create an inclusive and equitable culture of science and science engagement, particularly those that center the leadership of people of color.

The State of Inclusive Science Communication, a 2020 study by science communication scholars Katherine Canfield and Sunshine Menezes, examines existing research and practices for achieving inclusive science communication. These efforts, Canfield and Menezes explain, are characterized by *intentionality* regarding the representation and support of marginalized identities; *reciprocity*, to "address past and present inequities through equal partnerships"; and *reflexivity* through "continuous, critical, and systematic reflection," with iteration as needed to address inequities produced during interactions. The growing movement for inclusive science communication has found an institutional home at the Inclusive SciComm Symposium, organized by Menezes and the University of Rhode Island's Metcalf Institute, with philanthropic support.

In their study, Canfield and Menezes also note that inclusive science communication is linked by "a common focus on equitable relationships." Such relationships must move beyond mere mutual benefit and seek to correct instances of inequitable interaction to attain truly equal partnerships.

The importance of such relationship building becomes especially apparent in times of crisis. PLANET MassCONECT is a community-based participatory research project funded by the National Institutes of Health (NIH), which has worked with Massachusetts communities for nearly 15 years (one of this article's coauthors is a principal investigator on the project). In early 2020, PLANET MassCONECT developed a COVID-19 dashboard to address community concerns about the pandemic. Based on community input, the dashboard includes explanatory graphics and accessible information in English, Spanish, and Portuguese. Through iterative processes of listening and collaboration, it has evolved almost daily to reflect the priorities and experiences of the community.

Representatives from the communities that are served by PLANET MassCONECT in greater Boston and Lawrence, Massachusetts, also sit on an advisory board with authority to influence programming. In addition to formal accountability structures, the project has employees from the community and a network of decade-long informal relationships. The COVID-19 dashboard is one product of such a collaborative engagement. Its quick development and success represent the importance of combining access to evolving science and health information with organizational power and connections—building trusted relationships through investments of time and resources.

3. How can we better support "boundary spanners" as agents of change?

Shifting focus in science and science communication to advance equity also requires expanding who is empowered to represent science. Trusted messengers are vital for effective communication. Trust, in turn, depends on believing not only that someone is competent and capable but also that they care about your values, priorities, and well-being. Particularly effective for building trusted relationships and more effective communication are what researchers call boundary spanners—the people and organizations who can move across communities and fields to enable effective knowledge exchange, including sharing language and values with diverse groups, and translating between them.

In efforts highlighted by *The State of Inclusive Science Communication*, the South African Agency for Science and Technology Advancement, the University of KwaZulu-Natal, and others are working to promote science in Indigenous African languages. Such acts of "decolonizing science writing," Canfield and Menezes observe, intend to counter apartheid-era exclusion of Indigenous languages from scientific discourse. Even today, students in South African public schools can take science examinations in only English or Afrikaans. In The Open Notebook, science writer Sibusiso Biyela tells the story of writing about the discovery of the fossils of a new dinosaur species in Zulu—his native language. Doing so required conceiving of the story in a different way. "The hope is that someday, South African journalists won't have to struggle to find the words to talk about science in our native tongues," he explains. "That we can tell science stories that matter to Africans in their own languages."

For philanthropies committed to strengthening the connections between science and society, applying an equity lens to supporting, multiplying, and training boundary spanners is essential to build sustained relationships and engagement. However, boundary spanners are often not recognized by institutions or funders. In academia, the pressures on boundary spanners can be particularly acute for faculty of color, who are frequently encumbered with an institutional "minority tax"—the additional, often invisible work that includes serving on a disproportionate number of committees; participating in a broad range of, and often being limited to, diversity work; and supporting students of color at higher rates than their white counterparts do. As Black scholars have emphasized, the disproportionate burden on scholars of color to perform this boundary-spanning and service work, combined with the lack of recognition and reward that institutions offer for such work, reinforce the underrepresentation of people of color in science. This systemic inequity is compounded when racial identity intersects with other underrepresented identities and demographics, such as gender, sexuality, and socioeconomic background.

In an attempt at an antidote, Theresa Williamson, a neurosurgery fellow at Duke University Medical Center, and her colleagues propose a slate of "minority tax reform" strategies, including providing additional compensation or research funding to faculty of color in exchange for committee and outreach work, and encouraging white faculty to take on more diversity efforts.

As attitudes shift in favor of greater support for interactive public engagement in academia, philanthropy has the opportunity to focus its attention on communities that have experienced exclusion and harm in scientific institutions and to expand its support for people who can serve as boundary spanners with these communities.

The Civic Science Fellows program is designed to be both an initial spark and a long-term amplifier for this culture change. Supported by Science in Society and other philanthropies, the program

gives financial support and training to boundary spanners embedded in organizations that prioritize strengthening the links between science and society. Host organizations for the first two cohorts include scientific societies, academic institutions, and media organizations.

Several of the fellows' projects focus on creating resources to help networks incorporate DEI. Ivel Gontan, a civic science fellow hosted by the Association of Science and Technology Centers, is building outreach tools to help science museums align with community values and priorities. "There is great wisdom that is held in communities," Gontan says. "Part of our role as Civic Science Fellows is elevating this wisdom so it can be shared by a broader swath of society."

In addition to seeking insights on civic science approaches and principles through the work of the fellows, the program endeavors to understand which kinds of supports facilitate the most positive experiences for diverse cohorts of leaders. Through continued dialogue with the fellows, Science in Society and other partners are observing patterns that lead to positive outcomes, including the importance of developing a supportive community, building connections with a wider network, and centering DEI in the design of program content, sharing learnings, and discussion.

Meaningful, inclusive science communication requires actively listening to the voices of the people most affected by inequity.

Philanthropy can also strengthen the boundary-spanning function of intermediary organizations with core democratic functions, such as public-interest local journalism. Veteran journalist Glenn Burkins founded QCity Metro in Charlotte, North Carolina, with support from both local and national philanthropic organizations. QCity Metro is one of the nation's first digital-only news organizations serving a local Black community. At the beginning of the pandemic, in March 2020, QCity Metro initiated a series of questions in the media about why the Black community was seeing a larger share of COVID-19 cases—a disparity local health officials eventually began addressing. The outlet later reported on calls to establish testing sites in Black communities, and the city of Charlotte eventually added more mobile testing units in response.

4. How can we cocreate engagement that shifts power?

Meaningful, inclusive science communication should ensure that previously excluded communities are able to shape the decisions that emerge from new dialogue. This requires actively listening to the voices of people most affected by inequity and least likely to have access to science-related decision-making. It requires the kind of listening that Kelley Gulley, initiative director at the James Irvine Foundation and cochair of the Fund for Shared Insight, describes as "listening deeply enough to be changed by what you hear."

As research supported by the Fund for Shared Insight and others has shown, organizations can achieve better outcomes by listening to and respecting the people most affected by problems as experts in the contexts they live in and as codesigners of interventions. Their insights can mitigate well-intentioned, top-down efforts that would fail or cause further harm.

By the late 1980s, HIV/AIDS had been an epidemic in the United States for years and had killed tens of thousands of Americans. But the federal government allocated only a small research budget to study the disease, and only one pharmaceutical company pursued a treatment. The dearth of support was a consequence of the fact that the disease disproportionately affected stigmatized groups, particularly the LGBT community.

In response to the government's and medical institutions' failure to provide support, the political action group AIDS Coalition to Unleash Power (ACT UP) conducted its own research and protested—in the streets, in politicians' offices, at meetings of pharmaceutical companies, and in front of the NIH and Food and Drug Administration headquarters—to pressure the scientific community and the government to take action. ACT UP's activism, occurring simultaneously inside and outside organizations, revolutionized drug discovery and access and also helped to expand medical trials and classifications to include other demographics—notably, women and people of color, who had been excluded from scientific and regulatory processes and played an often overlooked role in AIDS activism.

Community-based efforts also spurred improvements in targeted communication to address the concerns of the people affected by the virus—including prevention support and assistance with housing, insurance, and care. These efforts, rooted in the voices that shifted the focus and approach of science, lead to tremendous progress in combating what became a decades-long global pandemic.

The aspirations of civic science are that people's perspectives and well-being will be taken seriously by science, public policy, and philanthropy and actively incorporated into problem-solving and decision-making. Because we will face future waves of complex global challenges—in which both problems and solutions are connected to science and technology—we need this engagement to be ongoing and to exist before crisis strikes.

Philanthropy can help by increasing its support of scholarship and practice to examine issues of DEI as translational scientific problems that allow evidence to inform practice across the sciences, as well as philanthropy. We can support communities that have lacked access to science to draw on expertise across disciplines as they seek to build a better future. And we can connect people advancing equity-centered civic science in ways that not only strengthen those individual efforts but also create something that is larger than the sum of the parts.

CHALLENGES AND PATHWAYS FORWARD

As we have explored these questions in our collective civic sci-

ence work, we have also reflected on some of the challenges that can either hold back progress or open us to new growth. Below, we highlight three broad areas of particular importance to philanthropies invested in science engagement.

Increase diversity in science and philanthropy | A significant barrier to strengthening connections between science and communities of color is the failure of scientific fields to foster and maintain a diverse workforce. While some fields have seen an increase in racial diversity over recent decades, others have not. For example, only 542 Black men matriculated at US medical schools in 1978, and that number dropped to 515 in 2014. In 2017, only 5 percent of postsecondary faculty members in the United States were Hispanic and only 6 percent were Black. And while Asian Americans are perceived as overrepresented in science, this belief ignores the heterogeneity among them—some Southeast Asian American populations, for example, hold postsecondary degrees at rates far lower than the national average. This lack of diversity also exacerbates the disproportionate cognitive labor for people of color in STEM fields. Furthermore, partly because of these disparities, academic institutions retain faculty of color at much lower rates than white faculty.

The fields of science communication and philanthropy also suffer from lack of diversity, with similar consequences. A series of reports on the science communication workforce—including science communication trainers, science communication fellowships, and science philanthropy communications teams—have highlighted a lack of diversity in each of these areas. In the philanthropic sector, the Council on Foundations' 2020 *Grantmaker Salary and Benefits Repor*t found that more than 72 percent of full-time foundation staff are white and non-Hispanic.

Given persistent disparities in racial diversity and inclusion in STEM fields, establishing accountability is an urgent priority.

Philanthropies can influence approaches to address these disparities from many angles, including diversifying their own workforce, supporting scientists of color and science engagement led by people of color, and incentivizing scientific institutions to develop and support a workforce that includes more boundary spanners.

Examples of success include the Meyerhoff Scholars Program at the University of Maryland, Baltimore County, founded with support from philanthropists Robert and Jane Meyerhoff. The program is recognized as a national model for increasing racial diversity in science and engineering and is being replicated at the University of North Carolina at Chapel Hill and Pennsylvania State University, with support from the Howard Hughes Medical Institute, and at the Universities of California, Berkeley and San Diego, with support from the Chan Zuckerberg Initiative.

"If you are not embracing and growing all talent, you cannot achieve any of the other big ideas," says France Córdova, a former National Science Foundation director who is now president of the Science Philanthropy Alliance. The alliance, organized by funders to inspire and inform philanthropy for basic science, is increasingly supporting its members with DEI resources, including by hosting Civic Science Fellows.

Black scholars are also developing innovative communications to build mutual support. In 2014, Stephani Page, then a biochemistry and biophysics doctoral student, created the Twitter hashtag #BLACKandSTEM to foster community and dialogue. In the summer of 2020, when increased visibility of police violence against Black people sparked nationwide protests, communications scholars Shardé Davis and Joy Melody Woods launched #BlackInTheIvory as a virtual space to share stories of racism experienced in academia and to demonstrate racism's effects at a systemic level.

"As 'Black-ademics,' we're often the only one," Davis, an assistant professor at the University of Connecticut, said in an interview at *Nature* magazine. "So when these racist acts happen, whether they're covert or overt, it's very easy to think, 'Gosh, I must have done something wrong.' But when you have this, when you share your experience, you're able to see that other people have gone through the exact same things. So that means it's not an 'us' problem, it's a system problem."

Incorporate evidence-based learning and engagement | Amid a social movement toward greater awareness about racism, there remains significant need for growth in understanding systemic discrimination, its effects, and potential solutions to reverse its harms. The Communications Network report indicates that this includes a need to build shared understanding about the meaning of central concepts, including equity, diversity, and inclusion, as well as research on what messages advance racial equity or impede it.

Well-meaning communication about health disparities, for example, can leave a damaging impression that the responsibility for fixing those disparities lies with the people experiencing them, rather than with the systems that create and perpetuate them. Commenting on patient trust for the journal *Health Affairs*, physicians and public health scholars Rhea Boyd, Edwin Lindo, Lachelle Weeks, and Monica McLemore explain that "while patient trust certainly shapes healthcare use behaviors and is an important part of the patient-physician relationship, incessant racial health inequities across nearly every major health index reveal less about what patients have failed to feel and more about what systems have failed to do."

Likewise, communication about the significant racial disparities in the COVID-19 pandemic can miss important points about why those disparities exist and what can be done to change them. "The coronavirus doesn't attack people by race, but American society does," Color of Change President Rashad Robinson remarked in a white paper on race and COVID-19. "Only big ideas that address our history of unequal protection and care will make this crisis a turning point for racial justice, rather than a point of exacerbation for racial inequality." The Communications Network report echoes the need for sharing learning, for comprehensive racial-equity training

and coaching for all staff, and for reflection on unintended ways in which we might be "perpetuating biases and stereotypes that serve the dominant power structure." A 2021 survey of Communications Network members found some progress compared with 2019.

For philanthropy, progress requires engaging in difficult conversations, listening to those who have been harmed, and acknowledging and responding to what we hear. We can be partners in interrogating how power operates—the inquiry at the origins of civic science as it was developed through the community-centered practice of Public Lab and others.

Progress also means supporting work that is both evidence-based and rooted in dialogue with underserved communities, recognizing the longer timescale required for inclusive relationship building. Philanthropy can support long-term partnerships among communities of color, science communicators, and social scientists studying different aspects of communication and systems of exclusion and inclusion. Some potential levers for change might turn out to be less promising than they initially seemed, or they might even backfire—as with big data and artificial intelligence, which have been promoted as capable of reducing racial bias and health disparities but have too often made them worse. A philanthropic focus on creating and evaluating systemic change through equitable partnerships with communities of color will allow us to learn together from success and failure and will ultimately lead toward more effective ways of involving and benefiting all communities throughout the process of shaping science.

Effective communication approaches can also emerge from research, development, and partnerships initiated in the philanthropic sector. For example, Trabian Shorters, then vice president at the John S. and James L. Knight Foundation, a nonprofit dedicated to journalism, the arts, and civic life, developed the narrative approach of asset framing through an initiative called the BMe Community, designed to build leadership in Black communities through strategic media and communication. BMe's asset-framing approach seeks to inspire action to undermine racism by designing language and narratives that draw attention to people's aspirations and societal contributions, rather than beginning with challenges and deficits. Asset framing has become a prod across the social sector, prompting fresh analysis of the causes of inequity and how we communicate with and about the communities affected by them.

Create structures for accountability | Closely tied to the need to base civic science practice in ongoing evidence-based learning, philanthropy can play a greater role in developing and supporting approaches for accountability within and across organizations to advance equity in civic science. Given persistent disparities in racial diversity and inclusion in STEM fields, establishing accountability is an urgent priority for civic science philanthropy. Accountability is not only taking responsibility for past harms but adopting practices as correctives. Without a climate of accountability, well-meaning initiatives run the danger of not delivering on their intended outcomes and are unlikely to be sustainable through changing political environments.

As throughout civic science, the shape of this accountability can't be determined by philanthropy alone but rather must be developed in dialogue with other types of expertise, particularly the lived experience of underrepresented communities.

Joyce Yen, director of the University of Washington's ADVANCE Center for Institutional Change, emphasizes that individual and organizational accountability can begin with establishing engagement that includes "lead measures" reflecting new behaviors that can drive change and further learning, such as increasing inclusive and equitable interactions with more scientists of color. Accountability can also be strengthened by learning in community with peers. Yen and Science in Society Civic Science Fellow Sam Dyson have helped the collaborative pilot a series of racial-equity learning sessions for funders, as well as peer-coaching circles to allow team members from different foundations to support one another in the process of developing equity-centered approaches in their work.

As we seek to advance long-term systemic change, we can learn from the social sciences and the social sector on using data and evaluation with a rigor rooted in equitable, community-centered relationships and systemic analysis. Our evaluation designs should be sensitive to how data are generated, where the data come from, what they represent, what they exclude, and whom they belong to. As the Equitable Evaluation Initiative, which advises philanthropies and grant makers about how to place equity at the core of their work, highlights, "Attention to outcomes … without parallel attention to how those outcomes are achieved can blind foundations to whether their approach helps to build power and agency or maintains current power arrangements."

Attention to how philanthropic and scientific institutions pursue outcomes leads to openly acknowledging and addressing the "minority tax" that diversity and inclusion efforts can exacerbate, for example. It leads to tracking institutional budget allocations and decision-making structures, and how they either incentivize the status quo or reward new approaches that value community engagement and correct for inequities.

Within trusted and inclusive relationships, it also becomes safer to design interventions and document and learn from failures. Communication can help balance a need for innovation with a need to reduce harm for vulnerable populations that too often have been the subject of experiments, rather than investigators with decision-making power about why and how new approaches should be designed.

COCREATING AN EQUITABLE FUTURE

The brutal realities of COVID-19, the ongoing climate crisis, the biases shaping emergent technologies like artificial intelligence, and a chaotic media environment rife with misinformation and polarization demand new, equity-centered civic science approaches. As Nelson said, "There has never been a more important moment to get scientific development right or to situate that development in our values of equality, accountability, justice, and trustworthiness."

As we commit to diversity, equity, and inclusion as core responsibilities and strengths of civic science, the how and why of developing the approaches outlined in the 2018 article for this magazine become clearer. Supporting effective science communication and engagement, capitalizing on the strength of diverse coalitions, building capacity to deal with moving targets, focusing on shared values, and building trusted relationships through applied research and feedback loops are levers that can drive systemic change toward racial equity. Combined, these practices can help build the foundations for future generations to reach their highest aspirations and for science to reach its highest potential to benefit humanity. With humility and a heartfelt call to action and response, we in philanthropy have a critical opportunity to spark a more just and resilient future. ■