

## Personal Statement

I have never been the type of scientist who has split-second “aha” moments; instead, big ideas tend to take up space in my head for months at a time until they turn into questions. Recently, I’ve been thinking about Langdon Winner’s 1980 article, “Do Artifacts Have Politics?” in which Winner argues, essentially, that technology enacts and enables structures of power and authority. We can find a canonical example in the bridges that Robert Moses built on Long Island; Moses specified that the bridges be lowered enough to let automobiles pass but exclude buses. Moses’ biases against poor people and Black folks, both of whom were more likely to take buses, are, quite literally, built into the bridges he designed. The kinds of politics that Winner talks about involve questions like the centralization of authority in a state with nuclear power, while I have so far mostly been concerned with the presence and community that marginalized groups create using online platforms. Just as Robert Moses’ racism and classism had concrete political consequences, so too do these day-to-day actions of online existence and resistance enact political intent in their own right. They, in turn, leave their own artifacts, technological structures built from scratch or repurposing existing affordances, with progressive values baked in. I’ve spent years surrounded by these artifacts – sometimes studying them, sometimes creating them – and I’d like to devote my career to the project of making sense of them. We so often discount the community-building work that marginalized people do, and Internet-based communities are no exception. **If I can build a research framework that makes asking about the ways that people with marginalized identities enact community and care online a productive and fruitful avenue of inquiry, I will consider my career to have been a success.**

### **Research Background**

Early on in my undergraduate career, I was lucky enough to be introduced to research through a graduate student mentor, Nathan Matias, at the MIT Media Lab’s Center for Civic Media. I was originally hired to help out with some natural language processing work but ended up collaborating with Nathan on a network study of the GamerGate controversy that summer during my internship at the Berkman-Klein Center for Internet and Society. Working at the Center for Civic Media was my first exposure, at least in an academic context, to technology as a civic resource that could be used to build thriving communities. At the time, I was also an avid Tumblr user (and later interned at the company for a summer, building a tool that showed semantic relatedness among hashtags). While learning the theories that academics use to make sense of life online in my Comparative Media Studies courses, I was also busy making sense of my own identity as a member of the LGBTQ+ community on Tumblr and through mailing lists within MIT. Both these threads of learning eventually culminated in my undergraduate thesis, which was an ethnographic study of The Discourse, a vitriolic debate over inclusion within the LGBTQ+ community. I was able to see firsthand the importance of community on social media to identity formation and self-discovery – as well as the ugly ways that community could turn on itself, often driven by the affordances and political choices of platforms themselves.

After graduation, I decided to work in industry for a few years to build my skillset; for two years post-graduation, I worked at Kensho Technologies as a graph data engineer. I learned how to build, maintain, and test data pipelines while simultaneously internalizing procedures for writing good code and developing robust systems. Since much of the data Kensho works with is inherently networked, I became very good at exploiting graph theory and thinking from a networked perspective to make faster data pipelines. I worked closely with data scientists and machine learning engineers at Kensho, and curiosity about applying my machine learning skills led me to work for Kayak’s Labs, an internal team at Kayak that was responsible for longer-term machine learning projects. A couple of my projects offered me a great deal of creative freedom that I used to grow my skills and improve existing infrastructure. In my second year at Kayak, I co-led the LGBTQ+ Employee Resource Group; in my work as a lead, I wrote guides and presentations promoting trans inclusion, pushed for equitable hiring practices, and wrote a guide to debias performance reviews. Being in community with other people who experienced the world as I did, as a woman in STEM, an out queer person in the workplace, and a disabled member of the

workforce, encouraged me to mentor other underrepresented LGBTQ+ people in STEM fields through the Out In Tech organization.

### **Intellectual Merit**

While working at Kayak, I also collaborated with the AI and Emerging Media group at Boston University; this research work culminated in a demo paper presented at EMNLP, entitled “OpenFraming: Open-Sourced Tool for Computational Framing Analysis of Multi-Lingual Data.” I enjoyed having the freedom to iterate with an eye towards furthering others’ scholarship; working within the larger scholarly community for whom we built OpenFraming required that I become accustomed to holding several different ways of seeing the world in my mind at once. This experience convinced me to apply for graduate education; I enjoy the work of reconciling many facets of the truth, but the pace and goals of industry do not encourage such undertakings. I realized that having more credentials would put me in a better position to advocate for more diversity and equity in whatever field I worked in next, and that the kind of computational research I wanted to do – studying how people talk to each other in online communities – required a PhD. I have just finished my first academic year and summer at the Network Science Institute at Northeastern; my current research focuses on the formation of online networks and the facilitation of a supportive, inclusive community for online learners. I am currently co-advised by Prof. David Lazer and Prof. Brooke Foucault Welles; with Prof. Lazer, I am studying triadic transitivity in Twitter networks using a novel method for time-bounding following events with the Twitter API. With Prof. Foucault Welles, I am examining the ways that hegemonic and counter-hegemonic narratives around female celebrities proliferate and mutate on various online platforms; we are also studying the application of feminist pedagogical principles to online community-based instruction on the igraph Python package as part of a grant from the Chan-Zuckerberg Initiative to diversify the igraph package’s open-source community. This summer, I am continuing my mentorship work through Out In Tech; I also presented early work on triadic transitivity at Politics and Computational Social Science (PaCSS) and the Women in Network Science satellite conference.

### **Broader Impacts**

Throughout my career so far, I’ve been aware of the systemic biases that are ever-present in STEM fields; looking back at the various computational teams I’ve been a member of, I’ve very often been the only woman, and certainly the only LGBTQ+ person or person with a disability. This has shaped the ways that I go about my work and the decisions I make. I’m not a natural leader, but I’ve been able to scale up my leadership efforts gradually, inspired by existing needs and my own internal motivations to help make tech more equitable. While at MIT, I tutored for the TSR<sup>2</sup>, the Talented Scholars Resource Room, leading a weekly recitation section for minority students taking the introductory algorithms class and answering questions as they came up. Later on, at Kayak, I stepped up to lead the LGBTQ+ Employee Resource Group because I recognized how much having a resource group available at my first job would have mattered to me. I also began mentoring undergraduates and early career professionals through the Out In Tech organization; my first mentee was able to find a job that was a much better fit, and I am guiding my current mentee, who is a first-generation college student, through their job search in the tech industry.

Systemic biases aren’t just present at the human level of things, though; they’re also present even in the research and product decisions we make. The work we do in research has the potential to exclude the voices of marginalized groups, even as we study their online activity, for example. By surfacing the community-building work that marginalized people are doing online, I hope to push back against narratives that trivialize online activism and undervalue the affective and infrastructural work marginalized people are doing. **I intend to learn more about, and help others build respect for, sources of knowledge and power that society tends to ignore or discount.** My current work on the #FreeBritney movement remarks on the situated knowledges that Twitter posters bring to the conversation which are, by the nature and accepted practices of the publications, largely left out of mainstream and

tabloid media coverage. I am also figuring out how the attentional capital that Twitter accounts, even parody accounts, possess can be brought to bear for causes like labor movements; while examining the causality behind triadic transitivity on Twitter, I noticed that amplification can have differential effects depending on the type of account being amplified. Ultimately, I want to produce knowledge about alternative forms of power-building that exploit existing structures on social media and even build novel ones. **My work also intends to amplify and uplift the work that marginalized people are already doing, using the visibility that academic validation brings to previously overlooked phenomena in order to make non-mainstream ways of knowing and holding power legitimate.**

### **Career Goals**

I am planning on a career that, first and foremost, promotes a more equitable and peaceful world. Since there has been a great deal of conversation around the political role of social media recently, I could see myself working in a policy or regulatory role as an expert in communities on social media. Technological policy is an evolving field, especially in recent years, and people working in the field need to understand exactly where and how change is taking place. Adapting to change requires understanding who is affected and what impacts might occur several years down the road; in other words, it requires big-picture thinking and the ability to undertake ambitious projects. A tolerance for uncertainty or paradox is essential to studying people's lives online, and having the ability to create and communicate new understandings of how people live will serve me well as a scholar or policymaker. The combination of specialized technical knowledge and a deep understanding of the work that online communities do for their members is a skillset I hope to cultivate and hone in the coming years; it is also a skillset that I believe will be fairly unique, even by the time I finish my PhD. **Receiving the NSF GRFP award will allow me to pursue and integrate these two kinds of knowledge while also lending visibility and credibility to this type of work.**