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THE NEED FOR FEMINIST APPROACHES TO SCIENCE COMMUNICATION

Technoscience in the era of #MeToo and the science march

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Abstract

Feminist technoscience theory offers perspectives for science communication that both question common narratives and suggests new narratives. These perspectives emphasize issues of ethics and care often missing from science communication. They focus on questions of what is marginalized or left out of stories about science — and encourage us to make those absences visible.

Keywords

Science communication: theory and models; Social inclusion; Women in science

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Science communication is inside a hard but important moment. When scientific controversies make the news, they are more often spawned by industry elites and celebrities who refute scientific work than by scientists. When the current U.S. president came into power, his administration scrubbed all mentions of climate from the White House website. Earth Day is now a March for Science. As scholars develop our research programs, we are faced with questions of how to orient our work to speak to other scientists, to the general public, and to this administration. We are learning that facts are not just facts but are pieces of complex sociopolitical flows. We are learning firsthand that the possibility for evidence-based policy is not based on evidence but on culture, politics and capitalism. We are all struggling with the current moment, particularly with how to communicate about and within this new gaze upon science that makes scientists feel silenced or even marginalized.

Simultaneously we are grappling with a new alertness via the #metoo movement to the ways in which science itself can occlude and marginalize women and other minoritized people while protecting abusers. This uncomfortable reality in which scientists are hurting each other is also reinforcing the heightened skepticism in science that public anti-intellectuals are currently cultivating. This is a moment in which political action and scientific action are closely entwined. In this charged political context, we as scientists and science communicators urgently need to demonstrate ethical behavior as a priority moving forward.

For decades, the field of feminist technoscience has striven to practice ethical approaches to scientific inquiry and technological development, built upon the assertion that knowledge is power and that science is politics. What can we learn by envisioning science communication through the lens of feminist technoscience that may help us to move forward ethically and carefully? Feminist technoscience looks critically at the practices, policies, and politics of science. It seeks to understand knowledge production, particularly: whose knowledge is considered valued knowledge? This work attends to power relations and resources, identifying who are empowered to produce knowledge through current infrastructures of scientific work and who are science's discontented and disenfranchised. Feminist technoscience pays particular attention to practices and praxis to understand the politics of the personal, to see how people treat each other, how they care for each other and their environment, and how they care for their science.

Canonically, Susan Leigh Star, echoing Anselm Strauss, asked of science and technology studies: *cui bono?* Who benefits? [Star, 1995] I might extend this question by asking: how do they benefit? And, who is inconvenienced or harmed for this benefit? A critical feminist scholar might look at a piece of research and ask: what is this a story of? Who is in power and who is subordinate? Where did the money for this work come from? How does that money drive the research agenda? Who is absent from this story? And importantly, what does this data represent and what does this data miss? Feminists reflexively ask this of ourselves as much as we ask it of our subjects: who are we missing? How can we do better? All of these questions can shape our work as science communication researchers and practitioners.

As an ethnographer of oceanographic and climate research infrastructures, I spent the last years with scientists and technologists instrumenting the global ocean with sensors and robots. I looked at what gets built and maintained, what can be broken and fixed. I sought to find what utopian ideals motivate my subjects and what impedes them from realizing those dreams. The answer, I was surprised to find, is often of a feminist concern. In my work, I found many scientists of all genders grappling with the differing treatment of men in science. I came upon a lot of atrocities when I did not go looking for them, which I will not detail here. For a discussion of sexual violence and gender inequity in ocean science, see [Steinhardt, 2018].

Harm appears in many forms, in disruptive life-changing events and at other times more subtly and slowly. One researcher discussed a newsletter on the exciting launch of a new oceanographic initiative which featured a cover with only one photo of two older white male scientists. Frustrated, she labored to get that photo changed for future publications to include an image depicting a diversity of genders, ages and races involved in the project, working with the communications staff and publishers. This was exhausting, nontrivial work. She detailed complex, awkward, emotive scenes of a love for ocean science: how she signed up knowingly for a passionate life of science and for this gendered power structure that is distinctly alienating, tiresome, unsatisfying, and heartbreaking. She lamented that this culture had taken the beauty and the bliss out of her work. This researcher described the frustrations of women who are not being depicted in the same ways that men are for the same work. We joked together as we rattled these sorts of common lines, "She's a woman!" "A mother!" "Has a family!" "The first woman to!" "Persevered despite latent misogyny!" "She walked a harder road

than her colleagues!" "She was pregnant at the time!" These gendered stereotypes are common in narratives about women in ocean science.

When stories of women scientists are told, their greatness is often qualified by their gender or their association with a man — often their husband or their advisor — rather than letting the power of their scholarship or their brilliance stand on its own. But science does not need a male referent to validate and authorize it. Stories of nonbinary scientists often do not get told at all [see Pérez-Bustos, 2014, for an exception, and the commentary by Perez-Bustos in this collection]. When men are written about in science, they are rarely qualified or recognized as fathers or husbands. A hard road for men, as another participant explained, is not defined by the gender binary but instead socioeconomic status, sickness, or disability. This participant and others described how they would like to stop seeing womanhood treated as a genetic deformity which needed to be overcome; they believed that womanhood doesn't require reference at all when evaluating whether the road to discovery was a hard one. These assertions are the crux of the politics of the personal, how we interact in everydayness.

We can learn from these scientists' experiences, by, for example, developing better networks for acknowledgments and crediting through science communication the collective action that makes science work, rather than reinstating the prototypical lone white male genius trope. Donna Haraway [2007], Mel Chen [2012] and Maria Puig de la Bellacasa [2015] push us even further, by asserting ecological thinking, including the presence of animals, insects and nature in our narratives of science work (not just as scientific subject). This work acknowledges the privileges of being a giver or a recipient of care and care's multi-directionality: how we care for non-humans and how non-humans care for us. We need to recognize when we as science communicators keep reifying the genius narrative that inaccurately represents the crucial contributions of many people and things, when not only feminist technoscience but much scholarship from broader science and technology studies and histories of science have shown us that time and again large networks and ecologies surround each and every discoverer and their great contribution to science. Feminist technoscience luminaries like Judy Wajcman [1991] have long argued that science and technology are not gender neutral. My work has shown that many women are pushed out of the workforce by the combined forces of men's dominance in the field and the sexual violence that disproportionately affects women and marginalized people. We can do better, and science communication can be part of how we do that.

Postcolonial and decolonial feminist scholars like Evelyn Fox Keller [1983], Sharon Traweek [1988], Tania Pérez-Bustos [2014] and Sandra Harding [1991] demonstrate to us that science is interesting to all genders, and that scientific labor is not exclusively masculine. However, the dominant interests of science became strongly linked to male interest, and associations of masculinity and femininity limit what we come to know. Together with queer theory by Karen Barad [2007], Sarah Ahmed [2006] or Lauren Berlant [2011] we see that diverse scientific teams and subjects, diverse reviewers and readers, advisory boards, and mentorship roles, will at once open new regimes of knowledge and identify oppressive practices to begin to unravel them. We are often blind to the troubles of others who are not like us. It is important to put multiple kinds of actors in our stories, to cite multiple kinds of people from multiple places, to have diverse citation lists and syllabi, to work

cross-culturally not just to fill a diversity quota set by the U.S. National Science Foundation or other funding agencies but because we have much to learn from others, we want multiple kinds of people to see themselves in science, to participate with us and to use science to solve problems inherent in their communities. The way around the blindspot is to necessitate diversity, openly and continuously asking for feedback from multiple kinds of people who will make our research stronger, our conversations richer, and our solutions less elite, particularly in health sectors.

Adele Clarke [1998], Ruha Benjamin [2013] and Annemarie Mol [2003], for example, look at the ways in which categories of people in medical fields get defined and what happens when someone lands in an Other or Miscellaneous category, about the bias of science toward answering questions concerning male reproduction and sexuality and sidelining the health and sexual freedom of women and nonbinary genders. Who do we overlook as having unimportant concerns? When did peanuts get banned from schools and, to follow Star [1991], what would be the tipping point for all restaurants to cater toward being allergic to onions?

We also have learned time and again that the deficit model of communication does not stand. This means that when we dispense information to a public, it does not mean it will increase knowledge or introduce behavior change to that public. Information is not enough. Feminist technoscience visionaries like Lucy Suchman [2007] have shown us that local culture is critical to understanding how something gets taken up, that simply disseminating a plan, policy or vision for the future does not mean it will be followed. Feminist technoscience can help scholars and science communicators understand the precarious visibility politics of who gets described and seen in science, and how they get described (what parts or who gets to be whole) and how they are seen, and the particular kinds of academic and journalistic labor that can produce the more equitable scientific worlds we desire, to be careful and not careless for ourselves and our environment.

Feminist technoscience shows us that there are endless possibilities for change, that change sometimes comes from within radical spheres, from the queer and unexpected scientific moments and people, just as much as it comes from within the powerful forces of hegemony and patriarchy that we see so visibly today. We can change. Our determinist narratives, which tell us certain norms and standards and technologies are "here to stay," are misleading. So how can we push toward positive change? The powerful lens of feminist technoscience in science communication starts us on this road by challenging assumptions and asking questions that produce constructive answers for more carefully constructed futures. The lens of feminist technoscience makes for a more resilient science communication (and science) that can stand up to the political climate of anti-intellectualism and scientific skepticism today.

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