



## Colorblind Science?: Perceptions of the Importance of Racial Diversity in Science Research

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# Colorblind Science?

## Perceptions of the Importance of Racial Diversity in Science Research\*

Kellie Owens<sup>†</sup>

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A large body of scientific careers literature explores the experiences of underrepresented minorities in STEM fields and why they exit the academic pipeline at various stages. These studies commonly address how to improve racial diversity in science but provide little discussion of why that diversity is important for science research. Feminist science studies scholars, on the other hand, have theorized the importance of diversity in knowledge production for decades but provide little empirical work on how to address current disparities. My research bridges these literatures by examining how diversity programs in the sciences justify their continued funding, and how these justifications map onto contemporary theories of knowledge production. Do diversity program directors seek to increase diversity in science because of political motives, like equality and justice for racial minorities, or because they believe that racially diverse workforces will produce better science? Based on interviews with federally-funded diversity program directors at universities and archival data from these programs, I find that program directors' responses can be classified into three categories: diversity is important politically; diversity is important pragmatically; and diversity is important epistemically. About half of the respondents found diversity to be important for the content of scientific knowledge. I argue that studying diversity in scientific knowledge production is different than studying the impacts of diversity in other fields due to current conceptions of scientific objectivity. Scholarship on scientific knowledge production can help diversity program directors and science careers scholars better articulate the need for diversity programming in STEM fields.

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## I. INTRODUCTION

Although the representation of racial minorities in academic science has increased in the past few decades, the pace of this diversification is slow. Only 4% of faculty in science and medical departments at the top 50 colleges and universities in the United States come from underrepresented backgrounds (National Science Foundation 2012). Federal science funding agencies like the National Science Foundation (NSF) and the National Institutes of Health (NIH) have funded university-level programs aimed to increase diversity in academia for decades. A large body of scientific careers literature explores the experiences of underrepresented minorities in STEM fields and why they exit the academic pipeline at various stages (e.g. McGee and Keller 2007; Summers and Hrabowski 2006; Seymour and Hewitt 1997). These studies commonly address strategies to improve racial diversity in science but provide little discussion of why that diversity is important for the future of science research. Feminist science studies scholars, on the other hand, have theorized the importance of diversity in knowledge production for decades but provide little empirical work on how to address current disparities. My research bridges these literatures by examining how diversity programs in the sciences justify their continued funding, and how these justifications map onto contemporary theories of knowledge production. I have found no published studies on the views of diversity program directors, the actors making on-the-ground decisions about the diversity programming functions and goals in the United States. Do these program directors seek to increase diversity in science because of political motives, like equality and justice for racial minorities, or because they believe that racially diverse workforces will produce better science? Based on interviews with diversity program directors at universities and archival data from these programs, I find that their responses can be classified into three categories: diversity is important politically; diversity is important pragmatically; and diversity is important epistemically. About half of the respondents found diversity to be important for the content of scientific knowledge. This case demonstrates that feminist views on the importance of diversity are often taken up by diversity program directors, although it may not be the dominant view of scientists. I suggest that leaders of diversity initiatives in STEM fields would benefit from more overtly addressing why they believe racial diversity to be important, and that feminist science and technology studies literature could help frame these discussions.

## II. THEORETICAL BACKGROUND

The diversity programs in this study all seek to increase the number of “underrepresented minorities” (URM) in academic science. When using

the term “underrepresented minority,” they are referring to the NIH definition, which includes “American Indians or Alaska Natives, Blacks or African Americans, Hispanics or Latinos, Native Hawaiians or Other Pacific Islanders” (U.S. Department of Health and Human Services 2009). It is an American-centric definition, usually including only U.S. citizens, and does not include groups that we may consider minorities in other U.S. contexts, like most Asians. While some of the programs also focus on increasing the amount of women in STEM fields, in this discussion I focus on racial diversity.

The importance of a diverse workforce has been studied in a variety of fields. For example, sociologist Cedric Herring studies whether racial and gender diversity is good for businesses (Herring 2009). He finds that racial diversity is associated with increased sales revenue, more customers, greater market share, and greater profit. Economists have studied diversity in organizations, concluding that diverse workgroups can outperform homogenous workforces (Hong and Page 2004). Most recently, PLOS ONE published the first empirical evidence suggesting “a gender-heterogeneous problem-solving team generally produced journal articles perceived to be higher in quality by peers than a team comprised of highly-performing individuals of the same gender” (Campbell et al 2013). This is in contrast to other scholars who suggest that diverse groups will have more conflict and will lead to less productivity and efficiency (Skerry 2002; Tsui et al 1992).

Studying why diversity is important for businesses and organizations is not the same as studying diversity in science, because of the general view that science is objective. Current conceptions of scientific objectivity rely on a lack of perspective or a “view from nowhere.” Under this view, the identity of the researcher should not impact the outcome of an experiment and anyone should be able to replicate the result (Daston and Galison 2007). Still, STS scholars have long argued that science is value-laden and political, often privileging a white male perspective. Because scientific knowledge is generally privileged as the truth in modern societies, this value-laden science can (re)produce racial and gender inequalities. While feminist STS scholars agree that more women and minorities should be included in scientific knowledge production to help reduce these inequalities, there are many theories on how and why to foster inclusion.

While feminist empiricists call for “scientific communities comprised of individuals with diverse *values and interests*,” standpoint feminists argue that diversity of *social position* is what matters epistemically (Intemann 2010, 790). The main difference between these groups is that standpoint feminists, generally, find an epistemic value in underrepresented and oppressed social positions, rather than valuing diverse interests and values without acknowledging social position.

These scholars also debate whether the real value of diversity is epistemic

or political (Freedman 45). Historian of science Donna Haraway argues that diversity is important epistemically, and that we can understand its importance through the lens of “situated knowledges.” By this, she means that all knowledge is partial and should be derived from as many embodied social locations as possible (Haraway 1989). Similarly, as Intemann notes, “... it is easier to recognize when idiosyncratic values are influencing scientific reasoning or methodology when the values in question are different from one’s own...diversity is likely to cause the scientific community as a whole to see existing limitations with how research questions are framed and with existing models, the range of alternative hypotheses and explanations considered, as well as faulty background assumptions” (Intemann 2010, 782). These scholars generally believe that a socially diverse scientific workforce will produce better science than a homogenous workforce.

Other feminist scholars argue that the importance of diversity is political. Freedman, for example, argues that a diverse group of scientists may produce more varied types of knowledge, allowing us to recognize the values and assumptions in scientific work; however, our representations of the world may still be “contradictory, inconsistent, or mutually exclusive” (Freedman 2009). This means that a diverse workforce may not bring us any closer to understanding how the world “really” works. Instead, Freedman argues that the real value of diversity is political: “[once we have] established that values make their way into scientific knowledge, then diversity in our scientific communities is easily justified for strictly political reasons, just like any other system of checks and balances. Whether scientific inquiry that is driven by the value of diversity gives us a better or more accurate picture of the world turns out to be beside the point” (Freedman 2009, 55). Whether the importance of diversity rests on political or epistemic grounds, both of these positions rely on the assumption that science is value-laden. This is counter-intuitive to common views of science as aperspectival and objective.

The sustained theoretical discussion of the importance of diversity found in feminist STS scholarship would be useful for scientific careers scholars and diversity program directors who often use unspecific language to describe why a diverse scientific workforce is important. Still, most STS literature on diversity does not speak directly to STEM scientists or diversity program directors. One exception is Intemann’s article on the National Science Foundation’s Broader Impacts Criterion (Intemann 2009). She argues that the Broader Impacts Criterion, designed to broaden the participation of under-represented groups in science, is misunderstood by grant writers and reviewers because they are uncertain why racial and gender diversity is desirable or beneficial. Intemann outlines three key rationales that scientists should keep in mind when considering how the diversity requirement of the Broader Impacts Criterion should be applied—social justice, talented

workforce, and increased objectivity. I build on Intemann's work by testing whether scientists who run diversity programs voice these types of rationales. Nearly all of Intemann's arguments are present in my interviews.

The following research connects the theoretical strengths of feminist STS with the empirical strengths of scientific careers researchers and those actively engaged in diversity initiatives. I find that STS theory on diversity in knowledge production is acknowledged in academic science and that many diversity program directors in STEM fields use similar language when asked to defend the existence of their programs.

### III. DATA AND METHODS

I conducted twelve semi-structured, in-depth interviews with STEM diversity program directors. All directors held a PhD in a science field and most were actively involved in research. Interviews lasted between thirty minutes and an hour and a half. Because this is a small qualitative case study, I did not create a truly random sample of participants, although participants came from a variety of demographic backgrounds to provide a greater depth to the results. All interviews focused on graduate rather than undergraduate education, as I was interested in studying programs heavily influencing science research. In particular, the interviewees were directors of at least one of these programs: 1. The National Institute of General Medical Sciences (NIGMS) Post-baccalaureate Research Education Program (PREP)<sup>1</sup> 2. The NIGMS Initiative for Maximizing Student Development (IMSD).<sup>2</sup> These programs provide funding for STEM graduate training of underrepresented minorities and seek to prepare students for research careers in the biomedical sciences. I asked the program directors questions about their job activities, why they believe diversity in the sciences to be important, and about the impacts of race and gender in lab settings. As my research is based on these participants' perceptions, I am not seeking to answer whether diversity makes science better, but rather what these scientists think of this question.

### IV. RESULTS

While STS scholars have theorized about the importance of diversity, no studies have examined the views of the program directors who control admissions, funding, and programming decisions for many underrepresented scientists on the ground. I sought to uncover these views and discover how feminist STS discourse was relevant to their practice. I found that directors

<sup>1</sup> <http://www.nigms.nih.gov/Training/PREP/>

<sup>2</sup> <http://www.nigms.nih.gov/Training/IMSD/>

hold a wide range of views on why diversity is important for science research, and their language is similar to the justifications outlined by Intemann (2009). The most common justifications can be broken down into three categories:

- Political: “It’s the right thing to do” (Interview Participant 2013).
- Pragmatic: “When you consider the changing demographics of our country it becomes clear that it’s absolutely essential that we engage these students that we used to call minorities and get them involved in STEM or else we won’t have a sufficient STEM research workforce in the future” (Interview Participant 2013).
- Epistemic: “From a purely scientific standpoint, diversity is very important because your ability to create novelty is dependent upon the difference in the viewpoints that individuals bring to the table, because if your viewpoints are shaped by your association, whatever you have learned, culture, a variety of things, you tend to see things differently. If you have ten people with ten different backgrounds you are going to come up with a more robust, um, way to go about doing things than if you have ten people, I don’t care how highly trained they are, if they all have the same background looking at that problem” (Interview Participant 2013).

It was common for participants to use a few or all of these justifications at different times in the interview. When asked, for example, how they explain the importance of their programs to skeptics, respondents were more likely to say they used pragmatic arguments about the changing demographics of the American workforce. Many responded with political or social justifications when asked why they decided to run a diversity program in the first place.

The responses were split, with about half of respondents claiming that diverse labs will produce different or better science, and half claiming it would not. I have not been able to discern any differences in response based on demographic characteristics of the participant. One interview respondent provided a typical answer for why diversity would produce different science: “A diverse lab will produce more robust science... See I’m not sure that I think science is always completely objective...what we think is true can change over time. Both socially and I think scientifically.” The interviewee then described his project that sparked what he called a “paradigm shift.” He says, “So, you know, doing experiments on the same protein, the whole field thinks it’s one thing, someone comes along and shows the new data that is inconsistent with that model, and suddenly everyone believes something else... So that’s why I really believe in robust, diverse, diversely-trained groups of folks, working,

and deciding what important problems are and then working hard on them from their own backgrounds and points of view, to be sure that we've got the most complete set of data and the best interpretation of that data." (Interview Participant 2013). This participant argues, as STS scholars would, that objectivity in science is complex and can be influenced by the people doing scientific research.

Other respondents, however, did not view racial diversity as epistemically important for science research because of science's objectivity. She said, "I always said that science is blind. That, you know, you isolate a gene or something and it doesn't make a difference whether a white person does it or an African American person does it, or anything. The gene certainly doesn't know who is doing that work... Right now my lab has five Hispanics in it, one African American, one Chinese, and one white person... And I don't know, labs I've had over the past 30 years have certainly not been this diverse, and I really don't see a big difference, in productivity, in enthusiasm, in work ethic, um, so you know, in some ways we are just expanding the pool of individuals but I don't know that they bring anything that special, um, in terms of ability or anything like that." (Interview Participant 2013). The idea that science is "blind" follows what Daston and Galison argue is the most common view of objectivity as a perspectival (Daston and Galison 2007). This respondent still believed in the necessity of diversity programming in the sciences but justified them using political, moral, and pragmatic rationales. About half of respondents had similar responses. This suggests that while feminist STS notions of knowledge production and objectivity are being considered by some scientists, even those directly involved with diversity programming often view science as value-free.

## V. DISCUSSION

While many studies address the experiences of minorities in STEM fields, we know less about the programs funded to improve their experiences. This project examines how the leaders of these programs view diversity and how they may use contemporary theories of knowledge production. I find that diversity program directors, despite running the same types of programs, have different opinions on why diversity is important. While nearly all respondents argued that diversity is an important political goal, only half of the diversity program directors thought that racially diverse groups of scientists would produce different or better science.

I argue that diversity in science should be theorized differently than diversity in other contexts, like the corporate world, because of our society's current framing of objectivity as the "view from nowhere." Although scientists may generally work under the impression that the identity of the researcher should not affect scientific results, the responses of the Diversity program



directors suggest that their views of the way identity shapes science are more complicated.

This study helps to bridge theoretical STS literature and scientific careers research using an empirical case of diversity programs. By bridging these literatures, we can provide a more theoretically engaging discussion of diversity and the future of the STEM workforce. There are many avenues for continued research including further exploration of the relationship between diversity and objectivity and increased attention to the STEM diversity programming that shapes the experiences of many underrepresented scientists on the ground. I hope to investigate these questions as I continue with this research.

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