

Science and Democracy Reconsidered

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Abstract

To what extent is the normative commitment of STS to the democratization of science a product of the democratic contexts where it is most often produced? STS scholars have historically offered a powerful critical lens through which to understand the social construction of science, and seminal contributions in this area have outlined ways in which citizens have improved both the conduct of science and its outcomes. Yet, with few exceptions, it remains that most STS scholarship has eschewed study of more problematic cases of public engagement of science in rich, supposedly mature Western democracies, as well as examination of science-making in poorer, sometimes non-democratic contexts. How might research on problematic cases and dissimilar political contexts traditionally neglected by STS scholars push the field forward in new ways? This paper responds to themes that came out of papers from two Eastern Sociological Society Presidential Panels on Science and Technology Studies in an Era of Anti-Science. It considers implications of the normative commitment by sociologists working in the STS tradition to the democratization of science.

Keywords

public engagement; citizen science; democracy; science and technology; STS; sociology

When I came up with the idea for a panel at the Eastern Sociological Society meetings on Science and Technology Studies in an Era of Anti-Science, my aim was a selfish one. I knew that I would learn a lot through the thoughtful reflections that leading Science and Technology Studies (STS) scholars might have to offer on the practice of science and technology studies in the strange political moment in which we find ourselves. I also suspected others would be interested in what an esteemed panel of STS scholars would have to say on these matters. I was therefore happy when the President of the Eastern Sociological Society, Nazli Kibria, agreed and invited Laurel Smith-Doerr and me—one of us a seasoned veteran in the field of science and technology studies and the other a researcher who had appreciated the field's contributions for some time but who is only just beginning to engage with it—to put together two Presidential Panels on the subject. The

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panels' theme was wonderfully resonant with the broader conference theme of "Facts and Fictions: Narratives of Inequality and Difference."

STS scholars have historically offered a powerful critical lens through which to understand the social construction of science. Yet, the current political administration in the United States has embraced sharply anti-scientific views, alongside significant numbers of the public. And we find ourselves in a political moment that is marked by the "wholesale rejection of expertise by voters and the more selective rejection of expertise being continued in some announced appointments" (Sismondo 2017, 4). As Frickel and Rea note, This disaster can be "measured in vacant seats on government scientific advisory boards...[and] plummeting enforcement actions at the EPA" (Frickel and Rea 2020).

A number of the papers note that the "new" situation we find ourselves in, however, is in fact not so new: what is happening now is rather a variation on a theme exercised by conservative governments previously (Frickel and Rea 2020; Kinchy 2020; Hatch 2020). Yet, a mark of just how much the ground has shifted for STS at least is that a preoccupation with the tension between science and democracy has suddenly taken a backseat to a concern with the need to preserve science itself. This concern has been articulated by many, including Bruno Latour who has observed that now more than ever scientists need to "regain some of the authority of science. That is completely opposite of where we started doing science studies" (in de Vrieze 2017).

This circumstance has led some prominent scholars in the STS tradition, like Monica Casper, to observe, "This contemporary moment is remarkably fraught for STS/M scholars; I often find myself in the odd position of defending science against its detractors" (Casper 2016, 212). The position is particularly odd because, as Michael Lynch (2020) notes in his essay in this collection, charges of being anti-science have been previously leveled against the field of STS during the Science Wars of the 1990s. Yet, as scholars in these collected essays make clear, being critical of science is not the same thing as being anti-science. Even if the need to defend science has put STS scholars in a somewhat "odd" position, these researchers argue that the field of STS has much to offer pro-science movements, and pro-science citizens' movements much to contribute to the preservation and betterment of science.

In responding to the current political moment, the essays in this volume consider a diverse range of subjects, including baselines for assessing the nature and impact of Trump's anti-science rhetoric and (in)action on science, science policy, and politics (Frickel and Rea 2020); the relationship (or lack thereof) between STS and anti-racist knowledge that benefits black people (Hatch 2020); the relationship between STS scholars and activists resisting attacks on environmental science (Kinchy 2020); the relationship between contemporary anti-science currents and "symmetry" as a tool used by STS scholars for pursuing research on scientific controversies (Lynch 2020); and the Environmental Data & Governance Initiative as a new form of engagement with the state, aimed at building a more transparent relationship with the public (Tirrell et al. 2020). While the varied foci of these essays resist attempts to reduce their contributions to any one single theme or idea, a significant concern cutting across them is the

field's relationship to science, to activist citizens' groups, and to public engagement with science more broadly.

So the theme that I wish to take up in this paper is the normative commitment by sociologists working in the STS tradition to the democratization of science. There are incredibly good reasons for this impetus. As Sismondo writes, "An assumption behind, and also a result of, research on Science, Technology, and Society is that more public participation in technical decision-making, or at least more than has been traditional, improves the public value and quality of science and technology...When scientific knowledge enters the public arena, those embedded assumptions can come under scrutiny" (2008, 19, 22).

And indeed, seminal contributions by STS scholars have outlined ways in which citizens have improved both the conduct of science and its outcomes. Some of my favorite examples of work in this area has demonstrated how lay people in communities disrupted by environmental pollution have marshalled knowledge and data through a process of "popular epidemiology" (Brown 1992); how skeptical sheep farmers relied on their everyday experience to challenge experts' abstract models of radiation dissemination that was itself based on incorrect assumptions (Wynne 1996); how lay activists successfully challenged the conduct of science around clinical trials for life-prolonging AIDS drugs (Epstein 1996); how consensus conferences offer a model for citizen engagement in realms traditionally involving scientifically complex technical decision-making (Sclove 2000); and how French muscular dystrophy patients organized to finance and contribute to research in this area (Callon and Rabearisoa 2008).

Among the collected essays in this volume, Tirrell et al. (2020) discuss the Environmental Data and Governance initiative, describing it as "exemplif[ing] an STS approach to responsive and responsible knowledge production." In her essay, Kinchy (2020) describes the way in which her new book (Kimura and Kinchy 2019) elaborates common dilemmas faced by citizen scientists, so that they might be able to navigate challenges better.

These and other important studies in this tradition make clear an irrefutable point: public engagement can and frequently does improve science. At times, citizen science may even "be the most efficient way of doing research" (Sismondo 2010, 188). Many, if not most, would also agree that a more inclusive science is better for democracy. And in our current political moment, in which leading newspapers advertise that "democracy dies in darkness," public engagement may play a critical role in preserving science.

Although the desire to democratize science is therefore a laudable goal, some might argue that without measures to ensure that an informed citizenry engages science—as well as a good understanding of which science it engages—promoting the democratization of science is not only irresponsible, it is reckless. This is a much harder line than I would take, since we also know that engagement may lead citizens to become more informed, and that democratizing science therefore holds promise not only for improving science but also our citizenry. But if the current moment has taught us anything, it is that a surprisingly large percentage of citizens are uninformed, or selectively informed, not only about scientific issues but also basic policy issues that have very real effects over their lives. Perhaps this should not surprise us: a little less than two-thirds of citizens in the United States do not have a college degree. This is of course not to

say that many people without college degrees cannot be informed on science and policy matters or that those with degrees always are. Rather, it is to underscore that being informed and being engaged are two different things.

A focus on science and democracy may also predispose one to ignore or overlook other important cases of science taking place in authoritarian contexts and the insights that study of those cases provide. Research on "citizen science"—as a reaction to science as an elitist enterprise—is now a cornerstone in sociological studies of science and technology. But strangely this drive to democratize what has historically been an exclusive pursuit has not extended to the most exclusive of contexts. What does citizen science mean in authoritarian political contexts? What can study of authoritarian science projects offer the field?

In this paper, I outline two areas related to the two themes described above that have been less well explored by STS scholars and argue that greater engagement with these issues might profitably push forward the field's thinking on matters related to science and democracy broadly, and citizen engagement with science specifically.

Cases of Problematic Public Engagement with Science

Bucchi and Neresini point to referenda, public hearings/inquiries, public opinion surveys, negotiated rule-making, and consensus conferences as some of the most widespread forms of public engagement in science elicited by a sponsor (2008, 459). More broadly, they envision public engagement as falling into three categories of public communication, consultation and participation (2008, 460). Yet, public engagement sometimes happens on its own, driven by the whims and fancies of members of the public themselves in a much thinner, more superficial, and ultimately sometimes more dangerous manner. Thus, popular movements—emboldened by celebrities, politicians, corporate interests, and hashtags of solidarity provided by online communities (a "shallow Twitter zeitgeist" in Casper's words (2016, 212))—have contested the science of climate change and promoted view of the earth as flat. Yet, these movements also constitute one important form of public engagement with science, which can have serious consequences even when (or especially when) engagement with scientific debates and facts are selective, superficial, or both. These cases demonstrate how science is not a monolith, that there are multiple forms of truth and processes of knowledge production at play by multiple actors who shape discourse. They also illustrate how the public's construction of science—and what counts as science, evidence, and fact—is itself diffuse and fractured.

As I write this, Samoa is plagued by more than 4,000 cases of measles; 70 people have died, most of them children (Gerson 2019). Globally, the number of measles cases more than doubled between 2017 and 2018 (Winsor 2019). Both media accounts and public health experts point to the anti-vaccination movement as playing an important role in the disease's spread. In Samoa, this is happening in the context of broader public mistrust of the healthcare system. But this is, of course, not the first time or place that public misreading and/or misapplication of science—however deliberate or purposeful—has led to death and misery. The anti-vaccination movement has prompted a resurgence of not just measles but other diseases in rich and poor

countries alike. Some anti-vaccination advocates have even gone so far as to label mandatory vaccination laws, grounded in a scientific understanding of herd immunity, fascist. Arguably though, even if perversely, these too are “powerful democratizing movements,” though perhaps very far from the kind that the authors had in mind (Hess et al. 2008).

The anti-vaccination movement aside, we know there is much to recommend in citizen science, and it has often been rightfully valorized. Kimura and Kinchy (2016) thoughtfully outline seven virtues of citizen science, including building social capital/community leadership and challenging authority. Yet, sometimes dangerous movements that are only engaged in science superficially have built social capital and community leadership and challenged authority, much like progressive pro-science movements have. And as the numbers of citizen movements have grown and participation has increased, they may claim even more of these virtues.

This leads to a difficult set of questions: what is lost by not turning a critical eye towards more problematic, or even harmful, cases of citizen engagement with science? What can be gained from expanding our understanding of citizen engagement to include more superficial forms of the sometimes more destructive variety? More broadly, if the field’s commitment to the democratization of science is based on the existence of a public that is both informed and engaged, does this commitment deserve to be re-evaluated in an era in which large numbers of the public are not guided by, or aware of, scientific consensus?

Arguably, we need to understand well how this fractured type of consensus is constructed if we are to resist and refute it. As Latour argues, “a greater understanding of the circumstances out of which misinformation arises and the communities in which it takes root...will better equip us to combat it” (in Kofman 2018). Doing so requires tracing the multiple and divergent forms of knowledge that center around objects such as vaccines, not only unpacking the institutional status quo but also analyzing the people and processes through which alternative forms of truth emerge, in line with Michael Lynch’s suggestion (2020). And it requires attention to the “infrastructure, efforts, ingenuity, and validation structures” that make alternative constructions of knowledge possible (Sismondo 2017). Arguably, this kind of approach will help us to understand better and disentangle the relationship between thick and thin forms of public engagement with science, on the one hand, and thick and thin understandings of it.

Studies of Citizen Engagement and Science-Making in Non-Democracies

To what extent is the normative commitment of STS to the democratization of science a product of the democratic contexts where it is most often produced? Some of the most exciting new scholarship in STS takes up inequalities in the production of scientific knowledge between the Global North and South (Crane 2013; Williams 2018; Pollock 2019). However, it remains that most STS scholarship eschews study of science-making in poorer, sometimes non-democratic contexts in favor of often rich and supposedly mature Western democracies.

Although occasional innovations offer no good reason to endorse autocracy, it remains that important scientific achievements have sometimes taken place under less than democratic

circumstances. Autocracies in Uganda and Thailand in the early 1990s are frequently heralded as cases of international best practice for their work in successfully curbing the HIV epidemic. The world's first heart transplant took place in apartheid South Africa. If the country's statistics are to be believed, China currently enjoys one of the lowest rates of HIV prevalence in the world. The health gains of Rwanda—led by Paul Kagame since 2000—have been hailed as “the most dramatic the world has seen in the last 50 years” (Rosenberg 2012).

One of the principal claims of STS is that knowledge is situated and subject to context. And the authors of these collected essays do a wonderful job discussing science and technology studies in an era of anti-science, thinking about these issues in relation to the American experience. Other important work has thought about the American experience with science and democracy in comparative perspective with Europe (Jasanoff 2005). However, what is gained by broadening these investigations even further, beyond American and European democracies?

What does citizen science, or co-production (Jasanoff 2004), mean in an authoritarian context? What unique challenges do non-democratic contexts pose for scholars of science and technology studies? What opportunities do studies of “authoritarian science” projects offer STS? Is the decline in public commitment to scientific institutions and their truth claims particularly a problem in wealthy democracies? How does devotion to scientific investment and knowledge claims differ in undemocratic settings? And how might study of science-making in non-democratic contexts productively contribute to new thinking about the relationship between science and democracy?

There are, I think, productive parallels that can be drawn between this line of questioning and that of postcolonial science and technology theorists who ask “what modern sciences look like if they had developed in other parts of the world—China, India, the Middle East, or Africa?” (Harding 2000, 133). Yet, my aim here is less to de-center Europe as a colonial power as they do and much more to unsettle our comfort with democracy as a primary and frequently unconscious reference point. It is also to encourage not just theory but new empirical fieldwork that informs theory. STS scholars in the U.S. and Europe sometimes take this contextual backdrop for granted, but I argue that these varied political settings complicate the field's basic assumptions. There is clearly much more to examine here than just what drives troubling anti-science dynamics in democracies and pro-science dynamics under dictatorship.

I found one of the most important points made in the set of essays I was asked to consider to be made by Anthony Hatch (2020), who argued that one of the most critical tasks of STS scholars is to contribute to the construction of anti-racist knowledge through the building of social and scientific relationships with black communities. He argues that this research could and should directly benefit minorities, following a blueprint laid out by other eminent scholars (Benjamin 2013). This is surely as worthwhile a project as there is, but it is also an agenda that has been vigorously shaped by a distinctly American experience. How might other, on face, very dissimilar political contexts traditionally neglected by STS scholars reshape our understanding of that important task? What, if anything, might they too contribute?

Conclusion

I have offered some thoughts on common themes these essays take up as a newcomer, someone just beginning to engage with STS, who does work at the intersection of sociology, political science, and global health. While challenges to the way in which science is conducted has not been a primary focus of my own work, I have studied the tools that “professional movements” of elites from esteemed professions bring to bear in struggles for policy reform in industrializing nations engaged in processes of democratic deepening (Harris 2017a, Harris 2017b). In this essay, I have endeavored to put some of the common issues these collected essays raise in broader perspective alongside contributions of the field as a whole. The ideas I lay out here are intended to challenge basic assumptions that undergird knowledge production related to science and knowledge. Building on the pioneering work of sociologists in the STS tradition who have worked on health transnationally (Decoteau 2013; Suh 2014; Bell and Figert 2015), these ideas are also aimed encouraging more research at the intersection of STS and the sociology of global health (Harris and White 2019).

Author Biography

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Acknowledgements

I am grateful to Nazli Kibria for enabling this conversation to take place at ESS, to Laurel Smith-Doerr for her patience, generosity and willingness to collaborate, and of course to the panelists for their insights and thoughtful engagement with the theme of Science and Technology Studies in an Era of Anti-Science. A deep debt of gratitude is owed particularly to Rebecca Farber and Jon Shaffer, both of whom improved this essay considerably through their incredibly rich comments. Finally, enormous thanks go to Daniel Kleinman and Katie Vann for being willing to sponsor publication of this conversation in ESTS and the incisive editorial feedback they offered.

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