Personal, Relevant Background and Future Goals Statement

My interest in the junction of online spaces and crowd-driven knowledge production was sparked in 2014, when tensions in Ferguson, Missouri prompted deeper examinations of race on the national stage. As an undergraduate, I was fascinated by how social media collated crowd participation into emotionally charged narratives and community archives, and supported a kind of pluralism where conflicting realities could exist side by side. Two years later, public negotiation of social identities became more personal, when I came out as transgender (trans) and transitioned into an identity whose right to public space is contested.

Just as the physical sciences define certain *material* needs of the human body, social scientists and philosophers identify *immaterial* needs as fundamental to our wellbeing—e.g. social belonging and individual agency. The trans population faces disproportionate barriers in meeting both needs. As I have learned more about the diverse experiences within the trans community and have managed my own trans identity in various social contexts, I am aware that many trans people do not have access to the same accepting and supportive environment that I do. Beyond material needs, I believe that my community has the same right to the *immaterial* furnishings of a healthy life. My goal, through through a career in academia that involves research, mentorship, and community work, is to bring this imaginary within reach.

Much existing work suggests that these immaterial challenges are largely shaped by the social environment, such as the support of family members and access to trans community. While many social science disciplines interact with the study of meaning in various ways, focusing on the social production of meaning is crucial to this work. The Science and Technology Studies (STS) perspective is particularly useful, as it allows us to examine manifestations of gender categories—e.g. through bathrooms and census forms—as the crystallizations of otherwise immaterial social forces. Using this lens, the immaterial needs and experiences of trans people become anchored in concrete objects, which thus become concrete opportunities for change.

Education and Professional Development. As I began my junior year of college, I had the opportunity to join Dr. Kate Starbird's emCOMP lab, which studies misinformation on social media in the context of crisis events, such as hurricanes, earthquakes, and shootings—and recently, politically-driven misinformation. With mentorship from Dr. Starbird and graduate students in her lab, I developed skills in all stages of the data collection and analysis pipeline, from collecting Twitter data, to storing large datasets, to conducting mixed-methods social network analysis and writing and presenting academic papers. Attending my first conference and receiving the prestigious, merit-based Mary Gates Research Scholarship from UW prompted me to further study negotiations of truth and meaning on social media. With encouragement and mentorship from Dr. Starbird, Dr. Spiro, and other lab members, I delved into a dataset of tweets relating the hashtags #BlackLivesMatter, #BlueLivesMatter, and #AllLivesMatter to shooting events. Applying a community detection algorithm to the shared audience network and conducting revealed stark polarization between Right-leaning and Left-leaning accounts,

significant differences in the social structures of each group, and patterns of automated political activism. Working with a graduate student, I submitted our paper to CSCW 2018 as the first author, where it was published in the November PACMHCI journal.

In the same month, Twitter released a list of accounts known to be affiliated with the Internet Research Agency (IRA), a "troll-farm" based in Russia as part of congressional inquiry into political misinformation. We recognized many of these accounts from our study of #BlackLivesMatter and #BlueLivesMatter hashtags. With this new addition to our existing dataset, we again used a mixed-methods approach to examine the positions and behaviors of these disinformation actors in a second CSCW paper, on which I was the second author. This research emphasized to me that disinformation and conflicting social realities didn't have an easy technological solution. While the IRA accounts interacted significantly with Twitter audiences—even producing viral content—they did not create the social fractures that underlie online conversations about race.

At the same time, as I navigated the process of coming out as transgender, I gained a more nuanced understanding of public deliberation and the construction of social "truths," particularly in the context of online spaces. I connected with other trans people by watching YouTube videos, reading Reddit threads, and scrolling through Tumblr posts. While the prominence of disinformation in the news cycle highlighted how certain antisocial behaviors can thrive online, the anonymity, fluidity, and playfulness that characterize digital cultures allowed me to find community and explore my own identity. These dual lenses surfaced for me the complexity of broader social conversations and disagreements, and their relationships to technological systems. I became particularly fascinated by the tensions of knowledge production, where online spaces allowed communities to bypass the centralized power structures that both unify social discourse and further marginalize minority experiences. These interests drove me to pursue a PhD at the UW Information School, advised by Dr. Spiro and co-advised by Dr. Starbird.

As I prepared for my PhD program, I worked as a data analyst at the Institute for Health Metrics and Evaluation, a non-profit public health research institute, with the goal of building on my existing software engineering skills and gaining experience in quantitative methods for social science. While I gained practical skills in implementing and testing large-scale data analysis systems using R, Python, and Stata, I also began to consider the position of this scientific work in relation to online crowd-driven community knowledge systems. Although my work at IHME did not directly involve online spaces, it provided a new lens on the wide scope and discursive purchase afforded by large datasets and statistical models, and the role these play in the public sphere.

I am now in my second year as a PhD student in the Information School, working in the DataLab. In my work examining IRA accounts, I also learned about historical instances of disinformation. While technology has changed how they manifest, mis- and disinformation are not new problems, and social network analysis is not in itself a novel approach. The utility of the large body of existing sociological work on information diffusion, social structure, and the

relationship between technology and society has become increasingly evident to me. The DataLab has given me access to mentorship and computational resources for studying online environments, and the information science program brings together a variety of social science disciplines. My advisor, Dr. Spiro, has a strong background in studying online social networks from a sociological perspective, and guides me in navigating this research.

Intellectual Merit: Redesigning Existing Tools. The limitations of current quantitative methods calls for a significant redesign of how complex social identities are categorized and encoded in quantitative data. Trans people are still fighting to be represented in accurate and humane ways by even the most basic data structures and their material representations—even the temporal nature of gender identity transition is at odds with standard representations of gender in data. At the same time, the rapid increase in available data and computing power seems to present almost limitless potential for the social science research. Viewing social taxonomies as tools for sensemaking and knowledge production, we can apply user-centered design frameworks to emerging data science methods. The user-centered design approach also offers mechanisms to evaluate success by iteratively collecting and responding to stakeholder feedback. Broadly, this work will draw together existing sociological theory and practice with a user-centered design approach to reshape how social science knowledge is constructed.

Broader Impacts: Building Trans Futures. The most direct and immediate impact that I can have is on my local community. To this end, I support my trans community by volunteering weekly as an operator with Trans Lifeline, where I help callers access medical, legal, or housing resources in their area and provide emotional support, particularly to those in crisis situations. This work is a channel for me to extend the privileges I have to directly help my community, and brings perspective and focus to my long-term research arc. In addition, I actively support my research community by organizing student-led reading groups, and as the Doctoral Student Association social chair, where I organize weekly social events, schedule seasonal activities throughout the year, and plan more serious conversations surrounding mental health and work routines. Thirdly, drawing on my own mentorship experiences, I see mentorship as a key part of establishing a more diverse academia by creating strong ties of support and belonging to students who might otherwise feel excluded. Once I have completed my PhD, I aspire to continue in academia as a professor at a research university.

The long-term goal of my work is to reconceptualize scientific knowledge as a public resource, particularly through the perspective of underrepresented groups. Quantitative social science serves a crucial role as a shared language between scientists and the rest of the public sphere. At the same time, the trans population, along with other vulnerable populations, has a history of disenfranchisement via scientific research. If social science research—and the broader STEM enterprise—is going to shift from an antagonistic or passive role to a relationship based on public service and mutual collaboration, researchers must prioritize the agency and values of the trans population. Collaboration with target communities will increase engagement of marginalized groups in both the production and application of social science knowledge.