"THINK PEOPLE. NOT [JUST] SCALE.":
TECHNICAL COMMUNICATION APPROACHES TO ACCESSIBLE CYBERSECURITY
WORKFORCE FRAMEWORKS

By

Christina M. Puntasecca

A DISSERTATION

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

Rhetoric and Writing – Doctor of Philosophy

2024

ABSTRACT

Engaging recent points of discussion within academia and practitioner research focused on access/ibility in the cybersecurity workplace, this dissertation examines the impacts of National Initiative for Cybersecurity Education (NICE) cybersecurity workforce frameworks on people and communities within the field of cybersecurity. The emerging era in workforce formation provides a timely opportunity to attend to the conversation around workforce development, pipelines and pathways, and what it means to create greater access to the technical field of cybersecurity for diverse, underrepresented, and/or disabled prospective employees.

These developments emerge at a time when the social justice turn in technical communication has become a major focal point in the discipline. Taking up Walton, Moore, and Jones' foundational work, Technical Communication after the Social Justice Turn (2019) and numerous scholars writing about the need to examine possibilities for justice work within user experience (Swartz, 2019), engaging with issues of linguistic justice and translation in technical communication (Gonzales, 2024; Mendoza, Haywood, Pouncil, and Kang, 2024), arguing for reciprocity in communication (Gonzales and del Hierro, 2017; Haywood, 2019; Powell and Takayoshi, 2003), and attending to questions of ethics in digital research (Haywood, 2022), this dissertation discusses a mixed-methods research study consisting of critical constructivist grounded theory analysis of the 2023 National Initiative for Cybersecurity Education Conference, whose theme titled "Resetting Expectations: Creating Accessible Cybersecurity Career Pathways," focused broadly on reimagining cybersecurity workforce pathways. The dissertation research discusses open ended, reflexive interviews with members of the cybersecurity workforce. Research discussion is followed by recommendations regarding career pathways and workforce development. A closer look into the ways technical communication has historically discussed accessibility and inclusion in digital workspaces, combined with extending

the conversation using intersectional frameworks and embodied (third-space) remote work

realities post-COVID, may provide new pathways into TCP research.

This work is dedicated to my children, Victor and Dylan Luiggi Puntasecca, whose joyful and chaotic orbit maintained the gravity of my (dissertation and cybersecurity) work, and to the time and attention these pursuits cost the three of us. I love you two more than I could ever say.

ACKNOWLEDGEMENTS

TABLE OF CONTENTS

Chapter 1: Conceptualizing Access and Thrivance in Cybersecurity Contexts

One of the biggest challenges is the lack of consistency in the way "cybersecurity" is defined.
-Cybersecurity & Information Security Agency

"I feel we can't really define accessibility in cybersecurity because cyber is so young–we haven't pinned down a definition for cybersecurity as a field."
-Interview Participant

"Knowledge is in embodied interactions among people, and technical communication may be a medium through which those embodied experiences become tangible and shareable."
-Jason Schwarts

Conversations focused on access and accessibility in the workplace, particularly in cybersecurity workforce pathways, have increased dramatically in recent years with the advent of the COVID era, alongside reportedly critical talent shortages in the cybersecurity industry, and the rapidly evolving technological landscape surrounding artificial intelligence and machine learning deployment. Such shifts have had an impact upon academic and industry material conditions— remote and hybrid workplaces have increased substantially, impacting modes and methods of technical and embodied communication; workers and learners approach illness and work life balance in new ways, requiring strategic restructuring of work expectation for employers and leader.   The social spaces in which we do the work has taken on new formats, providing opportunities to develop and drive modalities toward accessible and equitable workspaces. Since the advent of COVID-era shifts in workplace formation, we have seen numerous industry leaders make claims regarding the opportunities toward accessible workplaces (Knell, 2020, 2021; Steelcase, 2022), while disability advocates have argued for closer scrutiny around who these developments in accessibility serve (Disability:IN, 2021; Kafer; 2013). The emerging era in workforce formation provides a timely opportunity to attend to the conversation around workforce development, pipelines and pathways, and what it means to create greater access to

the technical field of cybersecurity for diverse, underrepresented, and/or disabled prospective employees.

These developments emerge at a time when the social justice turn in technical communication has become a major focal point in the discipline. Alongside Walton, Moore, and Jones' foundational work, *Technical Communication after the Social Justice Turn* (2019) numerous scholars have begun writing about the need to examine possibilities for justice work within user experience (Swartz, 2019), engaging with issues of linguistic justice and translation in technical communication (Gonzales, 2024; Mendoza, Haywood, Pouncil, and Kang, 2024), arguing for reciprocity in communication (Gonzales and del Hierro, 2017; Haywood, 2019; Powell and Takayoshi, 2003), and attending to questions of ethics in digital research (Haywood, 2022). While social justice conversations in the field often indirectly address access through discussions on reciprocity, care work, and equitable inclusion, there is an opportunity to engage with justice and accessibility within technical communication in new ways as workplace re/formation is currently an at-scale project in both academic and industry sectors.

Furthermore, there is an opportunity to push DEI hiring practices in a way that mitigates the characteristically "leaky" STEM workforce development pipelines, in which historically underrepresented groups are unintentionally lost during the training and development process. (Allen-Ramdial and Campbell, 2014) While outside the scope of this dissertation, understanding how workforce developers understand the STEM workforce pipeline, and how the National Institute of Cybersecurity reimagines cybersecurity career pathways" ensures working conditions for members of a diverse workforce empower workers to grow professionally. Best practices outlined in the conclusion will include recommendations regarding career pathways. A closer look into the ways technical communication has historically discussed accessibility and inclusion

in digital workspaces, combined with extending the conversation using intersectional

frameworks and embodied (third-space) remote work realities post-COVID, may provide new

pathways into TCP research.

On Bridging: Research Aims, Research Questions

This dissertation seeks to bridge industry and academic conversations around access/ibility in

technical workspace with a specific focus on access culture and practice in the information

security industry. The research is situated in a time of multiple pivotal social moments–at its

beginning there was COVID-19 and subsequent remote workforce migration; the research was

conducted amid periods of remote work backlash and controversy. and debates over how we best

teach and learn in remote environments; this year as I have conducted interviews we have

collectively witnessed the Artificial Intelligence (AI) and Machine Learning (ML) boom, and all

that comes with it in terms of impacts to technical communication and workplace formation.

These shifts unquestionably impacted the research, but they are not the central focus of my

dissertation. Rather, I seek to focus on the way we as people navigate hardship and uncertainty–

as it is always present and unfolding before us–and how we might facilitate others in that

navigation across physical, cognitive, and social access barriers toward professional thrivance in

the fields of cybersecurity and technical communication. More specifically, my research asks the

following question(s):

- How do conversations among cybersecurity educators and practitioners at the National Institute for Cybersecurity Education (NICE) conference reflect the conference theme, driven by NICE's cybersecurity workforce framework and strategic plan?
- How are community and belonging, pedagogy, accessibility and popular workforce development strategies like gamification understood by practitioners in the field?
- How can technical communications' critical scholarship on accessibility inform pedagogical methodologies toward a more equitable information security workforce?

- What are some strategies and best practices, informed by technical communication, that can drive workforce development away from "workforce pipeline" discourse and toward a more just and intentionally accessible trajectory beyond initial hiring of diverse workers?

Later in this chapter, I will conceptualize thrivance and access within the context of these research questions, I would like to situate the research in the cybersecurity context. Before doing so, I would like to begin with a positionality statement.

Positionality Statement

As this dissertation's methodologies rely on Black feminist standpoint theories, it is important that I outline my positionality within the research. My positionality is rooted in my experiences as a racially ambiguous child growing up in rural southern New Mexico, as a U.S. citizen holding the privileges associated with whiteness, and a person who moved constantly, attending thirteen public schools, graduating from an accredited homeschool program (a strange blend of privilege–a grandparent funded the curriculum–and disadvantage, having never had a stabilized educational experience during childhood development) as the only one of my mother's children to graduate high school. As a child, I never had a computer at home. My first computer purchase was made when I was twenty years old. This socialization element has been a barrier to my ability to take risks and "stay curious," despite the curiosity-focused culture of the technical work I do.

I'm a U.S. Air Force (USAF) veteran who has experienced success and growth by way of opportunities presented to me in early adulthood as a member of the USAF military and government civilian sectors. My positionality as a person socialized into lower-middle class living with little stability growing up, meant I wasn't socialized to understand those opportunities. I was not literate in the unwritten rules of success and had to learn them along the way. That thread has carried across my experiences and is one way I choose to think about

access in this dissertation. Access shouldn't just be afforded for diagnosed or pathologized conditions but should also consider holistic experiences informing positionality-based barriers to growth and belonging.

My own relationship with diagnose/able access needs comes from traumatic experiences (combat and abuse-related) while serving in the USAF. I'm a lesbian veteran womxn, having had my first woman-centered relationship under Don't Ask, Don't Tell. The harassment and threats I experienced due to the policy led me to pursue heterosexual relationships, and I was only able to pursue the kinds of relationships I desire after over a decade of heterosexual marriage. This leads to a common misunderstanding of my identity as bisexual. Lengthy research, outlined in my first major published research study (Puntasecca, Ware, and Hall, 2019) shows that LGBTQ+ veterans have increased instances of comorbidities related to Post-traumatic stress disorder (PTSD), mental health disorders, obesity, alcoholism, and diabetes. There are stories here that fold into one another, that press into one another like fibers of a page upon which my own diagnoses are written. To me, these stories (these reasons, these symptoms) are mine and are to only be shared within communities of trust toward specific purposes. They're not stories for here, but they inform my views regarding accessibility inclusive of mental health accommodations–topics that are included in the research.

I am a single parent, raising two children while working full-time within industry and while working to complete a doctoral degree. While my children's relationships with access need are private, I will share that as a mother I have had to navigate educational programs focused on scaffolding children with disabilities, including continuous engagement with Individualized Education Programs (IEPs), Ohio's Section 504 plan, defined as available to students who "have a disability that limits daily life" (kidshealth.org). In that, I have had to support the mental and

emotional impacts upon my child(ren) as they've had to cope with feelings of unbelonging in their educational institution(s) because of their disabilities.

My positionality, as developed in early life and in the military, informed my orientation to higher education. I did not see college as something I could access, and when I finally had the courage to apply to college, I chose to attend Sinclair Community College despite the fact that the Montgomery G.I. Bill (university funding provided to veterans as part of their service benefits) would have paid tuition for any institution with a state university rate. I slowly gained confidence as a student, not only through achievement or merit but in the form of relationships with fellow students and faculty who spoke possibilities into my life. Along the way, I experienced disruption at the institutional level during a faculty strike at Wright State University, and again during the COVID-19 campus shutdowns. Of course, I also experienced disruptions on a personal level along the way. These disruptions are common experiences for people who are underrepresented and/or face socioeconomic barriers to success. In the analogy of a leaky pipe, people who don't understand how to ride a current, or how to navigate the dynamics of flow, wind up at the edges, seeping outward instead of reaching the point of success (particularly within the timeframes that allow for benchmark recognition and joy).

Despite these disruptions, I have also experienced deep community, mentorship, and recognition for my strength and ability to contribute. All of this informed my orientation to my roles as a teaching assistant and writing consultant, and as a researcher writing this dissertation. I do not trust institutions easily, because I've experienced trauma on a systemic level in every institution that has grown me. I am aware this is not just a truth I live with, and I don't speak about it to garner pity or credibility within the research but to say the systems are broken. While strategic plans, resolutions, and laws drive organizations on many levels, culture and community

drive the success or failure of people moving within and through organizations. It is my desire to ensure that others aren't caught at the edges of things, stuck in the seam-work or leaking away from the realization of dreams. I seek to understand how systematic cultural inclusion can mitigate the loss of talent due to access barriers.

My positionality interfaces with the research in three ways: 1) my positionality as a socioeconomically disadvantaged youth, LGBTQ+ veteran, and single parent informs my experiences as a researcher within the academic institution in which I work; 2) my positionality as someone completing a dissertation in a traditional in-person program from out-of-state, and as a full time senior engineer within industry impacts my ability to build community with my committee and others in the department, in turn affecting my ability to navigate the *pipeline* designed for graduate students within my department; and 3) my positionality holistically impacts the ways I experience the objects of analysis in the research, and the themes emergent in the analysis. Note that in this dissertation, I will discuss the use of story as a methodology (see chapter 3). In addition, interview participants and NICE conference plenary speakers share stories to convey ideas and personal relation to issues of access in cybersecurity. In honoring those stories, I forward that storying is important to building communities of practice around established values.

Access Defined

The Covid-19 pandemic has amplified long-standing disparities faced by disabled people including poverty, a fragile social safety net, inequitable healthcare and a digital divide. This impact has allowed me as a new CEO to bring our mission into sharper focus but also hit a reset button to re-imagine how and where we work.
-Karen Tamley, President and CEO, Access Living

Nothing about us without us.
- Disability without Poverty

In conceptualizing access/ibility in the context of this study, I am reminded of the fundamental slogan of disability rights activists: Nothing About us Without us. Advocacy group, *Disability Without Poverty* (DWP, 2024 web), notes that the phrase can be traced back to 1500s Poland, and draws thorough lines between the slogan and other famous rallying cries for democracy, such as: "No Taxation without Representation." In doing so, DWP argues that inclusion of all is a longstanding tenet of democracy (2024 web). As you will read during the interview portion of my dissertation, all participants defined accessibility with slight variation with one exception. All participants stated that in order for something to be accessible, barriers must be removed for all people within any particular context.

Law, policy, and strategic plans have a historical presence in disability justice advocacy. This dissertation will briefly discuss the National Institute for Cybersecurity Education (NICE) strategic plan, as well as the NICE Cybersecurity Workforce Framework as related to the NICE 2023 conference. The NICE framework is a tool used by practitioners, educators, and people pursuing a career in cybersecurity. As NICE falls under the federal agency NIST, the institutes are subject to federal laws regarding accessibility such as the American Disability Act (ADA) and the Department of Health and Human Services Resolution 508 (referred to hereafter as Resolution 508). NICE is an intermediary between federal policies and standards, and members of the cybersecurity community and the mediating discourse as it interfaces with localized behaviors is a major point of inquiry in this dissertation. Much of the discussion analyzed in later chapters related to the NICE conference and interviews focuses on culture and practice resulting from the ways in which such discourse is represented. That said, it is important to understand how legislation like Resolution 508 impacts the cybersecurity community.

In the context of cybersecurity, it is reasonable to consider Resolution 508, described at section508.gov as follows:

> In 1998, Congress amended the Rehabilitation Act of 1973 to require federal agencies to make their electronic and information technology (EIT) accessible to people with disabilities. The law 29 U.S.C § 794 (d) applies to all federal agencies when they develop, procure, maintain, or use electronic and information technology. Under Section 508, agencies must give disabled employees and members of the public access to information comparable to the access available to others.

As cybersecurity standards are developed and maintained by government agencies such as National Institute of Standards and Technology (NIST) and Center for Infrastructure and Security Agency (CISA), the digital interfaces disseminating relevant policies and standards to the public (including cybersecurity professionals) must adhere to the mandate outlined in Resolution 508. Furthermore, federal agencies must ensure their employees have access to all Information and Communications Technology (ICT) necessary to fulfill their duties. 508 is an example of a legal standard situated in disability as understood by the medical model–disabled employees would receive accommodations after proving their disability by way of diagnosis. This example is one that shows the importance of access for those with medical diagnoses.

Accessibility as conceptualized in the dissertation is capacious, not limited to disability rights outlined in American Disabilities Act or Section 508, but certainly including disability justice as a central theoretical and practical component of advocating for access through cultural workforce development. Accessible organizations rely on systems that guarantee access to members of the organization—and these systems must be built and maintained alongside the people the systems are built for. In the context of cybersecurity, NuData (2024) insists, "It's companies' responsibility to address accessibility challenges when it comes to cybersecurity. Doing so can help organizations build user experiences that account for a diverse human

population, while also enabling individuality." Accessible organizations are holistic, incorporating various manifestations of accessibility based on need. Accessible models include but move beyond medical models and universal design: ADHD friendly web fonts and layouts; translation of education resources; culturally appropriate resources based on local contexts; non-linear work schedules; reflexive communication that takes into consideration communication styles, neuro-complexity, and mental health. Accessibility is not passive or static but in-process, always in development, and must be engaged with as part of organizational workflow in order to be realized at scale.

Thrivance Defined

Thrivance, a term taken up originally by indigenous scholars and community builders, describing an orientation toward futurity for Black, Indigenous, and People of Color (BIPOC) situated within an ontology and methodology of relationality (Driskill, 2014; Medina, 2021). As Medina explains, thrivance is a value central to many precolonial and decolonial societies. He contends that relationality, "ensures the thrivance (more than survival) of our ecological and sociological future, connecting all of us in the vast web of life…Although relationality is deeply rooted in Indigenous worldviews, it extends to all of us, especially during this time of ongoing crisis and uncertainty" (2021). This is true, too, in professional contexts, though the capitalist nature of corporatized labor institutions do not recognize it. Digital technology presents an interesting opportunity for understanding relationality, as infrastructures and architectures are by nature interconnected.

Such professional thrivance is created with, and for, aspiring and active professionals in technical communication (Haywood, 2019). Operationalized thrivance is built upon relationality (Craig, Flores, and Moeggenberg, 2022; Medina, 2021; Muñoz, Galla, Wyman, and Gilmore,

10

2023). Working toward thrivance is an ethical choice, situated upon a system of shared (co-created) values, participatory rhetorical engagement, and coalitional approaches to the difficult work of change when necessary (Lauren, 2018; Walton, Moore, and Jones, 2019). One aim of this project is to argue for relational digital workplace approaches in a way that might be desirable and attainable within industry settings.

Defining Cybersecurity, Situating Cybersecurity Research

The way an organization defines cybersecurity within technical and professional documentation reflects the values and priorities of the organization, as well as the ways in which it hopes to persuade audiences interested in learning about their relationship with cybersecurity. For example, government agencies define cybersecurity in public facing websites intended for general citizens, funders, and potential employees (see chart below) In addition to organizational values, the way cybersecurity is defined reflects mission. Cybersecurity is a broad field, encompassing multiple disciplines, methodologies, and orientations to the work. For instance, cybersecurity professionals might specialize in operations or research for either offensive or defensive security—and under those broad orientations to the work are a multitude of cybersecurity roles: incident response; threat hunting; governance, risk, and compliance, DevSecOps; security architecture; penetration testing, to name a few roles. In each organization, these roles look a bit different based on mission and values. To better familiarize the reader with cybersecurity and its breadth of manifestation, I will outline varying definitions of the industry, beginning with those more closely studied within the context of the dissertation.

Table 1. Cybersecurity Definitions Across Major Relevant Institutions

Organization	Cybersecurity Definition
National Institute of Standards and Technology (NIST)	1) The prevention of damage to, protection of, and restoration of computers, electronic communications systems, electronic communications services, wire communication, and electronic communication, including information contained therein, to ensure its availability, integrity, authentication, confidentiality, and nonrepudiation 2) The process of protecting information by preventing, detecting, and responding to attacks. 3) Measures and controls that ensure confidentiality, integrity, and availability of the information processed and stored by a computer. Rationale: Term has been replaced by the term "cybersecurity". 4) The ability to protect or defend the use of cyberspace from cyber attacks.

Table 1 (cont'd)

National Iinitiative for Cybersecurity Education (NICE)	NICE addresses the breadth of cybersecurity in the development of the NICE Cybersecurity Workforce Framework's high-level grouping of common cybersecurity functions. The NICE Framework will be discussed in more detail later in the chapter.
Cybersecurity and Infrastructure Security Agency (CISA)	the art of protecting networks, devices, and data from unauthorized access or criminal use and the practice of ensuring confidentiality, integrity, and availability of information.
United States for International Development (USAID)	The activity or process, ability or capability, or state whereby information and communications systems that support or affect development outcomes, and the information contained therein, are protected from and/or defended against damage, unauthorized use or modification, or exploitation (Web. 2024)

CISA describes the National Institute for Cybersecurity Education (NICE) Cybersecurity

Workforce Framework as a response to the industry's multiplicity and vagueness of

cybersecurity definitions:

One of the biggest challenges is the lack of consistency in the way "cybersecurity" is defined. Job descriptions and titles for the same job roles vary from employer to employer. This makes it harder for universities and colleges to prepare students for their first job. Employers spend time and resources retraining new hires and employees don't have clear career options.

The National Institute for Cybersecurity Education (NICE) Cybersecurity Workforce Framework is a detailed heuristic for defining roles, training teams, and assessing skill. As its guide "Using the Nice Framework," explains, "The NICE Framework has at its foundation Task, Knowledge, and Skill Statements (TKS), which are then used to form work roles and competency areas" (2024 web). In the introduction to their online guide, NICE outlines the various cybersecurity functions (7) , unique specialty areas (33), and work roles. As the NICE Framework is a complex guiding document with associated interactive tools, discussing it in detail is beyond the scope of the dissertation. However, we will have an opportunity to observe the ways in which practitioners, educators, and even game developers engage with the NICE Framework in later chapters.

While the prescriptive and centralized nature of the NICE framework addresses the definitional problems within the cybersecurity community, it overlooks the necessary consideration of local context and its impact upon cybersecurity operations. This dissertation seeks to address this by incorporating justice based technical communication methodologies into understanding how practitioners engage directly with NICE discourse at the organization's annual conference, and in more localized contexts through a series of semi-structured reflexive interviews with cybersecurity professionals. Before moving into technical communication literature, I'd like to highlight one call for cybersecurity research in its own rite, as an interdisciplinary but dedicated discipline. Myriam Dunn Cavelty and Andreas Wegnar, in their article, "Cyber security meets security politics: Complex technology, fragmented politics, and

networked science (2020)," argue for the interdisciplinary development of cybersecurity politics research field:

> We claim that it should not be conceptualized as a subfield of anything, so that inquiry is not overly restricted by the disciplining power of disciplines. Cyber security transcends levels of analysis, necessitates considerable interdisciplinary knowledge, and will be shaped by the availability of new data and methods. Its relevance for society is likely to become even bigger in the future, with new digital technologies expanding the spatial boundaries of cyberspace and with new complex issues emerging.

Written in 2020, their article establishes a foundation for cybersecurity research that has become ever more important as technology and society have continued to develop.

Situating Access &Thrivance in Infosec Contexts: Overview of Chapters

Over the next several chapters, I hope to illustrate a multifaceted consideration of access/ibility in cybersecurity through a mixed methods study of the ways national institutional discourse filters down into procedures and practice – and how localized workplaces negotiate policy while making meaningful moves within a specific context.

In the first chapter, I outline the necessity for bridging technical communication and cybersecurity conversations to build knowledge more holistically. I define access and thrivance contextual to the dissertation and situate the two ideas within cybersecurity contexts before illustrating the possibility of accessing thrivance in the field using personal narrative.

In *Chapter 2: Arguing for the necessity of coalitional (third)space for creating accessible pathways in technical communication*, I first outline relevant technical communication and industry scholarship focused on access/ibility, and from there discuss the ways Black feminist thought and critical disability studies address issues of access in similar ways. Next, I discuss place and space as a central element for consideration in the creation of just workplaces, as well as in creating new spaces for change when margins of maneuverability mean limitation to progress.

In *Chapter 3: Theoretical and Methodological Frameworks*, I revisit theoretical frameworks from chapter two, situating method/ology within a set of over values meant to carry through each phase of the dissertation. From there, I discuss methodologies used in the data collection and analysis for this study, including critical grounded theory thematic analysis, participatory research methods, and reflexive semi-structured open-ended interview methods.

In *Chapter 4. NICE Conference, Whova, and building community in Hybrid Workspaces,* I discuss key themes (workforce development, human resources, pedagogy, gamification, accessibility, and community and collaboration) and related case study findings from the NICE 2023 Conference. The findings from two case studies, one focused on the solitary disability-related presentation at the conference, and the other focused on plenary speaker discussion points centered around workforce development, accessibility, and community, provided new insights informing the interview portion of the dissertation. In *Chapter 5. Interview Discussion,* I draw connection between the observations made during conference analysis, and the themes emergent during interview discussions: workforce development, human resources, pedagogy, gamification, accessibility, and community and collaboration. Across the interviews, participants discussed definitional challenges to addressing accessibility, the need for community and collaboration for thrivance in cybersecurity workspaces. Participants unanimously agreed that a localized, culturally relevant, human-centered accessibility approach–not a legal framework or ADA approach– is critical to a just and inclusive workforce development pathway in the cybersecurity industry.

Finally, in *Chapter 6. Conclusion,* I revisit the importance of accessibility within the cybersecurity industry, discuss recommended best practices for accessible cybersecurity

workforce development, and provide insight on next steps for technical communication research in accessibility.

It is my hope that in illustrating the ways national cybersecurity organizations like NIST, NICE, and CISA conceptualize, approach, and implement access/ibility policy, while illuminating the ways industry practitioners understand and require access, we might come away with a set of best practices that are people-centric; in utilizing justice-based tech comm frameworks as a vehicle for communicating these practices, I harness the tech-forward disciplinary insights of our scholarly discipline. As a secondary outcome, in observing how national policy and localized contexts interact in the cybersecurity industry, we as technical communication scholars *and* industry practitioners might forge new ways to communicate access/ibility *with* members of our community who most benefit from it.

In this chapter, I have outlined the ways in which technical communication scholarship and practice interfaces with an exigent need for accessible, justice-based cybersecurity workforce development approaches. I discussed my positionality as a researcher and cybersecurity professional, framing my orientation to the research methods and objects of analysis. Within the context of cybersecurity, I have outlined possibilities for thrivance and defined understandings of accessibility before discussing the ways in which this dissertation seeks to engage the need for accessible workforce development. I want to leave this chapter with a final thought on the ways my research is situated within the interface of technical data and embodied life.

Big data pervades our lives, whether we speak its language or not. Research related to big data, whether an institutional critique or an analysis of twitter data around a particular social issue, can only be strengthened by making space for personal narrative and storytelling by and with the communities with a stake in the research project. Further, coming to understand

ourselves in our research as embodied subjects with stories that draw us to our passions, our curiosities, and our research, provides the opportunity for us to localize the data we engage in our research. Personal storytelling draws us to local context and makes the data relatable to a wider audience. A methodology that incorporates story and data calls for a collaborative form of research in which a big data framework allows for situated knowledge share. Attending to small moments of personal narrative and storytelling as they surface can help slow data-driven research, remind us of the people and places connected to our research, and perhaps can counter what Ruja Benjamin (2019) calls "the language of Big Data" by providing a new thinking space for the work of understanding technical research.

Chapter 2: Arguing the Necessity of Coalitional (Third)Space Toward Creating Accessible Career Pathways

For those of us who live everyday lives with one foot in both disciplinary research and beginning
institutional locations, this disjunction is difficult, to say the least. Why? Because to allow this
view of our everyday work is in essence to deny that we have any disciplinary work to do, that
we have any place
in the kinds of research that define disciplines in higher education.
-Margaret Price

If disability is everywhere…once you begin looking for it, where do we, as disability
studies scholars and activists continue not to look? . . .in which theories and movements
do we recognize ourselves, or recognize disability, and which theories and movements do
we continue to see as separate from or tangential to disability studies?
-Allison Kafer

A main goal of this project is to bridge bodies of knowledge situated within technical

communication and the infosec industry in a way that provides new spaces for learning,

innovating, and including often overlooked voices in both intellectual communities. I wish to

identify the theories and movements in which we can recognize ourselves as people who require

accessibility everywhere, as people who wish to thrive not only in spaces of institutional

learning, but in spaces of industry and innovation. Further, I wish to create a better understanding

of the ways in which spaces of learning and spaces of industry rely on one another to create

effective and ethical technological solutions for our social world. In the previous chapter, I

outlined an orientation to bridging academic and industry research toward accessible workforce

pathways before defining key concepts—positionality, access/ibility, and thrivance–which frame

my orientation to the research and the central goals driving the research. In this chapter, the

dissertation will:

1) provide a conceptual overview of conversation focused on access/ibility within technical communication and infosec communities, demonstrating commonalities between the two;

2) establish a values-based foundation, engaging with Black feminist and critical disability scholarship that forefronts those who are often the most precariously situated, and most engaged in, the work of creating spaces of thrivance for multiply marginalized workers in technical industries; and

3) outlining a reframing of justice-based technical communication that suggests a need for creating new spaces extending beyond the margins of maneuverability experienced by diverse members of the field.

Before delving into academic and industry conversations focused on accessibility, we must first define accessibility as it will be conceptualized in this dissertation. Much of the research I engage with in the dissertation—within technical communication scholarship and broader critical disability studies theories, as well as research taken up by practitioners in professional industry—understands accessibility as holistic, reciprocal, and community-based, centering the voices of community members–particularly disabled Black Indigenous and People of Color (BIPOC) individuals— with diverse access needs (Butler, 2019; Gonzales, 2022; Piepzna-Samarasinha, 2018; Queer Futures Collective, 2021 web). Margaret Price describes accessibility as "not a simple matter of access, but a complex interplay between the physical environment, the individual body, and the attitudes and assumptions of others" (Price, 2011). Price's conceptualization of accessibility aligns with BIPOC critical disability approaches, which underscore the connections between white supremacy, colonialism, and inaccessible social and infrastructural spaces (Claire, 2019; Ben-Moshe, 2020; Piepzna-Samarasinha, 2018; Puig-

Mannah, 2019) Similarly, Jay Dolmage (2017), describes accessibility as "an umbrella term for the various ways in which bodies are supported or hindered in their interactions with designed objects, architectures, services, and curricula." Dolmage emphasizes the importance of considering how various factors, such as physical landscape, technologies, and —like Price— social attitudes can facilitate or burden individual people as they interact with spaces and institutions. Both Price and Dolmage are foundational scholars in rhetoric and writing, arguing for intentional design of spaces and written systems with accessibility in mind. A more recently published scholar, Allison Harper Hitt (2021) builds on Price and Dolmage's work, advocating for reflexive practices founded on attunement to individual need as a way to improve upon accessibility programs which stop at medically-based accommodation practices and what Hitt describes as a "rhetorics of overcoming" (2021). Dolmage, Price, and Hitt's contention that the design of social and institutional space often overlooks the concept of accessibility extends beyond rhetoric and writing and into technical communication research in user experience and professional communication. As discussed in the above section, "Access Defined," Industry advocates have argued for a framing of accessibility in the COVID-era that draws connection between flexibility in the COVID-era remote workplace and the researched needs of disabled people who benefit from working from home. Access to spaces that work well for individual needs is a key argument for people working in industry.

Subsequent research in the discipline understands diverse access needs as nonlinear and personally situated, something that may or may not fit within university and/or workplace accommodation disclosure policies. For instance, one may need to plan for unpredictable sleep patterns due to bipolar disorder, while another may need the 3:00-3:30 pm block of the workday free from meetings in order to pick up a child from school (Price, 2011; Watson, Moore, and

Jones, 2019). Yet another may need freedom to engage in stimulating activities such as using fidgets or standing in the back of the room and bouncing on their heels (Piepzna-Samarasinha, 2018). Attending a community of people with varying and sometimes conflicting needs takes intentional care work, culturally sensitive education for community members, and a prioritization of people over profits and efficiency. We will delve more deeply into these scholars, and how they frame such outcomes as possible and preferable, later in the chapter.

Bridging Tech Comm Scholarship & Practitioner Research

In bridging technical communication scholarship and practitioner research, I like to think of technical communication scholarship as the theoretical foundation upon which we might design ethical frameworks for cybersecurity practice. For this reason, before we delve into accessibility discussions within the cybersecurity industry, I would like to lay a theoretical groundwork situated within technical communication scholarship and academic-industry collaborative research informing the industry discussion that makes up a large portion of the dissertation. Ultimately, I seek to provide a representational glimpse into the ways technical communication and critical disability scholars incorporate accessibility into our scholarship, and from there, into our practice in the classroom and the workplace.

Rhetoric and writing scholars have laid a solid foundation for scholars operating under the disciplinary umbrella for those interested in accessibility. Technical communication scholars have increasingly focused on the necessity for disability justice theory and accessibility praxis in user experience, multimodal instruction and curricula design, and linguistic justice research (Swartz, 2019; Butler, 2019; Gonzales, 2022). We will delve into these scholars' works later in the literature review. Similarly, scholarship focused on power dynamics, user centered design, and user agency all have nuanced references to the need for accessibility work threaded into their

larger messages. We see examples of intersectional technical communication scholarship in the work of Walton, Moore, and Jones (2019); Laura Gonzales (2017; 2020, 2022, Janine Butler (2019), and Constance Haywood (2019). Intersectional scholarship, by principle, often holds tenets of accessibility as foundational scholars of intersectional theory interrogate the way interlocking forces of oppression affect people based on their positionalities (Crenshaw, 2005). Some labor rhetorics scholarship lies adjacent to the research topic of the dissertation, but are worth briefly mentioning (Cox, 2019.; Lindquist 2012, Stenberg, 2015). Here I seek to outline the ways in which technical communication scholarship has explicitly and implicitly focused on and defined accessibility; the need for coalition work, and a focus on user agency as it is represented in technical communication scholarship.

Social Justice Scholarship in Technical Communication

Perhaps the most discussed, and unarguably a foundational text on Social Justice scholarship in technical communication is *Technical Communication After the Social Justice Turn*, by Walton, Moore, and Jones (2019). The text is structured in a way that demonstrates interdependence and intersectional thinking fundamental to its content; each concept, each chapter, relies upon and bolsters the concepts surrounding it. It is broken into three parts: Section I: Laying the groundwork; Section II: Strategically contemplating the 3Ps (positionality, privilege, and power); and Section III: Building Coalitions. The first section outlines the history of technical communication as related to social justice work, specifically the social justice turn recently perpetuated within the discipline, and it lays the definitional groundwork for the rest of the text. Upon this foundational framework, the authors introduce the 3Ps–positionality, privilege, and power–within Royster and Kirsch's concept of strategic contemplation. The authors position a praxis-based approach situated in reflection before action, but not without it.

"TPCs long history of user advocacy and intercultural communication can be augmented for social justice, but doing so requires the kind of structured reflection facilitated by 3Ps" (64). They go on to provide models of social justice praxis within technical communication in section three's discussion of specific actions possible within the field and its social spaces. The four R's framework–recognize, reveal, reject, replace–make up a holistic action oriented framework for institutional change. The four elements must be enacted in their entirety, as "mere recognition [of injustice and oppression], much like surface-level representational diversity, is insufficient." (p. 133). A relatively new text, the book is already widely cited by members of the field interested in solving social justice problems, and while disability is not directly mentioned, access through the tenets of care work is.

While Walton, Moore, and Jones create a heuristic for changemaking in technical communication, other scholars directly engage with technologies such as artificial intelligence (AI) and machine learning (ML). In their article, "AI for Social Justice: New Methodological Horizons in Technical Communication," Ben and Hopkins outline the ways email clients use machine learning (ML) to ingest information provided by email users to determine and refine what qualifies as a spam email classification (2022). This opening serves to demonstrate the implicit biases we know exist around stereotypical spam emails (i.e. the Nigerian Prince trope), underscore the ways ML email clients ingest human biases, and suggests that human behaviors rooted in social justice can drive ML toward more socially just outcomes.

The authors note the criticisms existent within recent literature regarding the coded biases built into AI before asserting that that "ML can help TPC scholars pursue social justice initiatives." The authors begin with a social-justice oriented foundation for engaging ML in technical communication scholarship, outlining "four relatively accessible approaches to sML-

based text classification," and making observations on the success of each approach. They close with an honest discussion of the risks and benefits of incorporating ML in technical communication scholarship. The value of this article to TPC scholarship and to digital and technical workplaces is its insistence upon a hopeful, actionable look at not just tearing down the oppressive frameworks built into AI, but building something new. As my research explores the ways digital workplace technologies engage with and are engaged by workers with various interlocking oppressions, this article provides some methodological insight into how to build toward accessible realities.

Johanna L. Phelps's article, "The Transformative Paradigm: Equipping Technical Communication Researchers for Socially Just Work," provides theoretical considerations for participatory, ethically driven research, and may be helpful in considering how disability justice research in technical communication might be situated. The abstract describes the text as a "methodologies and approaches article," and serves in part as a literature review focused on participatory action research, ethical commitments, and social justice work within and adjacent to technical communications research and practice. Phelps notes that a purpose of the article is to provide a framework for utilizing ethical questions as "drivers of research" (204). She draws the obvious connection between action research and social justice work, making the point that action research serves to improve material conditions within communities by way of collaboration with those communities. She asserts, "The transformative paradigm further equips researchers by providing the systematicity necessary to advance this crucial knowledge building. It also corresponds with the field's keen attention to matters of social justice." From there, Phelps provides a paradigm for social justice focused technical communications research toward democratizing and localizing knowledge construction.

Sites of Translation in Technology & User Experience

Linguistic and translatory research is a growing area in the field of technical and professional communication. Recent scholarship argues that technical communication practices are increasingly interested in and changed by globalization, multicultural workplaces and language relationships within communities. In her 2022 article, "(Re) Framing Multilingual Technical Communication with Indigenous Language Interpreters and Translators," Gonzales demonstrates the ways technical communication practices change to adapt to the specific needs of global communities within a cultural and linguistic context. She argues that "by paying closer attention to the role that language diversity plays in global technical communication, technical communicators can further support the good work and technological change that is already being enacted by multilingual communities across the world." Gonzales hearkens Watson, Moore, and Jones (2016) three "Ps: Power Positionality and Privilege" as she describes her relationship with the cultures, languages, and professional contexts situated within the Centro Profesional Indígena de Asesoría, Defensa, y Traducción (CEPIADET) unconference she co-organized in Oaxaca, Mexico. The conference consisted of translators from various parts of the world, gathered to discuss solutions to regional social problems. In her work with CEPIADET Gonzales used a decolonial and participatory design framework for her longitudinal ethnographic study, which focused on the development of the unconference, and themes emerging from round table discussions at the conference.

In a subsequent article (2020), Laura Gonzales collaborates with Janine Butler to adopt Sushil Oswal's definition of accessibility, one also taken up by Melanie Yergeau: "the ability to use, enjoy, perform, work on, avail of, and participate in a resource, technology, activity, opportunity, or product at an equal or comparable level with others" (in Yergeau et al. n. pag.).

This definition of accessibility is expansive and inclusive, going far to remove the gatekeeping qualifiers of legalistic definitions of disability. The authors intend to braid together the current conversations around multilingualism and of disability studies in writing studies, and to provide recommendations and strategies for pedagogies that "embrace multilingualism, multimodality, and accessibility simultaneously" by "considering accessibility through intersectional and interdependent approaches that put language diversity and disability in conversation." They examine a few examples from both of their own lives and research–Gonzales being a scholar of multilingualism, and Butler being a disabilities scholar, both teaching as members of the communities they study. While the article focuses on writing studies pedagogy, which is a departure from research in accessible workplace technical communication, the principles of intersectional, interdependent accessibility resonate with the ethics of such research. In considering the classroom as a workplace, we understand that models of multilingualism, multimodality, and accessibility in the article are transferable to workplace accessibility, particularly within global organizations.

Accessibility and User Experience

Understanding the ways users access and then engage with technologies has been a central focus of technical communication scholarship. While the COVID-19 pandemic created an urgency for accessible digital course materials (and digital workplace materials), the need for such materials is not new. In Janine Butler's 2019 article, Perspectives of Deaf and Hard of Hearing Viewers of Captions," she begins by discussing the historical fight for accessible classrooms for deaf and hard of hearing (DHA) students, including a 2015 lawsuit filed by the Department of Justice against Harvard University and Massachusetts Institute of Technology (MIT) for violating the American Disabilities Act, Title III, with regards to captioning coursework.

In the article Butler discusses the results of a focus group study with 20 DHA student participants, discussing experiences with closed captioning. Butler's findings underscore the need for advocacy regarding closed captioning, and the listening required for accurately informed and effective advocacy. She notes, "Promoting awareness across communities requires skill in cooperating with others, especially considering how participants' stories reflected advocacy as a continual process through education, within and outside the classroom, advocates can work together to improve direct access to real-time and high-stakes situations." I read this exigence and her response to it as a call for and justification of, studying the accessibility of digital workplaces.

Huatong Sun's 2012 article, "*Cross-cultural technology design: Crafting culture-sensitive technology for local users*," written at the advent of the text messaging boom discusses the phenomenon of wide popularity in text messaging, given the disadvantages of the technology (low efficiency, clunky, etc.), taking a comparative look at the ways users' localized communication practices in the US and China. As she considers this phenomenon, she contends that "[u]sers are designers (Norman, 2004), who are actively redesigning, or—more accurately—localizing, an available technology to fit into their local contexts. In some sense, who knows users' local culture and contexts better than the users themselves do? Users might not be able to articulate those cultural and contextual factors well, but they know" what their needs are.tIn her later work, Sun outlines the need for "user engagement" as a sociotechnic practical approach to human centered technical design (Sun, 2019). She seeks to, "explore the engagement concept in the disciplines of professional communication and HCI against the backdrop of the practice turn [8]," and defines a practi[1]ce-based theoretical approach as, "a holistic approach of engaging with

---

[1] Black Feminist standpoint theory translates similarly to localized contexts in that it asks us to consider those most impacted.

and transforming the world through embodied activity, mediated by artifacts, based on shared understanding" (2019). Sun's relational approach to user experience, combined with her previous work on localized understanding of technology is well-aligned with the justice-oriented scholarship which is the foundation of my dissertation.

Like Sun's assertion that users engage with technology based on local contexts and access to technology, Yanni Alexander Loukissas argues in the book, *All Data are local: datasets and datasettings,* that data are best understood and utilized with the local context, or data setting, in mind (2019). He argues that "ways of inscribing data are always constrained by local conditions." Loukissas outlines six principles for researchers working with datasets: "1. all data are local 2. data have complex connections to place 3. data are collected from heterogeneous sources 4. data and algorithms are inextricably entangled 5. interfaces recontextualize data 6. data are indexes to local knowledge." In outlining these principles and recommended practices for engaging with local data, Loukissas presents examples from qualitative research on "data cultures," providing visual examples of data in localized contexts (2019).

Examples of Participatory Rhetoric in the Workplace

In his 2018 book, *Communicating Project Management: Participatory Rhetoric for Management Teams*, Ben Lauren posits project management as a rhetorical and compositional process, one that centers participatory action as a way to define and accomplish shared goals.[2] What strikes me most about Lauren's book is his focus on values-based, agential decisioning within project management and facilitation. For instance, in chapter 3, "Communicating to Make Space to Participation: Locating Agency in Project Communication," Lauren begins with a purpose driven statement: "Participation is co-constructed. When a project manager intends to

---

[2] I tend to agree with this framing, and think we separate tech comm, composition, and rhetoric moreso than we should. Tech comm is rhetorical and compositional.

make space for participation, they are acting as writers: deliberately communicating in ways that invite people to exercise their agency and to contribute to a team's collective success" (65). Here, Lauren highlights agency, participation, and–though he doesn't name it as such–accessibility.

Further, agency and accessibility–the way they are recognized, valued, and protected– are situated within social space. Lauren describes social space as,"the relationships produced (or made impossible or difficult to form) between people and ideas" to the workplace (68). While scholars have long discussed the role social space has in constructing and reifying power, hierarchy, and organizational values, Lauren discusses the extension of social space in digital environments. In our current widespread move to digital workspaces, we have a kairotic opportunity to integrate agential, accessible workspaces as rhetorical and compositional processes.

Koerber, Provencher, and Starkley (2021) extend Ben Lauren's discussion of participatory project management (2019) with a focus on the careful balance between technical knowledge and "soft skills" in their qualitative study, led by the guiding question:"Which communication skills facilitate effective leadership in the STEM professions, and why are these skills important?" They situate this question within technical communication discourse taken together with the longitudinal study of engineering communication, alongside Rottman, Sacks, and Reeve's discussion of leadership in engineering. Their finding that technical engineering training led members of the profession to consider soft skills, or "the human problem-solving skills of effective leadership" as incompatible with the work of engineers. The authors' study focuses on interviews with 15 participants broadly situated in STEM fields, some with management roles. Interview findings focus on leadership orientations to project management

30

alongside perceived leadership traits. As a practitioner in the field of cybersecurity, I've heard management in my workplace say that project managers cannot adequately understand technical teams well enough to manage them. With this understanding, I found the idea presented in the introduction of Koerber, Provencher, and Starkley, that STEM professionals may not see people-centered leadership as compatible with STEM work to be both relatable and compelling.

The title of Jason Swarts's 2019 article, "Technical communication is a Social Medium," suggests a definitional focus that puts the medium of technical communication in play with agential embodied social practice. Swarts builds upon previous conversations in the field with his claims that "including users in development can create insights about a product" as a generative and key aspect of technical communication. He goes on to outline arguments for including technical communicators as "curators, managers, and facilitators of technical knowledge, "and highlights the tension created when we call for technical communication management in technical user communities that continuously generate knowledge as practice, and less so as reflective. To understand this dynamic, the author takes up community and communities of practice literature, social construction theory, and conversation analysis to create a framework for thematic analysis of user conversations surrounding a 3D imaging product. He focuses specifically on conversations around user experience and related understandings of professional identity. A key finding from his analysis undergirds his argument that:

> This kind of quasi-professional technical communication could become a more deliberate practice with the influence of professional technical communicators. Technical communicators can recognize when participants are identifying and negotiating frames of experience and help nudge the conversation by connecting other relevant professional, technical, and social experiences. From this position, a professional technical communicator could recognize the potential for shaping the conversation to make shifts in footing more likely.

Swarts's theoretical framework and findings highlight the importance of considering participatory technical facilitation, and this framework could go a long way in understanding the accessibility of digital mediums and tools used in the workplace.

An Expansive look at Design Justice & Critical Technology Studies

Some definitions of social justice and accessibility fall outside of the realm of technical communication studies, but are still widely discussed and cited in the field. Two prominent examples are *Design Justice: Community-Led Practices to Build the Worlds We Need*, by Suzanne Constanze-Chock (2020), and *Race After Technology: Abolitonist Tools for the New Jim Code* by Ruja Benjamin (2019). Often acting as theoretical foundation and methodological inspiration, these texts provide historical, cultural studies and user experience frameworks for the social problems presented within the development and deployment of technology in our modern society.

In *Design Justice*, constanza-Chock incorporates disability justice tenets to reimagine the ways we may center all humans and bodies into design. Aptly titled, "Design Practices: Nothing About Us Without Us," The chapter begins with discussion of the "diversity, equity, and inclusion" issue in the tech sector by way of an anecdotal account of the memo titled "Google's Ideological Echo Chamber," circulated at the tech company and resulting in a frenzy of dialogue followed by a return to "normal." The story ultimately demonstrates the ways DEI is used to detract from normalized harmful practices central to tech industry workplaces. The author asserts, "Employment diversity is a necessary first move, but it is not the far horizon of collective liberation and ecological sustainability. The goal . . . is to spur our imaginations about how to move beyond a system of technology design largely organized around the reproduction of the

matrix of domination. In its place, we need to imagine how all aspects of design can be reorganized around human capabilities, collective liberation, and ecological sustainability."

Constanze-Chock goes on to discuss 1) the ways DEI contributes to capitalist profitability, 2) how imagining the user and asking "whose tech" leads to reimagined tech, and 3) the ways user-centered design[3] contributes to exclusion and must be reimagined. She outlines several user-centered design concepts, and draws out the silences apparent regarding race, class, gender and sexuality. A major aspect to consider is the information asymmetry that occurs between tech products and their users, a concept we see represented in both Sun and Constanze-Chock's work (78). I'm interested in how this concept translates between institutions' digital governance policy and the lived experiences of the workers expected to adhere to or oversee such governance and policy.

With these frameworks in mind, Costanza-Chock (2020) discusses the importance of participatory design and disability justice as practices and methodologies useful in addressing aforementioned gaps. She touches on a few key lessons design professionals can learn from the disability justice community regarding interdependence, centralizing community members most impacted by a design process, and moving toward institutionalizing community accountability and control mechanisms in design processes. Applying these frameworks to a particular instance

---

[3] While Costanza-Chock discusses limitations to user-centered design, a step further might be to engage with Human Centered Design (HCD) through the work of Don Norman, which "considers the human needs of system usership. The Journal of Technical Writing & Communication published a special issue on Human Centered Design in 2016. While HCD falls outside of the immediate scope of this dissertation, it would be beneficial in future research to explore the ways HCD might forward accessibility goals in the industry.

of design injustice in the tech industry could generate compelling questions alongside meaningful research design.

Ruja Benjamin's book, *Race After Technology: Abolitionist Tools for the New Jim Code*, begins with a historical and theoretical overview of the ways society, technology, and policy in the US have encoded racial biases (2019). Benjamin is specifically interested in the ways AI, surveillance, and algorithms perpetuate criminalization and control of Black citizens through what she refers to as the "New Jim Code." She defines the New Jim Code as "the employment of new technologies that reflect and reproduce existing inequities but that are promoted or perceived as more objective or progressive than the discriminatory systems of a previous era." The next three chapters explore the presence of racial bias in technological cultural artifacts alongside elements of the new Jim Code: visibility, technological benevolence of AI and tech design, What is privacy for already exposed people in the age of big data? For oppressed people, I think privacy is not only about protecting some things from view, but also about what is strategically exposed (127). While Benjamin does not focus on disability justice in the book, the frames she uses easily transfer to questions of disability justice. For instance, I can ask: how does automation impact disabled users in the workplace, and in what ways do the interlocking forces of oppression target race, geographic location, and disability together to impact workers in digital spaces? Similarly, many of the populations she describes also contain disabled individuals; expanding her work to think about how the social problems she outlines impact disabled people will only prove to better serve those she seeks to empower.

Access/ibility in Workplace Settings: Practitioner Research

The ongoing conversation surrounding workspace realities since the advent of the COVID-19 era has been fraught with conflicting interests and inverted priorities as remote work-from-home structures became the norm. An element of particular interest in the conversation is the shift toward universally accessible practices long advocated for by disability justice groups. The tagline of GovTech article written by Noelle Knoll (2021, web) reads, "The shift to remote work has meant tools once pitched as "reasonable accommodations" for people with disabilities are now mainstream. That opens up a previously underutilized hiring group for state and local government." The tagline is one that suggests a connection between the way capitalism exploits and the way business models often ultimately adapt for their own interests and not those of their workers. With this understanding in mind, I read the article as a rhetorically strong argument advocating for disabled workers through a deep understanding of the motivations of government workplace toward effective and compliant workplace models. Citing American Disability Association (ADA) accommodation policy, the author discusses the glaring fact that work from home was not considered a reasonable accommodation for disabled people under the ADA prior to the COVID-19 pandemic, and how the creation of new infrastructure and commonplaces may change that going forward. The author also gives voice to advocacy groups, such as RespectAbility, and their understanding of connective tissue between workplace and technology development and subsequent development's impacts upon accessible remote workplaces.

In their article written during early COVID-19 workplace reconfiguration, Disability:IN, "the leading nonprofit resource for business disability inclusion worldwide," centers the needs of disabled workers in corporate settings in cooperation with their network of over 400 corporations (2020, web). The nonprofit seeks to "expand opportunities for people with disabilities across

enterprises." As part of their series on COVID-19 and accessibility, the group provides the following statement:

> "Disability:IN and our Accessibility Leadership Committee recognize that digital accessibility is crucial to the success of every diversity and inclusion initiative. The sudden switch to remote work due to the global coronavirus pandemic has highlighted the importance of digital accessibility at work – wherever that work takes place."

They go on to provide a long list of action items for companies and managers interested in advancing digital accessibility and inclusion in the workplace. Taken together with critical disability and technical communication scholarship, understanding advocacy efforts surrounding accessibility in professional settings provides opportunities for highlighting industry best practices and anticipating needs going forward.

Neurodiversity is another emerging focus among Diversity, Equity, and Inclusion teams. As discussed in chapter 4, NICE plenary speaker Dr Elizabeth Kolmstetter, Chief People Officer, Cybersecurity & Information Security Agency (CISA), discusses the agency's recent initiative toward a Neurodiverse Employee Resource Group. Interview participants, as outlined in chapter 5, also mention neurodiversity in the workplace as an access issue. The Eagle Hill Consulting Group's recent report, "Neurodiversity in the Workplace: Are Employers Overlooking their Highly Capable Neurodivergent Employees when Creating Conditions for Success?" (2024) claims that only 19% of surveyed technical professionals know whether their DEI program includes a neurodiversity element. 20% know there is not one, and 44% are unaware. This lack of awareness is a key barrier to retention and growth for neurodiverse employees (Eagle Hill, 2024). Awareness through culturally focused programming and employee centered solutioning, as will be discussed in chapter 6, is a key element for accessible and inclusive workforce development.

Critical Disability Studies, Feminisms, and Black Feminist Thought

In the previous sections of the chapter, I discussed lines of thought within technical communication scholarship focused on accessibility and justice, as well as an overview of industry conversations focused on accessibility. With an understanding of these conversations in mind, I will provide an overview of intersectional feminist and critical disability scholarship that informs the values of my research. Intersectionality, as described by Patricia Hill-Collins, centers Black women's experience based knowledges, which are informed by social power structures and collective ideas about Black women, and how they are treated as an extension of systemic norms (2000, 2009). This experience based knowledge leads to a consciousness situated in collective Black Women's experience, also referred to as Black womans' collective standpoint (27). Black feminism is centered in Black Women's experience, and group standpoints are situated in, reflect, and help shape unjust power relations**,** based on dynamic positionalites. (Collins 1998) Collins notes that Black feminist thought must be "tied to Black women's lived experiences and aim to better those experiences in some fashion' (35).While Black feminism centers Black women's experience, it can be leveraged by anyone, and serves to include a diverse range of people with unique needs. As Collins explains:

> At first glance, these connections between black feminist practice and Black feminist thought might suggest that only African-American women can participate in the production of Black Feminist thought and that only Black women's experiences can form the content of that thought. But this model of Black feminism is undermined as a critical perspective by being dependent on those that are biologically Black and female. Exclusionary definitions of Black feminism which confine Black feminist criticism to black womens critics of black women artists depicting black women " (Carby 87, 9) are inadequate because they are inherently separatist. Instead, the connections here aim for autonomy. (pg 37)

In heterogeneous institutions and spaces, a Black feminist approach can be used by everyone and can include everyone, but must intentionally consider how systems and practices impact the least

advantaged members of a community, particularly Black women, through the critique of power structures. As a white woman researcher aiming to critique cybersecurity workforce development, I must consider what the work does to provide tools of empowerment to all cybersecurity professionals, but particularly those with the greatest need for accommodation. Collins also underscores the need to recognize the diversity within the Black feminist movement.

Critical Disability Studies

Mia Mingus, a prominent disability justice activist and advocate promotes access intimacy as a way of relating to and with disabled community members. She explains, "access intimacy is a term used to describe the moments when a person 'gets' your access needs. It's the process of being seen and attended to in a way that is not procedural or imbalanced in power–it's a human connection at work" (2011). Mia Mingus writes in her blog, *Leaving Evidence*, of access intimacy as a person with physical disabilities, but notes that it likely occurs for various people with differing access needs from physical disability to cognitive impairment to parents of small children or people with no money for lunch that day.

Access intimacy, if applied as a framework, has the potential to take ADA style access from procedural and compliance-focused to holistic and part of team and community building facilitation work. Furthermore, this framework reflects the coalition-building work of Jones et al. In Tech Comm After the Social Justice Turn, the authors make a point that while social justice initiatives make administrative meetings and taglines, there are still meetings at kid pick-up time, and so access isnt a reality. This is an example of a lack of access intimacy in the workplace (2011). Access intimacy informs the abolitionist principles of *Care Work: Dreaming Disability Justice (2018), Emergent Strategy (2017)*, and *Race After Technology* (2019) out of theory and

into practice in an accessible way. Access intimacy can be compatible with and practiced in corporate workplace cultures alongside a variety of methods and strategies..

In *Care Work : Dreaming Disability Justice*, Leah Lakshmi Piepzna-Samarasinha describes her project as a "mapping of access as radical love." (2018). Care work is a tenet of disability justice and radical movement work present in other writers on the topic. Pieppzna-Samarashinha's collection of essays centers queer, disabled, economically disadvantaged, Black and Brown communities and people, demonstrating ways of being within these communities and highlighting their contributions (even in their failures) to disability justice and communities of care.

Of particular interest to me is the chapter titled, "Care webs: Experiments in creating collective access." In this essay, the author asks, "What does it mean to shift our ideas of access and care (whether its disability, childcare, economic access, or many more) from an individual chore, an unfortunate cost of having an unfortunate body, to a collective responsibility that's maybe even deeply joyful?" This question buts up against more regulatory approaches to access, which focus on ADA compliance. I would like to stay with the trouble these two, together, cause. It draws out another question: is it possible to create true communities of care in corporate environments which are, at their foundation, capitalist institutions grounded in prioritizing profit and efficiency?

Allison Kafer's book, *Feminist, Queer, Crip* (2013), provides a political and theoretical framework for both understanding what disabled people and their embodiments are, can be, and have been, and how disabled people and communities (can) interface with a world of "compulsory able-bodiedness." The book takes an intersectional approach, expanding theories such as queer time, and cyborg theory, and reproductive justice to include dis/abiity justice

theory and practice. Of particular interest to my research is chapter 7, "Accessible Futures,

Future Coalitions," in which Kafer discusses a participatory activist project undertaken in a

course she facilitates. In the course, she asks her students the following guiding questions:

> If disability is everywhere…once you begin looking for it, where do we, as disability studies scholars and activists continue not to look? . . .in which theories and movements do we recognize ourselves, or recognize disability , and which theories and movements do we continue to see as separate from or tangential to disability studies?

She goes on to discuss the important possibility of cross-movement work, which is a

foundational methodology in her text. In all previous chapters, she discusses the silences in

foundational queer and feminist texts, and in her final chapter (chapter 7) she demonstrates this

as a potentially transformative methodology, particularly when combined with the interrogation

of 1) rights and 2) social space. She provides an example of this cross-movement, mixed

methods approach through her course project, PISSAR (People in Search of Safe and Accessible

Restrooms) in which students at UC Santa Barbara created a checklist for accessible restrooms

focused on gender and disability. The checklist invokes ADA requirements, as well as gender

inclusion criteria specified by Trans* activists.

Taking up the text's feminist methodology of uncovering silences in the literature, as well

as the example of PISSARs intersectional approach to surveying accessible space could prove

useful to tech comm scholars interested in focusing on policy and governance as it relates to

accessibility. Doing so could expand the field's intersectional orientation to creating accessible

workspaces in technical fields, which largely dismiss conversations around accessibility.

On Space, Place, and Intersectional Approaches to Workplaces

With an established understanding of the need for accessibility in technical fields, and an

sociotechnic practical approach (Sun) situated in critical disability and Black feminist

approaches to community problem solving, I argue a need for coalitional thirdspace for creating accessible career pathways in technical communication. The idea of contextually appropriate positionality is no doubt covered in technical communication scholarship previously discussed in the chapter. For instance, in *Technical Communication after the Social Justice Turn* (2019) Walton, Moore, and Jones discuss the necessity in defining justice not as universal and independent but situated within a "relevant social context" by "evaluating the social institutions which affect our lives" and addressing issues of oppression through appropriate justice methodologies: distributive, transitional, restorative, etc." (5, 33-34). While the authors describe understanding context and social institutions as important to justice seeking, they only briefly touch on these concepts.

Positionality, one of the 3Ps, is described as fluid and situational. The authors argue that "being a young black woman in rural Georgia in the 1990s differs from what it means to be a Black, gay man in Harlem in 1910" (2019). Considering place/space context serves to build upon the foundation of the 3Ps, particularly positionality, by extending the framework to operate in contexts that require adjacent/third space as sites of negotiation. Nedra Reynolds, *In Geographies of Writing: Inhabiting Places, Encountering Difference,* asks of our academic discipline, "How do people experience space, and what might that tell us about how they experience other forms of the social world . . . cultural and material theories of discourse? What do "sense of place," pathways, habits, or dwelling have to do [with]learning?" (2003). In our digitized yet embodied world, technical communication is a central part of the places and spaces we inhabit. Explicit discussion of place/space provides deeper insight into power, positionality, and privilege which are dynamic embodied elements of identity. Before outlining such an

approach more precisely, I must first do the work of defining thirdspace as previously understood.

The concept of thirdspace as conceptualized in this dissertation was originally purported by Edward J. Soja, a scholar of urbanism and human geography with postmodernism-adjacent frames,and critiques of the "violent accelerations" associated with technology and development in late capitalist societies. According to Soja, thirdspace is a place of possibility that emerges when first- and secondspace fail us, "and where alternatives (that can appear chaotic by previous standards) begin" (1989). Heavily influenced by Lefebvre and deCerteau, Soja was also influenced by the writing of fellow social theorists such as Gloria Anzaldúa, bell hooks (1989), and Homi Bhabha" (Bloch and Brasdefer, 2023). Of interest to this dissertation is the connection between Soja's idea of third space and bell hooks' work in "Choosing the Margin as a Space of Radical Openness" (1989), in which she says, "As a radical standpoint, perspective, position, "the politics of locationality calls those of us who would participate in the formation of counter cultural practice to identify the spaces where we begin revision." It is the intentional space identification in Soja's work of revising norms, though that makes his work radical. For instance, Human geographers Bloch and Brasdefer discuss the citation choices made by Soja in the epigraph of his 2010 book, *Seeking Spatial Justice*, in which he chose to cite MLKs "Letter from a Birmingham Jail," instead of foundational spatial and social theorists like Michel de Certeau. This act of citation decentralizes the theoretical lineage and reflects the multiplicity of effort justice requires.

Nedra Reynolds' book (2003), discussed above, takes up the concept of thirdspace as utilized in cultural geography fieldwork and composition service learning, arguing for a reflective observation of the impacts of thirdspace when utilized as a way to experience

42

difference. She argues against the use of thirdspace as passive engagement with outside communities: "an appreciation of difference" is not enough— cultivating such appreciation does little to interest students or residents in activism or social change" (2003). Utilizing thirdspace within communities as a means for negotiating margins of maneuverability and navigating or subverting institutional histories, norms, and logics which otherwise serve to prevent change. Similarly, Walton, Moore, and Jones argue that the 4Rs framework is only useful if enacted fully. Merely recognizing injustice does nothing to change it (2019). Taken together, Reynolds' work on thirdspace and Walton, Moore, and Jones' frameworks for social justice in technical communication provide new considerations for space-based action for change.

Composition scholars Rhonda Grego and Nancy Thompson, in their book *Teaching/Writing in Third Spaces: The Studio Approach 2007)(*, expands the definition of thirdspace with a more practical framing of the term: "There are times when we are compelled to deal with home matters, to turn the light of our critical faculties on the particular mix of those flows, forces, and tensions within our own compositional places/spaces, when being forced to face our location can help us better see our situations.". The authors' description is helpful in understanding how our locations inform our margins of maneuverability within institutions as we determine how technical communication can inform the infosec industry toward ethical and just practices; after all, workplaces, user interfaces, system architectures, and mobile data, all happen in particular locations with institutional and structural systems and histories. Particularly spaces which limit users and practitioners due to access or identity need a dedicated space to attend to navigating those obstacles.

Loukissas, discussed in a previous section of this chapter, argues that large bodies of data pulled from disparate locations often lose their local contexts during synthesis. But what happens

43

when data from different institutions are brought together? How might we jointly hold or reconcile their incongruous place attachments?" (2019). These incongruous place attachments contain institutional histories, power relations, and experiences of people of varied positionalities. As Collins (2000, 2009) and Walton, Moore, and Jones (2019) discuss positionality in their work, they often use space and place as a contextual factor impacting positionality dynamics. Loukissas's work focuses on the power of the local for making meaning, and thus shaping realities, much like Soja's illustration of de/centralized city planners' impacts upon people living in cities.

As the following chapters of the dissertation will demonstrate, cybersecurity policy and standards tend to work from a centralized focus outward (much like old cities). However, in practice the profession is more rhizomatic (like LA) and decentralized. Further, its education epicenters tend to come from a position of centrality. This parallel between Soja's extended metaphor of the city and the tension between cybersecurity policy and practitioner need provides the justification for looking at thirdspace as a response. Taken together, Soja's work and the work of critical disability and Black feminist scholars share the aim of privileging pockets of community and building coalitional knowledge for change.

Rapid covid-era shifts toward hybrid space in academic and industry contexts have had the potential for thirdspace innovation. As academic institutional precarity increases and as we see a governmentally recognized talent gap in cybersecurity, there is an opportunity for thirdspace to operate as a site of translation and knowledge building. For instance, within thirdspace academia can inform industry toward more just practices.

Methodological Implications

This chapter outlined the ways in which tech comm explicitly and implicitly defines disability

and accessibility, and the potential for the technical communication discipline to further address access needs, I have noted scholarship with methodologies that may serve the pathways I imagine for equitable and praxis-driven disability justice scholarship in technical communication. Some of these methodologies come from the discipline. I've also noted that more work needs to be done to incorporate industry knowledge as valuable for informing technical communications scholarship. Likewise, I've underscored how technical communication scholarship focused on the practical importance of justice and equity can serve as a purposeful and beneficial theoretical grounding for practitioner research.

Chapter 3: Reflexive, Justice-Based Theoretical and Methodological Frameworks Methodology

A methodology for defining and designing accessible career pathways in cybersecurity takes up theories of accessibility, inclusion, and practices toward social justice in technical communication (Benjamin, 2019; Haywood, 2018; Walton, Moore, and Jones, 2019) and applies them through community-centered practices (Costanza-Chock, 2020; Gonzales, 2017). It considers the voices of people within the community across hierarchy, and allows for member-checking, co-creation, and messiness. It is not quick research, because research that shapes change must not foreground efficiency. My research seeks to work in-process and reflexively, to both ask questions of community partners, and to ask them what the questions should be.

This chapter will focus on the work of not only recognizing the problem of access in information security, but in attending to tensions between business logics, representational Diversity, Equity, and Inclusion (DEI) efforts, and community care through methodological frameworks for coalitional possibilities (Walton, Moore, and Jones, 2016). First, I will provide a brief review of previous chapters in order to frame the metho/ology outlined over the course of this chapter. Next, I will discuss the importance of story to the dissertation research; outline the grounded theory methodologies further discussed in chapter four; discuss the ways in which findings from grounded theory analysis inform methods used in semi-structured interviews. From there, I will frame the methodology toward upcoming chapters.

I chose to weave cultural rhetorics, Black feminist standpoint theory, and empirical methodologies together in my research, because this weaving together mirrors the realities of our lived experiences as people from varied cultural backgrounds, languages, and stories, people who must carry our whole selves into the prescriptive and pervasive nature of big data and business interests. I decided on this approach as I listened to Zachary Oxendine, a plenary

speaker at the National Institute for Cybersecurity Education (NICE) conference whose personal stories drove the calls to action in his talk. Oxendine's positionality statements, origins stories (shared in greater detail later in this chapter), and focus on prioritizing the uplift of others were powerful—and his reach as a keynote speaker at a national tech conference was possible because he is good at his job as a program manager at Microsoft. He lives intentionally in both worlds. I hope my dissertation will do the same. I began the dissertation discussing my positionality, storied from my standpoint as a queer veteran woman, researcher, and information security practitioner, situating my power, positionality, and privilege as it exists in coalition with others in both worlds, and as it impacts my personal experience and relationship with the topic of my dissertation.

In chapter two, I discuss the frameworks I use to approach socially just rhetorical work: standpoint feminism, coalitional disability scholarship, cultural rhetorics, and the work of technical communications scholars. It should not be lost on the audience that much of this work is taken on, attended to, and built by Black, Indigenous, and People of Color (BIPOC) women across disciplines. The idea of storytelling as a tool for socially just rhetorical work is well established in the field, and scholars come to this work using various, sometimes entwined, scholarly traditions. While storying is key to many of these scholarly traditions, I underscore Cultural Rhetorics here, as it is perhaps the most well-known rhetorical tradition for its explicit use of story as methodology. A cultural rhetorics storytelling methodology is rooted in decolonial methodologies with a focus on mentoring, constellating community, and reclaiming indigenous making and storying practices (Powell, 2014).

Others in the field rely on a sociocultural lens, rooted in or adjacent to traditional academic qualitative research methods. Julie Lindquist, in her article "Time to Grow Them:

Practicing Slow Research in a Fast Field," discusses the slow process of community-based narrative research and the many factors that might slow such research down: funding, longitudinal analysis, and—perhaps most important to this essay—the slow process of trust-building necessary for genuine partnership with community members (2012). Lindquist discusses elements of her research project *LiteracyCorp Michigan* that ensured community agency in the project. Phenomenological film narratives, in which participants used video cameras to collect data about their lives, was a key component of the project, for thorough collection and increased agency of collection in the participants (2012). Both of these storying traditions have made important contributions to the field, and at particular moments, I as a lover of narrative am drawn to both of them. But I struggled to find a way to articulate my hopes for storytelling and big data research using either of these methods (at least, in this particular research which holds the goal of articulating such a methodology). And while Lindquist's work serves to tell the story of another person's experience, it remains detached from the subject and maintains researcher authority, taking on a different epistemological lens than that of feminist standpoint theory. My research seeks to integrate frameworks in a way that privileges multiple experiences; much of my values-based approach is informed by Black Feminist theory (Crenshaw, 2005; Haywood, 2018)

In my academic and industry experience, I have begun to really hone in on the need to use storytelling in spaces traditionally reliant upon big data research to resist and revise the disembodied nature of such research, which always impacts humans navigating physical space. Further, storytelling may have the translational power to bridge mistranslations between business logics founded in policy, and the cultural and holistic needs of people with intersectional experiences of power and oppression (Mendoza, Haywood, Pouncil, and Kang, 2024). In

chapters four and five, I highlight instances in which conference participants and interview participants use story to convey messages about the need for accessibility in cybersecurity workforce development.

Focus on the disjuncture between technology and human living isn't new, by any means. Artists like Liberty Russell of Glitch Feminism have been storytelling by way of the digital medium of art that seeks to interrogate this very thing, placing pressure upon social assumptions around the binary nature of digital and physical worlds. Still, I ask myself what it would look like to have a research method predicated on an ethos around understanding the way big data researchers engage with the digital as embodied subject interfacing with community and business stakeholders through big data analysis. Researchers impact and are impacted by the research process as well as its outcomes. My strategic storying in the beginning of my dissertation speaks to this interplay a bit. I am grateful for two scholarly works which guided me toward a better understanding: 1) Ruja Benjamin's (2019) call to interrogate the language of Big Data, and 2) Devika Chawla's essay, "Between Stories and Theories: Embodiments, Disembodiments, and Other Struggles."

In her article, "Between Stories and Theories Embodiments, Disembodiments, and Other Struggles," Devika Chawla textually engages with the ways in which her stories and those of her family, who were displaced after the Pakistan/India partition, hold tension with theories often in critiques of narrative texts such as novels and films (2011). She discussed her experiences within academia as a first generation learner with deeply instilled storying practices that, at times, misalign with academic theories of narrative criticism, creating a disruption in her ability to engage with the material. At other times, her sensitivity to stories, from a place of situated knowledge, provides insights inaccessible through formal theoretical approaches. She describes

the ways in which, over time, both story and theory have become a part of her, that "looking back, and looking ahead" are part of her process. Chawla's sensibilities around navigating story and theory have felt like a gift(ed) framework through which I can trouble the ways I am, and others are, caught between story and data in their research. I am only just beginning to really understand the connection enough to articulate it, but the promise it holds for me is a comfort, and my instincts say, "follow this thread." And I do, I weave it in and out of my analysis, as my participants and the artifacts left by conference presenters weave their stories into their work.

From initial bounded storytelling, I expand outward with a view of the information security field from early COVID onward, identifying an exigence–the industry wide recognition of an increasingly problematic information security talent gap, intersecting with the accessibility conversations at play in remote/hybrid/in-person work discussions– and situating my research question(s) within today's professional environment. I continue to expand focus upon national discourse, specifically in the ways government initiatives seek to address the exigence at one national conference. The spiraling iterative nature of the research-–from personal story to an exigence based within the information security industry approached with a reflexive interactive approach to discourse analysis– guided by frameworks rooted in Black Feminisms and critical disability studies results in a methodology that can span the personal, the national narrative, and back again, culminating in in-depth narrative interviews and coalitional talking circles.

I carry my stories and my understanding of an exigence with me to the National Institute of Cybersecurity Education Conference, listening to members of the field attend to the central theme: "Resetting Expectations: Recreating Accessible Cybersecurity Pathways." I make notes of each presentation title, and annotate all conference materials, as well as the Whova application's NICE conference pages.

Grounded Theory and Analysis of Language as Social and Rhetorical

Grounded theory is a widely used qualitative method across disciplines interested in psycho-social dynamics. The originators of grounded theory qualitative research defined it as 'the discovery of theory from data – systematically obtained and analyzed in social research' (Glaser and Strauss, 1967). More recently, critical grounded theory research has been proposed as a way to drive social change, raise consciousness, and work against forces of oppression (Levitt, 2021).

Grounded theory research, when done well, avoids such bias through systematic reflexivity, generating an understanding of concepts, and following emergent threads between concepts. Grounded theory is iterative, and selective coding involves consistent returns to outcomes of previous iterations of open and selective coding in order to ensure themes do not drift. Creswell (1998) suggests the resulting theory can be presented as narrative (story) or as a set of propositions (action items). The reflexive nature of grounded theory research, as well as its inherent focus on narrative and call to action are compatible with the ethics of cultural rhetoric and justice-based technical communication scholarship.

There are, however, some shortcomings in grounded theory research, particularly situated within foci on power and positionality, and in the ways meaning may be hidden or shared based on the interests of those with more or less power Thus, participants of grounded theory research may not be willing or able to vocalize the elements of data that would provide the richest understanding of sociocultural dynamics related to a social phenomenon. Levitt, a grounded theory researcher in the field of psychology, discusses some of these shortcomings before proposing a "critical constructivist" grounded theory research method within psychological, interpersonal, and sociocultural research. As Levitt (2021) explains, "constructivist researchers

examine their dialogue to learn about their participants and their interpersonal systems . . . how meaning is constructed interpersonally, identifying both those processes and the meanings themselves to develop a deeper understanding of a phenomenon." As a scholar interested in foregrounding the intellectual authority of subjective experience, I find Levitt's approach to grounded theory important in ensuring equitable research.

Levitt also underscores the common approach in constructivist grounded theory researchers to co-create meaning with participants. This methodological approach to research is similar to mentoring ethics in cultural rhetorics and in coalitional justice-based technical communication research (Powell et. al, 2014; Walton, Moore, and Jones, 2019). Levitt describes critical researchers as "engage[d] in inquiry to promote liberation, transformation, consciousness raising, and social change," again driving research orientations beyond recognizing and questioning dynamics of power in social situations, but toward refusal and replacement of oppressive institutional practices (2021). She aligns with feminist standpoint theories as she describes the need to forefront and privilege experiences at the margins of discourse around social issues. She discusses the importance of considering positionality, power, and political contexts important to research participants, discussing the need for iterative self-reflection and reflexivity as a mitigation effort against hazards of researcher expectations and perspectives. With this in mind, I conduct self-reflective writing sessions prior to interviews and afterward in the form of memos. I also return to the questions asked and reflexively adapt as needed based on interviewee feedback. Given my focus on accessibility and psychological safety within the workplace, Levitt's approach to grounded theory research compliments those researchers in rhetoric, writing, and technical communication with whom I seek to build meaning.

Methods: Discourse analysis of 2023 NICE Conference

Data collection for discourse analysis occurred in three key sites: 1) the Whova Application's program, 2) transcribed keynote speaker presentation titles, and 3) presentation materials for one selected program (the only one that directly addressed dis/ability). In order to capture thematic content across conference presentations, titles were analyzed as the first objects of analysis. Presentation titles account for only small bits of text but they hold a high rhetorical impact because, in my experience, session titles tend to inform and persuade conference attendees where to go. Plenary speaker sessions were analyzed as high profile moments designed to reflect key frameworks supported by conference organizers and reflective of NIST / NICE strategic plans. These presenters represent key players in the field, and are themselves high profile industry leaders. Selected presentation materials serve as: 1) close reading and thematic analysis of a presentation closely aligned with the conference theme, and 2) an opportunity to highlight a major gap in the conference discussions as a whole, as analysis quickly made apparent an overall absence in a focus on accessibility among conference presenters.

Discourse analysis consists of the three main objects of analysis:

1. Conference Overview: grounded theory analysis of artifacts from online portions of conference (a layer of this is that it shows how people unavailable to attend in person have a limited view)

2. Case studies: Corporate Communication and Story (comparing the keynotes)

3. Interviews: five in-depth open-ended interviews with cybersecurity professionals

Methods: Thematic Analysis: Conference Program & Presentations

In the Whova App, all conference presentations are listed under the Agenda tab in the bottom control pane. Sessions are listed by day and time, are searchable, and can be added to a custom "My Agenda" subsection of the Agenda tab.

Initial coding of the conference program consisted of a review of all 40 conference titles listed in the "Full Agenda" section of the Whova application. Initial open coding led to the discovery of 10 codes. The following table provides a breakdown of all conference presentation titles categorized thematically. For the purposes of this research, all references to the thematic terms assume the aforementioned definitions.

Table 2. Thematic Analysis: Conference Program Themes

Workforce Development (n=5)
Addressing the Cybersecurity Shortage through Upskilling and Reskilling
Cybersecurity Experts Growing on Trees? Yes, Ask your Plumber
Upskill and Retain Employees through Cyber Competitions and Exercises
Lessons from a US-Ireland Collaboration in Workforce Development
Trait-based Cybersecurity Career Pathways; Globally Scaled Non-traditional Routes into Cybersecurity
Disability (n=1)
Cybersecurity Workforce Can Come from Unexpected Sources: Students with Disabilities
Diversity, Equity, and Inclusion (n=5)
Increasing Diversity and Inclusivity in the Cyber Talent Pipeline
The Power of Diversity: Building a Stronger Workforce with Women in Cybersecurity

Table 2 (cont'd)

Bringing Equity to Cybersecurity with Grant-Funded Resources
Diversity and Inclusion: A Priority of NICE's Strategic Plan
Privacy, Equity, and the Cybersecurity Landscape
Pedagogy (n=9)
Using VR to Teach Cybersecurity Concepts
ORTSOC: A Clinical Rotations Approach to Professional Cybersecurity Education
Preparing Middle Schoolers for the Cybersecurity Workfors
Cybersecurity Clinics: Training the Next Generation of Cyber Defenders
Knocking Down the Barrier of Access to High School Cybrsecurity
Cybersecurity Resources for Non-Cybersecurity Classrooms
A holistic Approach to conducting a cybersecurity capstone course
Novel Approaches to Cybersecurity Education and Workforce Development
Public Sector Security Cyber Education SYstem - Preparing Students
Gamification (n=5)
Expanding the Next Generation's Skill Development: Using Gamification for Cyber Learning
Cyber Gaming, Career Maps and Regional Clinics, Oh My!
Cybersecurity Playable Case Studies
Playing NICE: Sharing Alternative Learning Experience
Resetting Thruways and Participation with Open Badges and Socio-Political Uncertainties
Human Resources (n=4)
How Educators, Hiring Mgrs, and Others Work w HR professions in Strengthening the Cybersecurity Workforce

Table 2 (cont'd)

Rethinking Government Hiring
Dating your Hire: Can the NICE Framework Solve the Government's Assessment Problem?
Fixing the Gaps in the Cyber Workforce
Neuro-inclusion Principles for the Manager, Team Member, and HR/DEI Professional
National Standards (n=2)
The UKs Journey to Standardising the Cyber Profession
Community & Collaboration (n=7)
The 502 Project : Facilitating Community in the Cybersecurity Workforce Pipeline (Nathan Fish, Asst Prof of Cybersecurity Education, USF)
Philanthropic Efforts in Cybersecurity
Innovative Public Sector and Higher Education Collaborations Addressing Talent Crisis (Public Sector + Academia Partnership Preso)
Developing the Next Generation of Diverse Cybersecurity Professionals Through Multi-Organizational Partnership
Leveraging the Value of Alumni to Build Pathways to Employment
Working Together to Widen Cybersecurity Career Paths through Experiential Learning
Building Bridges, Connecting Marketing and Workforce Development to Cybersecurity Programs
Philosophy (n=1)
Building Momentum Begins with Belief

Following grounded theory methodology's recommended practice of further clustering themes via secondary coding as a way of cross-examining proper thematic placement and finding connections between themes, I further distilled the original ten codes down to six central codes:

1. Workforce Development: Workforce development, broadly defined, is an interrelated set of solutions designed to meet employment needs. Workforce development promotes employment using a reciprocal approach of addressing the needs of both job seekers and employers.

2. Disability: The Centers for Disease Control defines disability as any condition of the body or mind (impairment) that makes it more difficult for the person with the condition to do certain activities (activity limitation) and interact with the world around them

3. Pedagogy: the method and practice of teaching, especially as an academic subject or theoretical concept. (m-w)

4. Gamification: the application of typical elements of game playing (e.g. point scoring, competition with others, rules of play) to other areas of activity, typically as an online marketing technique to encourage engagement with a product or service. (oxford language)

5. Human Resources: the department of a business or organization that deals with the hiring, administration, and training of personnel (oxford language)

   a. Including DEI and Belonging

6. Community and collaboration: "a ground of people who share a set of common values, beliefs, and practices, and who engage in ongoing dialogue and collaboration and enact change within their shared cultural context" (Royster and Kirsch, 2016).

Secondary coding also revealed connections between pedagogy and workforce development. While workforce development was not a theme directly identified in initial coding, reskilling and upskilling was.

In the interest of further developing themes, I reviewed the codes, frequency of occurrence for each code, and the relevance of the codes to the topic of accessibility in the field. In codes with infrequent occurrences, I used my knowledge of the conference and industry to identify the significance and connection of each code. For instance, the presentation "Momentum Begins with Belief " is the only topic falling within "philosophy" as a code. Similarly, "Cybersecurity Workforce Can Come from Unfamiliar Places: Students with Disabilities" is the only conference presentation focused on disability, a topic directly related to the main theme of the conference. Deconstructing the absence of such content in the conference is key to understanding the broad level of engagement with accessibility among cybersecurity practitioners.

Of significance during secondary coding, and in comparing presentation themes to themes within the plenary speakers' discussions, was the concept of community. Six presentation titles focused on community & collaboration. Likewise, plenary speakers mentioned community and collaboration in all plenary sessions. Community and collaboration shares thematic connections with gamification as used in the cybersecurity industry.

Methods: Community Focused Interviews

After identifying key themes using grounded theory analysis, I narrow the scope again, observing these themes more closely in conversations with members of my professional community. In selecting participants, I chose some (n=3) members of the community I have come to know over my years in the industry. Some are people I have worked with, while others work in cybersecurity but are people I know from community involvement efforts and poetry scenes in Ohio. One participant asked if I should select participants I do not personally know, in order to avoid bias and conflict of interest. While I take conflict of interest seriously, and

selected participants intentionally in order to avoid posing such a conflict, my decision to engage with a community I am familiar with is an intentional decision grounded in cultural rhetorics scholarship and standpoint feminist theory (Powell, 2014; Collins, 2000, 2009). To provide balance in terms of familiarity and demographics, I selected the remaining of the participants (n=3) based on participant referrals using the snowball method. Two participants are white men I do not know and with whom I have never worked. One participant is a Black woman who attended the NICE conference and is a top contributor to Whova content associated with the conference. I approach my work as centered in values-based community building praxis, starting with a foundation-building session focused on defining values and guiding principles for the work participants and I will conduct together. In doing so, I first and foremost take an overt approach to making the values foundational to my research apparent to participants. I do so in creating an intro segment to the interview:

1. check ins/access needs
2. summarize research and research goals
3. discuss values of the research

From here, I approach each interview session as a conversation between colleagues, loosely set within three major themes: 1) participant positionality: storying industry experience 2) accessibility 3) discussion of key thematic findings of the NICE conference. The conference was designed with the following guiding questions in mind:

> As the digital workforce expands and information security workforce shortages reach critical levels, how do educators, recruiters, and professionals conceptualize and communicate accessible cybersecurity career pathways? How can critical technical communications scholarship on accessibility inform pedagogical methodologies toward a more equitable information security workforce?

Each participant approached the discussion differently, requiring a reflexive recentering of values and foci. I intentionally affirmed experiences and insights, following the participants' lead as they brought insight grounded within their personal standpoints. Throughout the interview sessions, I reflexively returned to themes the participants mentioned over the course of the discussion. After the discussions, I went back to the interview script to look for ways I might adjust the guiding questions based on feedback from participants.

After I conducted the first three interviews, I began coding the interviews in two ways: first, I reviewed each transcript with the codes identified in the NICE conference and highlighted the codes accordingly. Next, I coded the interviews independently of those codes to look for any new themes that might have emerged in conversations with the participants.

Final thoughts on Methodology: Analyzing data in community

I am interested in big data as it impacts communities. Everything we do, we do in community. The "language of big data" can be alienating and disembodying, working to separate content from community. In my career as an intelligence analyst, and cybersecurity analyst, I've been around big data language quite a bit as it is put into practice, and I have found a function of such language to be the degree of separation it provides between analyst and subject of analysis. In this context, the language can serve to separate the analyst from ethical questions that would inhibit efficiency. Similarly, If we are not careful as researchers, we run the same risk of neutralizing topics and pulling them out of their material contexts, thus overlooking the safety of impacted communities as well as a misunderstanding of their needs or goals (should they be given the chance to articulate them). This chapter provided an overview of the ways in which Black feminist theory and Cultural Rhetorics approaches provide frameworks for localizing and contextualizing people and communities when research focuses on large datasets and broad (e.g.

national policy) contexts. Secondly, it discussed the ways in which critical grounded theory and

reflexive interviews can contribute to the continuous centering of participant needs during

research. The chapter also outlined the specific methods used in the research process during

NICE conference analysis and the participant interviews, each discussed in subsequent chapters.

Chapter 4: NICE Conference, Whova, and Building Community in Hybrid Workspaces

> Don't overlook folks that don't talk the way you want them to talk. Don't overlook the folks that don't have the walk, credentials...possibility can stem from a conversation during cornhole. The people who dream of doing what you do, you're not better than them. Don't think scale, think people.
> -Zachary Oxendine

The 2023 National Initiative for Cybersecurity Education (NICE) Conference and Expo convened in person in Seattle, WA and via the mobile conference application, Whova. While the conference is located in a convention center like many national conferences, and presentations occur in person at the conference venue, attendees can participate in discussion forum threads with other attendees and presenters, contact other attendees via messages, explore documentation posted by other participants, and view the keynote /plenary sessions in the application. This format is well-suited to the still largely remote or hybrid cybersecurity workforce, emulating versions of a remote and/or hybrid workplace.

The Whova application describes itself in the iPhone App Store as:

> an award winning event and conference app. It helps you gain insights about people you meet at events. . . Whova's technology builds comprehensive profiles of attendees so you can view all attendee profiles before you even arrive at the event or conference. Plan in advance whom to meet at an event, what to talk about with each attendee and reach out to others via in-app messages before, during, and after the event.

User experience and understanding of a social space is heavily driven by the design of an interface. The ways in which a user interface is designed provides affordances and constraints regarding user agency in expression and engagement (Arola, 2010). In the case of user interfaces allowing communication between users, it's important to understand the ways human behavior and the underlying power structures involved in communication impact use of an interface. Justice-oriented user interfaces consider equity and accessibility in the design (constanza-Chock, 2018; Swartz, 2019). The Whova application is the conference participants' first point of contact

with the conference, so I find it important to outline the main elements of the application, followed by a discussion of the ways in which user interface design scaffolds and/or inhibits user engagement from an accessibility standpoint. The top banner of the app, when opened, is a Google Map of the conference venue. The lower control pane consists of five buttons: *Home, Agenda, Attendees, Community, and Messages.* The middle section of the app, which makes up about a third of the screen, is an Additional Resources pane with 10 buttons: *Leaderboard; Photos; Documents; Floormap (sic); Polls; Session Q&A; Speakers; Exhibitors; Twitter;* and *Whova Guide.*

Incorporating conference details into the Whova application frames the user experience as a hybrid and remote social networking opportunity. As a participant, I used the application and attended the conference in person. A few weeks before the conference, I received an email with instructions to download the Whova app. In the week prior to the conference and expo, I received messages from a few attendees, mostly introducing their research and inviting me to their presentation. As the conference neared, participants uploaded conference materials and contributed to discussion threads. The discussions became more active during the conference session, allowing for a multimodal networking experience accessible to remote participants as well as those more comfortable with written, digital collaborative communication.

Considering the role of place and space to understand how conference participants experience and exchange information provides an opportunity to understand by observing one use case as a microcosm of a broad trend toward hybrid and remote work.

Place, Hybrid Space, and Dataset(ting)s

As discussed in the literature review, theoretical frameworks grounded in space/place are useful in locating ourselves as people negotiating fences between industry and academic commonplace,

as well as people whose positionality and social engagement flows within and between institutional location via datastreams (Collins 2000, 2009; hooks, 1989; Loukissas, 2019; Soja, 1996). Identifying data/setting and rhetorics of hybridity is of particular interest to analysis of *location* as it relates knowledge formation and the construction of social space in the design and production of the Whova app as a site for hybrid participation in the NICE Conference. In the context of the Whova application and its content, I would like to consider the foundational analogy of "walking in the city," as presented by de Certeau (1985). In chapter seven of his book *The Practice of Everyday Life,* de Certeau engages in an extended metaphor of walking in the city. Beginning with an image of a view from the top of the World Trade Center, he takes us on a journey from eagle's eye view, down to the pedestrian act of walking through a city, engaging through a postmodern lens with human geography and urban planning, before ultimately describing the "pedestrian speech act," a form of living that can also be applied to writing. He describes walking as an act of enunciating, and thus impacting (rewriting/revising) a space. In the section of the text subtitled "walking rhetorics," de Certeau describes "tours and detours," famously noting that, "[t]he long poem of walking manipulates spatial organizations, no matter how panoptic they may be: it is neither foreign to them (it can take place only within them) nor in conformity with them (it does not receive its identity from them).". In city design, as well as digital design, users navigate, adhere to, and deviate from the intended design in ways that uphold the intended function of a social space or build new meanings (new spaces) within and at the margins of design. Observing this dynamic of revision can be useful in thinking about how government initiatives based on strategic plans rub up against the way conference participants walk through the NICE spaces.

Braiding together de Certeau's (1985) analogy of *Walking in the City* with Loukissas's work, *All Data are Local: thinking critically in a data-driven society* (2019), I seek to underscore the importance of localized understandings of cybersecurity as an industry, and draw out the tension between centralized policy-driven initiatives and the localized data participants bring to the table (or, app) as I consider the importance of setting in datasets. Loukissas suggests that " datasets of high volume and variety are often composite collections across disparate times and places (2019). This is relevant here as we consider the variety of material (data) presented at the NICE conference, seeking to connect with NICE's conference theme, yet all have a local context, thus complicating the notion of a simplified "framework" as presented in the NICE strategic plan. It is critical that as we review the composite tapestry of insights available to us via the NICE Conference's Whova application that we also consider locality alongside power, privilege, and positionality of the speakers. Considering locality alongside the three Ps allows for an enriched understanding of the subject, adding to the foundation necessary for coalitional community and reciprocity. Further, comparing the NICE framework and conference theme to the ways in which presenters and participants choose to speak about those topics allows for an understanding of how local users and practitioners might revise intended policies in the context of their workspaces.

Multimodality as a tool for building community/coalition in hybrid space

Multimodal forms of communicating during conferences is a common and well-documented practice in rhetoric and writing conference organizing, especially in recent post-COVID years. Conference applications are common practice. My first experience using a conference application was at the 2019 National Women's Studies Association (NWSA) conference. Since COVID, conferences have commonly hosted remote sessions, hybrid options, and have focused

on more capacious and inclusive conference offerings. For instance, at this year's Conference on Composition and Communication (CCCC) there was a return to all in-person sessions with an option for accepted presenters unable to attend to publish their work in a conference proceeding. This multimodal approach to conferences can be seen as a reflexive community practice amidst challenging times, as well as a turn toward adaptable conference configurations that reflect the hybrid–physical and digital–nature of our lives.

Kristin Arola (2010) discusses feminist epistemologies and practices engaging multimodality in digital spaces as a nuanced community practice. In her 2010 article, "The Design of Web 2.0: The Rise of the Template, the Fall of Design," she discusses the bounded agency within templated social media.She argues that, "[a] digital feminist pedagogy recognizes that today, 'community' is found not only in face-to-face spaces but also in the networked spaces of the Internet [. . .] as spaces where individuals come together through the 'sustained pursuit of a shared enterprise' (Wenger, qtd.in Arola, 2010)." The NICE conference's Whova application works in a templated manner to provide a community for those with the shared enterprise of workforce development in cybersecurity through academic and industry methodologies. The application also provides a structure for the conversation between and among conference participants, with room for participants to drive the ways the structure is filled in and built out– the way space is created–increasing accessibility through participant agency.

Accessibility in Hybrid (Third)space: Absences in the Whova Application

Accessibility, as defined in chapter one of the dissertation, holds multiple meanings: 1) ensuring universal availability of a place, program, setting, or event in the form of disability accommodations made for an intended audience; and 2) reflexive and care-based systematic approaches to inclusion and belonging of all people within a community or organization

66

(Disability:IN, 202; Disability Without Poverty, 2024). Accessibility as conceptualized by disability justice advocates is more situated in reflexive and reciprocal community care (Constanze-Chock, 2020; Piepzna-Samarasinha, 2018; Kafer, 2013; Mingus, 2011). In considering how accessibility is engaged at NICE 2023, as it is directly included in the articulated conference theme, "Resetting Expectations: Recreating Accessible Cybersecurity Pathways," it is important to note the ways when taken up by DEI proponents in the industry. While multimodal accessibility is well-accomplished by the Whova app, and is poised to increase community engagement as described in the previous section, disability accommodations are lacking: there are no accommodations for hearing or visually impaired participants; while the application can be downloaded in multiple languages, there is no translation tooling available in-app or translation services in the conference for multilingual participants interacting with presentation materials; there is no ADHD-friendly font option available in the app; there are no references to identity-based interest groups within the conference organization.

Case Study: (The only) one presentation about disability in the workplace

While this dissertation conceptualizes accessibility capaciously to include socioeconomic, geographic, race, gender, and neuro/cognitive need from a coalitional framework, we discuss in the introduction that physical disability is often the starting point for most institutions due to compliance frameworks such as American Disability Act (ADA) and Rehabilitation Act, Section 508. Thus, assessing the presence of such focus serves to provide a baseline understanding of accessibility within a given community as represented in conference presentations. Of the 40 conference presentations in the program, only one conference presentation directly spoke about accessibility through a disability advocacy lens. The presentation, titled "Cybersecurity Workforce can Come from Unexpected Sources: Students with Disabilities," presents an

overview of Project Access, a Cyber.org initiative partnering with PaloAlto and Department of the Blind and Vision Impaired (DBVI) that seeks to "support students with visual challenges to 'see themselves in cyber' through a multi pronged approach:

- Promoting awareness of opportunities in cyber

- Stimulating interest in cyber and helping students gain confidence in their abilities

- Providing ongoing support through a mentor program, opportunities to connect with other students with similar interests, and further resources and

- Defining training and career path information for various jobs in cyber

The presenters ground their program's mission, values, and methods in the NIST and NICE frameworks, defining the initiatives for the audience in a way that demonstrates applicability to the disabled workforce community. From there, the presenters constellate the NICE conference theme, NICE cybersecurity framework, community programming, and disability needs together as a powerful rhetorical tool for change. With an accessibility mission grounded in the NICE Cybersecurity framework established, presenters shared practical examples of how programs can provide education and tools to their intended population(s) in accessible ways. The NICE Cybersecurity framework is discussed in greater detail in the introduction. Presenters provide examples of recruiting based in the NICE framework, consisting of immersive workshops and summer camps hosted by Project Access and sponsored by community partners. These workshops include the following activity modules:

- Robotics and Cyber

- Leap into Linux

- Cyber Warriors Virtual Summer Camps

One panel presenter makes a rhetorical appeal for the need to serve visually impaired populations, demonstrating that visually impaired people are pervasive in society and that any one of us can become visually impaired in our lifetimes. They note that access needs related to visual impairments "cross all social and racial and ethnic classes." This rhetorical appeal may capture the attention of DEI motivated employers and managers with a so-what factor, while the relatability of the information serves to humanize the visually impaired population to the audience. A deeper look at the information also serves to remind us of the importance of intersectional identity formation and resultant experiences. The need for intersectional approaches to accessibility across demographic categories was often harkened by participants as outlined in chapter 4 of the dissertation.

As discussed in the literature review, intersectionality is a Black feminist theoretical framework that serves to demonstrate the ways in which multiple forms of oppression overlap and interlock in a compounding way based on one's positionality, creating circumstances impacting individuals (Crenshaw, 1998). Taking up this presentation's focus upon blindness to describe intersectionality, we might consider gender expectations in the workplace, and how those expectations brush up against the needs and behaviors of the visually impaired. Taking into consideration how a visually impaired woman from an upper middle-class environment might materialize as compared to a visually impaired man living within a poverty income bracket, provides insight into the ways in which interlocking experiences create unique ways of understanding the access needs of and the potential biases faced by workers in tech.

Although the conference presenters do not discuss intersectionality outright, they take a varied approach to considering disability in the workplace. In one example, they mention a 2017 study by The Center for Talent Innovation titled "Disabilities and Inclusion: US Findings," on

the disparities between the percentage of the workforce that have a disability, compared with the percentage that report disability to their employer. Conference panel speakers do not expound upon potential causes of the disparity; however, we can turn to technical communication scholarship on the topic for more insight on the social determinants of disabled individuals in the workplace–policies, communication practices, communities of care, modalities of work and learning–impact their effectiveness and sense of fulfillment. See the literature review in chapter two for examples.

In addition to defining and complicating the idea of disability in the workplace, the speakers provide an outlook for COVID-related disability outcomes, ones that uniquely interface with the post-COVID hybrid workforce question. They posit that one in four people diagnosed with COVID-19 will have symptoms of "long COVID," potentially introducing new members of the disabled workforce. It is noteworthy to mention that panel speakers' claims correlate with experiences noted in the interview portion of this dissertation study. For instance in chapter five, one interviewee mentioned an experience in their largely in-person workplace environment, in which a coworker has operated in a fully remote capacity for over six months due to side effects from "long COVID." As long term effects of COVID-19 surface, workplaces will have to contend with new ways disability materializes for team members. As discussed in the introduction, while the COVID-19 pandemic created an urgency for accessibility practices in the workplace, the need is historically documented across disability communities (Butler, 2018; Kafer, 2013; Piepzna-Samahrazhina, 2019; Costanza-Chock), 2019. However, social institutions of work and learning have been slow to accommodate disability. As workplaces reconfigure workspaces "post-COVID," advocacy for disabled team members is crucial. While legal approaches grounded in the American Disabilities Act (ADA) and the Department of Justice's

Rehabilitation Act, Section 508 are useful legal tools in considering institutional frameworks for accessibility, it is important to note that Section 508 was not mentioned by any presenter at the NICE conference, nor in any interviews. Instead, cultural approaches to accessibility were forefronted. This is not a departure from disability justice work historically. Collaborative and coalitional work is a hallmark of praxis-focused critical disability justice activists and organizers (Kafer, 2013; Puig-Mannah, 2019; Piepzna-Samarasinha, 2019). There are kairotic opportunities for both legal and cultural advocacy, and advocates can work across spaces (in thirdspaces) and in coalition toward accessible pathways for learners and workers.

Case Study: Community, Mission, and Agency in Plenary Session Representation

The 2023 NICE conference hosted three plenary session speakers: Elizabeth Kolmstetter, Chief People Officer, Cybersecurity & Information Security Agency (CISA); Zachary Oxendine, Indigenous ERG leader and program manager, Microsoft; and Annabelle Klosterman, a Cyber Defense student at Dakota State University. The speakers presented in different formats and were given different timeframes: Kolmstetter's plenary session was the longest, structured as a conversation between a host and herself, with prompts included in the session. Oxendine's session was a traditional plenary session. Klosterman's plenary session came in at the shortest, less than ten minutes long, and contained the least breadth of content. The selection of plenary session speakers and the structure of their sessions serves to represent the NICE mission, core competencies, and cybersecurity frameworks as well as a representation of business needs, industry leadership, and academics across the hierarchy of skill level and position.

Meet the Plenary Speakers

Plenary Speakers did not have bios published in the NICE conference program. A look into their digital presence provides some insight. Dr Elizabeth Kolmstetter, Chief People Officer,

Cybersecurity & Information Security Agency (CISA) has a page of her own on CISA.gov. Her

bio on that webpage reads as follows:

> Dr. Elizabeth Kolmstetter is the Cybersecurity and Infrastructure Security Agency's
> (CISA) Chief People Officer. In her role, Kolmstetter works closely with Director
> Easterly, Chief of Staff Kiersten Todt, and members of the leadership team, in close
> coordination with the Office of the Chief Human Capital Officer and the Office of
> Equity, Diversity, Inclusion and Accessibility. Dr. Kolmstetter continues to build the
> CISA Culture into our everyday activities and plays a critical role in ensuring an enduring
> "People First" culture.

Zachary Oxendine, Indigenous ERG leader and program manager, Microsoft, maintains an active

presence on LinkedIN (2024). His bio reads:

> I work in technical and leadership roles at Microsoft. I build opportunities to empower
> people everywhere in STEM. My work in indigenous, rural, veteran, deaf/hard of
> hearing, and education communities. . .know no limits. Because they are all apart [sic] of
> who I am. Let's work!

Annabelle Klosterman, Dakota State University student, also maintains a presence on LinkedIN

(2024). At the time of the conference, Klosterman had just finished her Bachelor's degree. Since

then, she has gone on to earn a Master's Degree in Cyber Defense at Dakota State. Her bio reads:

> Annabelle Klosterman is a Technology manager, a Public Speaker, and
> Co-founder/Program Director of the Cyber Community Club. She obtained her Bachelor
> in Cyber Operations and Master's in Cyber Defense at Dakota Skate University. Her
> areas of focus are offensive and defensive security, governance, risk and management,
> and cybersecurity training/outreach.

While the Whova Application and conference program did not include bios for the plenary

speakers, open coding of plenary sessions content revealed varied foci representative of the

speakers' identities and professional roles within cybersecurity. Notably, there was a

disproportionate amount of time given for each speaker, likely designed as such to align with

speakers' hierarchical roles and knowledge. The following section will discuss each plenary

session's themes and how they align with the codes revealed through grounded theory analysis as discussed in chapter three.

Dr Elizabeth Kolmstetter, Chief People Officer, CISA

Dr Kolmstetter spoke heavily about diversity, equity, and inclusion (DEI) as well as talent pipelines and career trajectories. Workforce development and human resources are key themes that emerged from grounded theory analysis, discussed in chapter three. Understanding how CISA, a major US government cybersecurity organization, conceptualizes workforce development alongside other key themes that emerged from this dissertation's analysis, can provide insights into driving factors in cybersecurity workforce development more broadly.

Overview

Kolmstetter began her talk with an overview of CISA's orientation to human resources by way of a four-pronged approach: attracting, hiring, engaging, and retaining team members. She prepared the audience for her talk with an outline of her talking points: hiring mechanisms, referrals, government pipelines, "fit", and establishing and maintaining a diverse workforce. Kolmstetter underscored the argument that DEI and accessibility must be "baked into CISA's people first culture." She went on to say that belonging should also be incorporated into DEI and accessibility efforts. She asked, "How do we make sure we have the right building blocks, do the right things to support people daily?" Her answer: developing the right programs, having ongoing discussions, and from those efforts, increasing a sense of belonging. She presented a definitional view of key DEI concepts, starting with the basic idea of diversity and building outward toward more transformational concepts, and framing these toward the environment CISA's mission seeks to foster.

- Diversity is: often limited in practice to quantifying workforce makeup.

- Inclusion is: are their voices being heard?

    - Inclusion must be more than "just a nice poster on the wall"

- Belonging is: do people feel safe to use their voices?

- Engagement is: connecting ppl to one another and connecting ppl to the mission

From here, Kolmstetter outlined accessibility initiatives, culture and belonging in the workplace, and workforce development ideas.

Connections to Thematic Analysis

The following section reviews the ways in which Kolmstetter's plenary session discussion aligned with emergent themes from open coding of NICE conference materials and presentations–" accessibility" and "culture and community," followed by outlying discussion of workforce development. Her discussion of workforce development is relevant to the discussion in the introduction on a need for interrogating cybersecurity workforce pathways as a means for ensuring growth opportunity for those allowed to enter the workforce as part of DEI initiatives.

Approaches to Accessibility

Kolmstetter touted CISA's forward approach to accessibility in her discussion of DEI efforts. Of note, CISA's website lists their DEI department as "Diversity, Equity, Inclusion, and Accessibility (DEIA)," demonstrating in name that access is a key part of what the organization considers in their inclusion efforts. Their website defines DEIA as part of the current strategic plan, which is framed as guided by Executive Order 14035 (DEIA Strategic Plan 2022-2026)[4]. As CISA is a major government organization in the field of cybersecurity, spearheading the inclusion of accessibility in their DEI programming could impact changes across government, and into industry over time. She also discusses the Neurodiverse Employee Resource Group as a

---

[4] Note that this is a guiding DEI order vs a legal order on accessibility.

specific example of CISA and a pioneer in focusing on the neurodiverse workforce population.

In thinking about the ways accessibility is defined in chapter one of this dissertation, Kolmstetter is unwittingly providing an example of "nothing about us without us" in action, as Employee Resource Groups are employee lead by members of the group represented. The data on impacts of neurodiversity, outlined in chapter one, show a disparity between the number of employees with neurodiversity— 15% —and the percentage facing job insecurity and lack of employment, up to 80% of the neurodiverse population (Eagle Hill Consulting, 2024). As focus on neurodiversity is a newly explored DEI initiative across the corporate world, there is a lack of training and education focused on supporting and empowering impacted employees—both the neurodiverse, and those who manage and/or collaborate with them (Eagle Hill Consulting, 2024).

Culture and Community

As Chief People Officer, it makes sense that Kolmstetter centers the cultivation of workforce culture in her plenary session. During her plenary session, she described culture as a "felt experience," the cultivation of which "must be done with intention." CISA's DEIA strategic plan underscores her claim, and goes further in saying:

> Working toward a shared understanding of diversity, equity, inclusion, and accessibility (DEIA) by reinforcing positive habits that foster an inclusively diverse culture highlights actions we must take to advance DEIA We must strengthen our ability to recruit, hire, develop, promote, and retain diverse talent while removing any barriers that may exist to do so. We must seek to understand, recognize, and appreciate our diverse perspectives, backgrounds, and unique challenges We must embrace open dialog on the importance of fostering equality for all with a bias towards action We must strive to be the change we want to see in the work, fighting injustice and bias wherever it exists.

Kolmstetter posited that culture-focused workforce strategies such as those discussed in CISA's DEIA Strategic Plan should be "must do," not "nice to do," in the schema of HR operations. I see an opportunity here for taking up justice based theoretical frameworks outlined in chapter two of the dissertation, such as Black feminist theory, coalitional approaches to technical

communication, and collaborative care work toward disability justice as praxis in workforce development (bell hooks, 1989; Crenshaw, 2005; Collins 200, 2009; Walton, Moore, and Jones, 2019; Piepzna-Samarasinha, 2018; Kafer, 2013; Mingus, 2011). As one interview participant mentioned during the interview phase of the dissertation research (see chapter five), including people educated in the humanities and cultural studies—and I would expound to include technical communication here— increases the possibility that the words put forth in such a strategic plan see action– hopefully and most importantly, ensuring diverse, multiply marginalized people working within such a workplace can access opportunity for growth and thrivance as outlined in chapter one of this dissertation.

Kolmstetter described the incorporation of belonging as a key tenet in DEI work as "especially poignant when . . . experience is different from the majority." In other words, belonging does not equate to assimilation. While this sounds nice coming from a chief people officer, technical communication scholars have written in depth about the ways in which communication between the majority and the multiply marginalized can often create tension, particularly when marginalized groups operate in coalition to question and change the status quo.

Community & Belonging amidst remote work/future workplace formation

Kolmsetter discussed the ways in which the COVID-era has made opportunities for belonging more difficult, particularly in the ways workforce culture is impacted by remote workplace configuration. She reflects on remote work challenges at CISA as a tension between "work/life balance versus work/life blending." This is a challenge widely discussed in popular journalism, outlined in this dissertation's chapter one (Disability:IN, Access). She claims that "future forward" or innovative approaches, in balance with studying what is being lost without human interaction, may serve to provide critically needed solutions. Some strategies she offered to the

audience were to "bring people back together" in novel ways, focusing on "presence with purpose," in order to "connect with each other, have synergy, [for instance through] innovative brainstorming sessions with lots of disciplines in the room." Her strategies connect with areas of the dissertation in two ways: 1) interview participants commonly purported the need for interdisciplinary hiring and retention, as well as collaboration across segments of business for improving communication of cybersecurity principles, standards, and practices; and 2) her focus on innovating new ways to communicate beyond margins of maneuverability gives space for coalitional thirdspace creation, potentially providing opportunities for enculturating accessibility in the workplace. While this seems like a hopeful proposition, some of her other ideas around hiring and workforce formation conflict with, and in ways seem to overlook, notions of belonging and access for neurodiverse team members.

If Hiring Mechanisms don't reflect accessibility culture, is there one?

In one glaring example of this disparity between professed values-based DEIA mission and innovation frameworks that seem to not consider the needs of neurodiverse and otherwise disabled employees, Kolmstetter presented to the audience a "hiring idea" focused around short-term, rotational roles in various possible formats. In one example, she suggests the potential for rotational "term employment" opportunities that would create a "porous border" between government and industry workplaces, two segments of the field which she playfully calls "cylinders of excellence" instead of silos. In further describing the model, she describes it as similar to "project based gig work" or consulting. This approach, she claims, breaks down silos and opens pathways of communication toward a more collaborative workforce. Pointing out the tendency for government employees to stay in one role for the majority of careers, she claims that exposure to "a breadth and depth" of contexts and skill sets over a period of one's career

improves capacity building. While this can be true, it doesn't seem to consider the need for psychological safety among neurodiverse employees, or the already tenuous struggle with employment instability Eagle Hill Consulting's study outlined (2024). While Kolmstetter referred to term-based rotational work as "a use case for increasing diversity," this will only be the case if such models are designed with multiply marginalized and dis/abled voices informing the structures and systems that will drive their success–or increase likelihood of failure, if not designed with equity in mind (Collins; Walton, Moore, Jones; Haywood; Gonzales).

Zachary Oxendine, Engineering Technical Program Manager and Indigenous Employee Resource Group Leader, Microsoft

Zachary Oxendine, Engineering Technical Program Manager and Indigenous Resource Group Leader, Microsoft, captivated the audience through embodied object lessons and storied approach to workforce development. He focused more on personal stories with lessons about diversity and inclusion, disability, community, and nontraditional routes toward successful cybersecurity careers. Of all the presenters and materials I reviewed during my analysis of the NICE conference, Oxendine's talk stuck with me the most firmly, likely due to his methods of storytelling and his history of putting the work of advocacy into practice. His methods have much to teach those in the industry of cybersecurity on how technical people can communicate and advocate effectively.

Overview

Oxendine walked onto the stage in an unassuming gray suit, white shirt, and simple tie. He began to tell a story about his suit, one the audience may have never noticed otherwise, explaining that it was the same suit he wore to his first job interview—an interview he didn't find successful. In fact, he carried a lot of experiences with struggle across the years of his childhood and early

adulthood, experiencing an awareness of potential unmet due to socioeconomic disadvantages, socialization, and the missed cues associated with both. Oxendine describes his life in an intersectional fashion, demonstrating the multiple ways he experienced disadvantage as a rural indigenous child of two deaf parents.

Growing up in a lower working-class family, Oxendine was categorized in school as a gifted learner but says he didn't last in the program because of his struggles with speaking and socialization. Oftentimes, children of lower and lower middle class aren't socialized in a way that teaches them the unwritten rules of society and success. I address my own experiences with this in chapter one. Similarly, interview participants discuss the nuances associated with socialization and workforce development, specifically in terms of gamification as a pedagogical or workforce development approach. As Oxendine continues to discuss the trajectory of his early adult life, he describes struggles with success in the military, and later in college. He consistently found himself outside the margins of success, with no clear direction for how to get to the place of success he desired. It wasn't until he met a man at a barbecue over a game of cornhole and sparked a connection leading to mentorship, that he began to find his way. He describes how community and relationship gave him new hope, helped him hone his vision and then his skills, and lead to newfound motivation and a successful interview with Microsoft. Since then he's founded a nonprofit that teaches technical skills to rural indigenous youth, and he leads an Employee Resource Group (ERG) for indigenous employees at Microsoft. He shares that relationship and community, which brought him into the work, is something he is determined to reciprocate. He tells the audience he wore the same suit to that Micfosoft interview, which led to his dream job. He wore it on the stage as a plenary speaker at a national conference. Returning to

the object lesson of the suit, he demonstrates the way an object can take on new meaning based on context (support, scaffolding, empowerment) around it.

People Oriented Hiring Practices

Community is clearly central to Oxendine's professional ethos. A notable quote toward the end of his plenary session, spoke directly to hiring decision makers:

> Don't overlook folks that don't talk the way you want them to talk. Don't overlook the folks that don't have the walk, credentials...possibility can stem from a conversation during cornhole. The people who dream of doing what you do, you're not better than them. Don't think scale, think people.

His claim compliments the discussion presented by Kolmstetter but situates similar claims within an inter/personal context. I argue that engaging with business logics, strategic plans, and national level policy from a localized and coalitional context is key to impacting workforce pathways toward accessible, needs-based, justice-forward workplace cultures.

Annabelle Klosterman, Dakota State University, Student: Cyber Defense

The conference included a student in the plenary session lineup: Annabelle Klosterman, a Cyber Defense student at Dakota State University, spoke briefly about the importance of continuous learning as a driver of increased potential for a future in the cybersecurity industry. She also found motivation giving back to the community by passing down learning to new students, inspiring others, and staying curious while approaching new methodologies in cybersecurity efforts.

Critical Thematic Analysis

A considered look at the way themes emerge in coding sessions led me to consider how positionality impacts discussion of the topic at hand. Much of the conference presentation content is focused on pedagogy because the conference is organized by NICE, a cybersecurity education initiative. While Kolmstetter's plenary session focused on building workforce cultures

rooted in forward-facing DEIA initiatives, and conceptions of belonging in the COVID era, Zach Oxendine's session focused on story, on how to navigate positionalities of difference, and build community toward finding a career in technology. Taking the frameworks presented in critical constructivist grounded theory frameworks (Levitt, 2021) alongside justice-based tech comm scholarship methodology (Haywood, 2019; Walton, Moore, and Jones, 2019) it became evident that a look into positionality, tech culture bias, and accessibility frameworks during the interview portion of the research would be necessary in order to ensure complete and people-driven analysis of the content.

In this chapter, I discussed the NICE conference's use of the Whova application and its impact as a user interface on participants from an accessibility perspective as well as the impact of the multimodal hybrid conference design on participants. Second, I provide an overview of grounded theory analysis of the presenter titles and materials provided in the Whova application. Next, I reviewed two case studies from the NICE conference: one, the sole presentation at the conference focused on disability, and the other, an analysis of plenary speaker sessions in relation to the themes outlined in chapter three: human resources, workforce development, accessibility, gamification, and pedagogy. In the next chapter, I will discuss participant interviews, which are structured as informed by thematic analysis discussed in this chapter of the dissertation.

Chapter 5: Conceptualizing Navigable Workforce Pathways: Participant Interviews

> I think adding more humanities, humanities majors, or just people that are more. I'm saying this from a municipality perspective, where there has to be some level of verification that you know what you're talking about. So I think having people that majored in women and gender studies in it is just to sit in on meetings and learn over time how to do stuff in it, of course, but having their perspectives heard could change everything about how we do it [. . .] That's who we're going to. We're not going to the engineers, we're not going to help desk, we're not going to me, we're not going to the programmers. We're going to the person that has all these soft skills, that has a decade plus of functionally HR experience. Just in the IT realm. That's the most important person. And if we can focus on qualities like that, gosh, it might not suck so bad someday.
>
> -Participant 1

My overall aim in the research is to better understand the ways in which cybersecurity professionals and aspiring members of the industry navigate professional development pipelines, particularly with regards to access barriers and people-centered approaches to access initiatives. As mentioned in chapter three: methods, this dissertation seeks to work in-process and reflexively, asking questions of community partners, and to ask them what the questions should be. In chapter three, I outlined grounded theory analysis of the 2023 National Institute for Cybersecurity Education (NICE) conference, including conference materials, followed by in-depth case study analysis of a selected conference presentation and plenary speaker sessions from an accessibility perspective. The dissertation focuses on the work of not only recognizing the problem of access in information security, but in attending to tensions between business logics, representational DEI efforts, and community care through frameworks for coalitional praxis (Walton, Moore, Jones, 2019). In speaking with my participants, their storied experiences resonated with some themes emergent from the content analysis of the NICE conference, and a few new themes also emerged.

I approached the interviews as centered in values-based community building praxis, starting with a foundation-building session focused on defining values and guiding principles for the work participants and I would conduct together. In doing so, I first and foremost took an overt approach to making the values foundational to my research apparent to participants. I did so in creating an intro segment to the interview, starting with a brief check-in on the participant's energy, environmental factors, and needs for the duration of the session. From there, I summarized my research goals and situated those goals within my research methodology and theoretical frameworks. I specifically outlined the concept of three Ps—power, positionality, and privilege—and the coalitional nature of my goals toward creating practical heuristics for use in local cybersecurity contexts (Walton, Moore, and Jones, 2019).

From here, I approached each interview session as a conversation between colleagues, loosely set within three major themes: 1) defining participant positionality by storying their industry experience(s); 2) discussion of access and accessibility within the participant's definitional understanding of the concept; and 3) discussion of key thematic findings that emerged from my analysis of the NICE conference presentation materials. As a reminder, the conference was designed with the following guiding questions in mind:

> As the digital workforce expands and information security workforce shortages reach critical levels, how do educators, recruiters, and professionals conceptualize and communicate accessible cybersecurity career pathways? How can critical technical communications scholarship on accessibility inform pedagogical methodologies toward a more equitable information security workforce?

Each participant approached the discussion differently, requiring a reflexive recentering of values and refocus on the phase of the interview at hand. I intentionally affirmed experiences and insights, following the participants' lead as they brought insight grounded within their personal standpoints. Although the third phase of the interview script was initially outlined based

on emergent themes from the conference analysis, I took time during each interview to reflexively return to themes the participants mentioned over the course of the discussion. After the discussions, I went back to the interview script to look for ways I might adjust the guiding questions based on feedback from participants.

After I conducted the first three interviews, I began coding the interviews in two ways: first, I reviewed each transcript with the codes identified in the NICE conference and highlighted the codes accordingly. Next, I coded the interviews independently of those codes to look for any new themes that might have emerged in conversations with the participants. Here, I will introduce the participants and provide background for each based on the first phase of the interview. Next, I will discuss a synthesized view of the participants' discussion of key themes emergent from the NICE conference. From there, I will introduce new themes emergent from interview discussions before suggesting a high-level overview of possibilities for coalitional practices (further outlined in chapter 6) in cybersecurity based on participant insights.

Introducing the participants

Given the theoretical groundings of my research, based in community care approaches (Piepzna-Samarasinha 2018, Queer Futures Collective 2019) and Black Feminist praxis (Collins, 2000, 2009; hooks 1989, Haywood 2018; Walton, Moore, and Jones 2019), understanding the participants holistically, and from their own understandings of their situated realities was a critical element of my research design. Developing this understanding openly and as a foundation-building exercise was important to me. During the first phase of the interview, I asked each participant to tell me about themselves based on our brief overview of power, positionality, and privilege. I asked them to tell me about themselves as a whole person and as a professional. From there, I asked them to tell me about their professional focuses and experience,

each of which was informed by the foundation we laid based on their individual standpoint. Here I provide a summary of each participant's responses.

Participant 1 is in senior management at a fortune 20 corporation, overseeing global teams in risk and compliance. She began her cybersecurity career in the US army over 20 years ago. She calls herself a lifelong learner, and holds an M.S. in data science, an M.A in English Education, and a Ph.D. in Business. A major component of her professional identity lies in her passion for mentoring other women in cybersecurity. She gets joy out of "helping people who look like me." She works remotely, as does her husband. They have three children at home, the youngest of whom is less than a year old. Participant one has been highly successful in the field, but sometimes considers a move into education. When asked about who she is, she described herself as a woman, learner, mother, and veteran.

Participant 2 is a security engineer and Information Systems Security Officer (ISSO). She has been in the field for less than five years. She holds a B.S. in Computer Science with a certificate in Cybersecurity. Participant two is interested in the connections between art and technology, and creates space and technology themed art as a hobby and secondary source of income. She identifies as a Lesbian, but doesn't find that to impact her work very much. She is currently looking into technical writing jobs focused on cybersecurity.

Participant 3 is a security engineer for a local municipality. They have worked in IT and cybersecurity for over a decade, starting with individual pursuits in their teens. They received a B.S. in Information Security Systems from a regional university, which propelled them from IT roles into cybersecurity. They have aspirations for management and are currently preparing for the CISSP certification.

Participant 3 identifies as a young, Black, AMAB queer, nonbinary, gutter punk. Professionally, they describe themself as a well rounded and highly political person; this carries over into their interests in the rapid development of AI and the social implications of such development. They also referenced their self-directed learning style and love of reading as driving factors in their professional development. They find that their identity, particularly the way others see them as a large Black man, tends to impact their ability to build community, gain trust, and develop connections in the industry. Their current role in a local municipality has been useful in finding support both in cultural belonging in the industry, and in professional development pursuits. Politics is an area of both opportunity and tension for them, as they note that, "Politically, I am extremely left, which has also given me a certain optic or certain lens [that] maybe is better for us to see the world in, and especially fields that are predominantly homogenous, like cybersecurity," but much of their region's cybersecurity opportunity lies in homeland security, a sector that is misaligned with their values.

Participant 4 is a Security Operations Center manager. He has been in IT and cybersecurity for about a decade and has worked for the same firm for much of that time. He holds a B.A. in Business from an online university, and several cybersecurity certifications. His interests lie in forensics for incident response, as well as cloud security.

Participant 4 cites his public speaking skills, which he says he developed in childhood during religious activities, as a core component of his ability to build dynamic business relationships and mentor others in the field. He identifies as a middle-aged Latino and a devout Catholic. His work identity seeks to leave what he calls "political correctness" or politics "at the door." He does admit that he has felt racial discrimination, particularly in terms of his accent, in the workplace from time to time. However, he says this has been minimal, and he enjoys his

workplace very much. He plans to maintain his role at the manager level for the foreseeable future.

Participant 5 is a senior manager of cloud security and has been in the field for almost eight years. He has a B.S. in Computer Science, and an M.S. in Data Analytics. He is highly involved in the local chapter of a national cybersecurity organization called Information Systems Security Association (ISSA) and offers mentorship to others in that space. When asked about his personal identity, he mentioned that he identifies heavily with the tech space and has since he was a teenager. He loves gaming, but also loves the outdoors and spends time hiking with his daughters to help balance work and family while relieving stress and avoiding burnout (a topic he and I discussed at length). He mentioned that he was diagnosed with ADHD as a child, and that he sees this as a strength in his professional life, because hyperfocus, multitasking, and curiosity are traits he brings to his work every day.

While the participants come from a wide background of racial, gender, economic, and dis/ability backgrounds, each one presented examples of access needs at some point during the interview. These ranged from overt experience of difference based on race, gender, and parental status, to more covert examples of access barriers related to ADHD and high-functioning anxiety. Interestingly, during the introductory phase of the interview each participant presented a view of themselves through a professional lens, using language one would expect to hear in an interview or on LinkedIN, rather than a more personal or identity-based focus on the elements of their positionality that might hold the most experience with access barriers. As we continued to discuss cybersecurity and access within the thematic codes that came from the conference analysis phase of my research, participants became more candid in their discussion of personal

experience with marginalization, failures of translation, and systemic issues related to access and inclusion within the industry.

Data Findings

After the introductory phase of the interviews, I explicitly discussed some of the emergent themes of the conference with participants in order to get a first-hand practitioner view of how those themes show up in the workplace. For each thematic code, I read the theme descriptions as outlined in chapter three, and asked open-ended questions about how each participant experienced or related to the theme. Discussing these themes reflexively with each individual participant allowed for me to better understand patterns of experience with each thematic code across participants. These conversations also opened new avenues for more explicit discussion regarding how race, gender, and class impact a sense of belonging in a space that, as one participant pointed out, "consists of a 93% white male demographic." Over half of the participants also had suggestions for improving access through humanities-based methodologies in cybersecurity practices, policies, and procedures, as well as in methodologies for communicating cybersecurity need across enterprise.

Participant Conceptions of Access/ibility

Defining access and accessibility was the first task I undertook with each participant after phase one of the interviews. For three of the five participants, access was defined similarly as ensuring all people within a setting have the ability to utilize and benefit from the systems in place that ensure a particular setting operates well. For instance, Participant 2 defined accessibility as "ease of access of something to everyone, including ease of access to training and knowledge and information around cybersecurity." Participant 3 argues that "[I]f somebody that's poor can't have access to it, it is not accessible. If somebody that has any amount of physical mental

differences from the mass population can't access it, it's not accessible. If truly and literally, if every single person on the earth cannot access it or in a community cannot access it, it's not accessible". Participant 1 quoted the common disability justice slogan, "nothing about us without us," pushing the definition of accessibility beyond just providing access to a thing, but also including disabled people in the discussion toward developing best practices.

In the context of cybersecurity workplaces, accessibility through remote and hybrid work, as well as flex scheduling, was a major point of discussion for participants. Participant 2 mentioned that while her workplace expects 100% in person work, the policies have changed since COVID. Participant 2 has seen more flexibility in schedules for people who have child and family responsibilities and allow work-from-home during illness. For instance, "if you're sick, they tell you to stay home and you have the option to work remotely [while sick]. We do have one team member who had a lot of COVID complications, and he works full time remote." Here, Participant 2 notes an instance where policy bends toward need in an otherwise rigid workplace, stopping short of discussing opportunities for harnessing this instance as a means for concretizing the practice into policy. Participant 1 is a mother of a child under a year old, as well as two school-aged children. As a senior manager, she is responsible for multiple teams and a demanding workload. She mentioned during our discussion on accessibility that her employer's willingness to accommodate a non-linear workday allows for her to step away from work to attend to childcare needs during business hours and return to her responsibilities after hours where needed. At a policy level, this accommodation is there, yet she mentioned that the culture among her peers is less forgiving, and she has experienced frustration from other managers when she has had to adjust her schedule at short notice. Such othering in the workplace is particularly disheartening for her when it comes from other women. Her experience is an example tension

89

based on a dissonance between DEI initiatives, historic business logics, and the pace of change in workplace culture.

One participant mentioned accessibility in the context of language. As discussed in chapter two, language and translation is a key access issue in the context of often globally contracted and interconnected technical workforces, as well as in the context of language and listening in technology interfaces (Lawrence 2024; Sun 2012; Gonzales cite). As this was not mentioned in any other interviews or in the NICE conference discussion, and because the participant's presentation of conflicted internal debate demonstrates an example of the messiness and inadequacy of accessible care work, I find it important to document this portion of the participant's response in its entirety:

> Last year and this year we had several people who English was not their first language, And they did speak English, they were fluent in English but they had pretty heavy accents. They're from different places and personally I had a hard time understanding them. And I know that they both had, and i was not the only on that they struggled really hard with the communication part of their jobs. And they're both really willing to talk; it was that when they did they were not getting the communication across effectively and there was no . . . no…mmmm . . . when it was something I could gently correct then I would speak up but other than that nobody did anything [to help] but also I wasn't sure what we could do. I reached out to my dad who works in a foreign country as an english person in a foreign language country and about how he handles things and he didn't even really have an answer to that not that he's an expert on accessibility or anything but because he's had those firsthand experiences I thought he might have some helpful information and honestly that's not something I've heard a lot about in the context of accessibility. "I think that's an example of where accessibility [efforts] have failed. That's not really a cybersecurity issue–but maybe it is because colleges are incentivizing foreign nationals to come over and enroll in their programs. So.

Participant 2 mentions an access issue in tech workspaces not heavily focused upon in US government interventions into addressing the workforce pipeline and pathways in STEM fields. Working toward improving access in the workplace can be difficult when we are not equipped to define, validate, or resolve issues beyond our skillset(s). This is an example of how margins of maneuverability can place leaders in a double bind. Yet, even in these moments, it is incumbent

upon leaders to seek out resources and points of contact who can best support our team, and to self-educate whenever possible as challenges arise.

Community in the Workplace is Healing…and Sometimes Evasive

Participants come to and experience community in the workplace from their unique positionalities, navigating the power dynamics at play within their local contexts. Examining the commonalities and tensions between participants' stories of community offers opportunity to recognize shared experience across multiplicitous standpoints and positionalities and can be an entry point into coalitional problem solving (Crenshaw, 2005; Collins 2000, 2009; Walton, Moore, and Jones, 2019).

Participant 1, a white woman and military veteran in senior management, finds her sense of community through mentorship and educational pursuits. She says, "I enjoy helping women, people who have experienced the same challenges as me, to thrive and grow to their potential. I can relate to the struggles they have and understand what they're up against in a predominantly male field." It gives her a sense of purpose and belonging to guide women toward success. As mentioned in the previous section, she successfully navigates her identity as a mother of an infant in the hybrid environment, although people have shown disapproval when meetings were interrupted by her child crying. She mentioned early professional experiences in the military in which she was placed at a disadvantage due to her role as a mother. These experiences combined motivate her to ensure that, whenever possible, these barriers are removed for other women in the field and within her sphere of influence. She says she approaches these dynamics with her mentees "from a place of strength, proud to represent other women, and to show them what's possible when we advocate for each other and for our own potential." She is also an active

member of a local cybersecurity organization where she mentors and collaborates with other practitioners of various positionalities.

Participant 2 discusses the important role of community with her coworkers, particularly based on activities outside of work, in building the morale and trust they have in one another. "This is the first time I've had a work team that does extracurricular activities." She mentioned they do birthday Fridays and have holiday parties. "Community with coworkers helps build respect and [encourages] professional development. It also gives us a chance to support one another outside of work. So, either a win, or–some of us are looking for other jobs–and we feel comfortable talking about that and even giving each other heads up for opportunities that might be relevant to each other." She also mentions the digital community she has found on infosec-focused groups and group chats online, where she gets to know people and see their struggles, which provides a sense of hope as well as a possibility model. Of particular interest to me was the way she described the group chat, which consists of infosec practitioners from across the country, as a means for calibration while navigating problems: "Like if I'm trying to figure out if my experience is specific to me and my company or if it is an industry wide thing." Similarly, Participant 5 benefits from building community in digital collaboration spaces, like a signal chat or reddit group. "My ADHD monkey mind is always pinging off of a variety of concepts as I go about dealing with various issues at work. It's nice to be able to search up a message board on reddit, or write in a quick question in the group chat before the thing leaves my brain and is gone till next time." He's built relationships across industry through these types of ad hoc interactions, and in some cases has found new coworkers in the process.

Participant 3 has seen success in his decade-long tech career, but it's come with some

hardship, particularly in the context of how his race, size, and age interplay as he attempts to

build connection:

> If I'm the only one that looks like me, I'm the only one, that–I think cyber is very close to
> the vest. So, if I try to talk to another person from another company or another city,
> there's definitely some hesitation, which I understand. . . that said, you can go to my
> LinkedIn, you can go to my municipality's page. . . see my face, hear my voice, have a
> number, have my email, you can verify who I am, I'm not a threat actor. And definitely
> earlier in my career, before this job, definitely it was. It was incredibly difficult just to get
> any sort of mentorship, a one to one, let alone community. [he attempted to start a black
> IT members group for a while but it fizzled out]. So unfortunately, my experience with
> communities, not really there, but its something Ive continually tried to build and there's
> at least some progress here in the recent year." Participant four, also a man and person of
> color in the industry, mentioned that he has experienced dismissive attitudes toward his
> educational institution, as well as his accent, and while he feels accepted overall, he's had
> to overcome moments of feeling like "the team jester."

Gamification: Pros, Cons, Connection Between Winning and being "Read in"

Gamification is described within the context of my research as a methodological and/or

pedagogical approach to learning and practicing cybersecurity skills using digital, tabletop, and

even card style games. Some examples of cybersecurity gamification are "Capture the Flag,"

tabletop (simulation/roleplay) exercises, and the cybersecurity videogame *Haiku,* which is

designed in alignment with the NICE Cybersecurity Framework (Haiku, 2024). Gamification as

a code is an outlier in my research, because although in my experience it is a common

pedagogical and team-building practice in cybersecurity training and development, it doesn't

directly address the central focus of the dissertation: access to thrivance in the cybersecurity

workforce. Yet, gamification was discussed overwhelmingly at the NICE conference as a major

pedagogical practice, and as a researcher I had to follow the thread. It turned out to be an

interesting discussion point across interviews, and synthesizing responses provided an

opportunity to observe a common practice in the field of cybersecurity in a way that allows for

practical development of best practices. Making space for this theme also allowed me to check my own biases (I am not one that uses gaming to learn), and to notice areas where I can better include members of the disability community I might leave out. For instance, gaming was mentioned by every participant with ADHD as a useful learning tool, and in one case as the way they overcame lack of confidence due to struggles in traditional classroom settings.

Participants had similarly two-sided views of gamification, as well as some suggestions for how to better utilize gamification as a tool for creating accessible workplace development. Participant 2 explains, "[f]or people who have struggled in traditional classroom formats for learning and proved themselves via testing, I do see the value in games like capture the flag or hack the box kind of exercise contests." Game-based training and accomplishments have the potential for an alternate means of entry into the cybersecurity workforce, she posits, as win badges can be listed on a resume in lieu of test-based certification. Participant 5 spoke heavily about the ways in which gaming and gamification has provided an in-roads for belonging, as well as an alternate route for learning outside of the traditional classroom:

> I did not do well in school as a kid, I was ADD—back then they called it ADD–on ritalin, and just trying to stay out of trouble. I didn't like to read. I still don't, but don't tell my boss that [laughter]. But I love gaming. I've always loved video games, all the way back to Zelda on the O.G. gameboy. That's one place I've been able to relax, shine, be good at something. So, when I started college, I was nervous. Then I had a class where we learned programming through gaming, and I was like–woah–mind blown you know? I know I'll get an A in that class! And I did. And I've made that my—I lead with that, ever since.

Participant 5's experience echoes much of what was mentioned in NICE conference materials, as well as promotional materials for cybersecurity gaming platforms such as Haiku and Capture the Flag. While Participant 2 led with those talking points in her discussion of

gamification, she also worries that it might send a wrong message, noting the downside of gamified accomplishments as a recruitment strategy;

> The use of competitive gamification leaves the impression that you have to go above and beyond to make this a desirable profession. I worry that kids who get into this profession by way of gamification might think that the profession is fun and games most of the time, and when it's not, it can be pretty boring and sometimes tough to deal with. It is fulfilling for me, but I am concerned that the gamification makes it seem like we need to make it a game to make it appeal to people.

Participant 1 similarly described capture the flag games as "encouraging competition instead of collaboration" and rewarding privilege within the group. They posit, "I think gamification overall decreases accessibility and diversity because the best people at playing the game are the people that've always been taught how to play the game." They went on to discuss the ways access to technology, tech culture, and collaborative gaming pedagogies in early and middle child impact the ways people approach gamified experience in professional development.

In contrast, Participant 4 spoke of his experience with gaming, calling it "the great equalizer." He described gaming as something he could use to find common ground with others who come from different backgrounds than he does, and noted the ways his skill in gaming provided opportunities to impress other cybersecurity professionals when more traditional skill markers did not. From there, he could build rapport while building more traditional skills with confidence he would otherwise lack.

Reflexive interviewing and the coding of new themes

During interviews, participants regularly spoke about a few key themes not directly or substantively discussed during a majority of the NICE conference. Each interview participant discussed positionality while answering questions across themes, which led to multiple discussion points regarding race, class, gender, and sexuality. While DEIA and belonging were discussed by two of the three plenary speakers, conference presenters did not focus their topics

on these points, so they weren't included as codes in my initial NICE conference analysis. However, I noticed throughlines between the ways interview participants and plenary speakers discussed positionality and DEIA. For this reason, I decided to include them in my codes during interview analysis. Similarly, communication strategies were also discussed by each participant, with a heavy focus on the need for humanities in the tech industry during two of the five interviews. Initial NICE conference coding included pedagogy, primarily focused on lab based units and gamification. Given the relevance of the theme to technical communicators interested in the research, I decided to also include "professional communication" as a thematic code.

Holistic Belonging: Race, Class, Gender, Sexuality in Tech Spaces

Much of the foundational work of this dissertation project, as outlined in the introduction, literature review, and methods, sets out to approach technical communication within cybersecurity through a holistic human-centered lens. One tension that comes from this focus is the need to reconcile business logics with the intersectional, contextually dynamic nature of our human experience. To put it plainly, the work inevitably gets messy, and business logics based on efficiency, profit, and the measurable attainment of goals, are misaligned with conceptual frameworks promoting accessibility and equity. It is this tension that puts experiences based on race, class, gender, and sexuality within the margins of conversation, even during interviews focused on accessibility in cybersecurity workplaces. These experiences are vitally important to our understanding of the industry and ability to thrive within it. It's for this reason I choose to discuss the ways race, class, gender, and sexuality were mentioned during interviews—and more specifically, the observable ways power, privilege, and positionality show up in the presence (and absence) of these topics.

As is often the case, positionality-based discussion of privileged identity and experience was largely unmentioned in the interviews, particularly with issues such as whiteness (among white participants), the dominance of white male demographics and influence in the industry (by white men), and class privilege (by those of higher position and ranking, and people who are not first generation university graduates). However, these issues were mentioned by those impacted by them through marginalization. Participant 3 mentioned early on in his interview that as a young, Black, muscular, masculine presenting person, it is difficult to achieve initial buy-in with other security professionals. They mentioned an experience they had with a manager in which they were advised against adopting Black cultural practices into their appearance. They explained, "I locked my hair out probably about two years ago, and I remember when I got it locked out, my boss at the time said, that's not going to be good for your professional appearance." They did mention that in their current role, they are presented as a possibility model in recruitment posters, and while they appreciate the inclusion it feels tokenizing—resulting in a double-bind for the participant, in negotiating alternating moments of invisibility and hypervisibility.

Similarly, gender was discussed along binary lines by cis women participants, while a queer understanding of gender was discussed by Participant 3, who identifies as nonbinary and Queer. The two cis women interviewees both spoke at length about their experiences of marginalization as women, and both discussed women's empowerment through mentoring. However, both participants are white women and the discussion of women as homogenous led to a default lens of whiteness on the topic of gender in the cybersecurity workplace. It is important to note that as these participants are both members of my professional community, I know them to have positive intentions across demographics, and their personal histories demonstrate care for

97

women of color in their mentoring relationships and worldviews. That said, we must

intentionally center women of color in our discussions of gender marginalization as a practice of

inclusiveness and accessibility that includes all people.

Strategizing Cultural Awareness in Cybersecurity Communication

As technical and professional communicators, we understand the ways space is created

using the communication and documentation designed as infrastructure for our daily lives (Sun,

2012, 2019). Technical communication often takes into account local and cultural contexts

(Gonzales, 2022), power structures, and institutional barriers that can be overcome or at least

navigated through strategic communication practice. Interview participants made note of

instances that demonstrate this dynamic in cybersecurity workplaces. For instance, Participant 2

discussed in her interview the intersection of communication and writing as a feminized practice,

and as a necessary component of instituting security policy across business. In her interview she

referenced statistics that show women are often tasked with administrative (coded as secretarial)

duties. She goes on to note that she is the only woman on her team, and much of the

administrative work falls to her. While she is aware of the disparity and coded historical

feminization of this work, she harnesses that moment as an opportunity to make change within

her margins of maneuverability. She programmatically distributes security policy across

business in a way that is digestible for a wide array of teams. She mentioned the incongruity

between security policy and the ways in which average employees move through their work

without a working understanding of policy.

> The first time I sent someone an email explaining a security concern, I quoted the
> applicable policy and then wrote conversationally, an explanation of that policy and how
> it looks in the context of the email. I thought it might come across as condescending or
> annoying, but the email recipients were pleasantly surprised and happy about it. Like 'oh
> wow, this is great, thanks for explaining this to me!' And it's turned into something I do
> regularly for my team, almost programmatically.

Of interest is her mention of writing as a feminized practice.

While Participant 2 provided an example of programmatic development of access to policy knowledge from her own work experience, Participant 1 argued for the role of professional communication in the development of accessible workplaces, given the understanding that there are recommendations for universal design and accessible technology:

> We should be able to distribute accessible infrastructure at scale. But we need a wide range of people at the table for that–not just DEI people, but people with disabilities across enterprise, tech dev folks who can build the infrastructure accessibly, people with skills in storytelling and user experience who can inform working groups on best practices for accessible design. It needs to be a strategically implemented goal, not just at the NIST and CISA level, but across the hierarchy of industry.

Participant 1, at the end of their interview, similarly wanted to mention the need for humanities in the industry as a means for persuading business partners to adopt security practices, and as a means for developing more effective processes. As a reminder, Participant 1 is a computer sciences major, but they value reading as a central practice in developing understanding and diversifying interests. They also are also a music enthusiast. I chose to include the full transcript here, as a unique demonstration of a "typical" tech professional advocating for humanities in higher education and in technological spaces, which is of particular interest to those who study in the technical communication and digital humanities field:

> I think I hit on a lot of different things that are important to me or just something I wanted to say. But one thing that as a policymaker and a game plan writer and et cetera, et cetera, I have to do continually is, I don't like the phrase. It's a common phrase, so I'm just going to use it. I have to play to the lowest common denominator. And generally speaking, what's important to me and what's important to some plumber that we have hired are vastly different things, and especially from a professional criteria. So I have to continually think, how do I get buy in from the plumber, from the fireman, from the cop, from the city manager, from the mayor? How do I get buy in from these people when undoubtedly I'm going to make their lives more difficult? And I think a lot of that can be solved in it, because the vision of trying to make people's lives more difficult, that's what cyber is, protection. It's more annoying to walk into

your house when you have to put a key into the lock and turn it than it is just being able to walk in. Is it annoying? Yes. Is it something we've all deemed necessary? Absolutely. So thinking about it like that, and thinking about it like trying to sell to people that opening up an MFA multi factor authentication app on their phone is the same as just putting a lock in your door has been a struggle.

And I'm going to come back to what I said previously. I think adding more humanities, humanities majors, or just people that are more. I'm saying this from a municipality perspective, where there has to be some level of verification that you know what you're talking about. So I think having people that majored in women and gender studies in it is just to sit in on meetings and learn over time how to do stuff in it, of course, but having their perspectives heard could change everything about how we do it. I'm lucky enough that when I'm writing a policy, excuse me, or if I'm writing anything, I've had a wide range of friends in my life. So I can talk to these people. I can talk to one of my best friends that's a crust punk that hops trains to get from one city or one state to another. I can talk to him and be like, hey, what do you think of this? And get his take on it. But then I can also talk to one of my friends that is a president of a major television company division. I can talk to him and get his take on it. So I'm fortunate. But I think if we ever want to move it forward as a whole, it comes down to getting people outside of it in the room and in some level of investment or. How effective will it be? I don't know, but it sounds like the perfect place to start, at least.

We're talking about getting me an understudy, and I have people that. It's very early in the conversation. It's probably not going to happen for another year, maybe two, but we're talking about getting me an understudy. And they're like, all right, so do you want somebody that can match you or push you technologically? And I'm like, no, I don't care. I can threat hunt. I've done it before. I can freaking do offensive security even. I've done it before. I have no qualms about that. What I have qualms about is how do I get 1800 people to give a shit? Pardon my French. And if I have an understudy, using the term loosely, that has a completely different skill set than me, that majored in WGS, majored in African American studies, majored in anything that's under more the humanitarians aspect. That's what I need. That's the kind of perspective that's going to be fresh and fantastic. And that's one of the most important people in the department is her official title. I hate using it. Her official title is secretary to the CIO. She's the most important person in the department because she has an English major. And what was her minor? Her minor was in the humanities. And she's the most important person because who do we go to to communicate to every single other department? Who do we go to to get their opinion on how things are worded? Or if we do ABC and it has XYZ result, how does that impact other departments? That's who we're going to. We're not going to the engineers, we're not going to help desk, we're not going to me, we're not going to the programmers. We're going to the person that has all these soft skills, that has a decade plus of functionally HR experience. Just in the IT realm. That's the most important person. And if we can focus on qualities like that, gosh, it might not suck so bad someday.

Of particular interest to me is the ways in which Participant 1 discusses the need for humanities educated professionals in technical workspaces as a means for translating critical and/or relevant information across professional roles in order to achieve buy-in. Participant 1 understands from their perspective the reasons why people in blue collar industries are hesitant to take direction from security organizations. In making these suggestions, the participant demonstrates an understanding of the ways in which their skillsets and in some cases privileged positions of power create communication barriers between his industry and the industries whose information they are trying to protect. Creating culturally aware systems of communication and sites for translation (Gonzales; Mendoza, Pouncil, Haywood, and Kang 2024), based on the needs of those impacted by security regulations, is a potential solution to a problem Participant one draws into focus. Further, creating communication plans that are informed by the impacted users and their localized context ensures greater levels of agency (Loukissas; Sun).

Across the interviews, participants made connections between definitional challenges to addressing accessibility in the field of cybersecurity, the need for community and belonging for thrivance in cybersecurity workspaces, and a focus on the complex nature of gamification as it relates to accessibility and community in cybersecurity workforce development. Asking the participants questions about their identity and the role power, positionality, and privilege in their mentoring and workplace community experiences led to discussions that present positive correlations between the themes discussed. Making reflexive decisions allowed participants to follow threads I didn't anticipate, leading to additional discussions centered around humanities in STEM and technical communication planning as a means for increasing equity in cybersecurity workplaces. All participants across a wide range of backgrounds agreed that a localized,

culturally relevant, human-centered accessibility approach–not a legal framework or ADA

approach– is necessary for more inclusive workforce development in the cybersecurity industry.

Chapter 6: Beyond Awareness: From Community Conversation to Coalitional Action

> *But we ask for more than mere recognition. Mere recognition, much like surface-level*
> *representational diversity, is insufficient.*
> *-Walton, Moore, and Jones*

As the cybersecurity industry focuses on strategizing successful workforce development to address ongoing talent shortages, the National Institute for Cybersecurity Education (NICE) strategic plans seek to bridge talent gaps through 1) better defining cybersecurity workforce frameworks, and 2) creating accessible career pathways to cybersecurity (Nice Framework, 2024). This dissertation seeks to bridge conversations on issues of access to thriving careers in cybersecurity with technical communication orientations to justice from a holistic perspective, using critical disability theory, Black Feminist intersectional approaches, and justice-based technical communication frameworks. The work of this dissertation is grounded in values forwarded by critical disability advocates: reciprocity, community, and inclusion of those most impacted by policies and practices.

Over the course of the dissertation, I have 1) provided an overview of the exigence within cybersecurity industry approaches to accessible workforce frameworks, defining access and thrivance in the context of cybersecurity; 2) foregrounded the research with a positionality statement based in Black Feminist standpoint theory, conveying ways in which my personal experiences as a socioeconomically disadvantaged youth and Lesbian veteran under Don't Ask, Don't Tell (DADT) impacted my orientation(s) to institutions and capacity for following norms toward commonplaces of belonging; and how my positionality as a person with disabilities and parent to children with disabilities impacts this dissertation research, scope, and vision; 3) provided a review of literature focused on accessibility within technical communication and the cybersecurity industry, as well literature that is justice-based and located in critical disability

studies, writing studies, and cultural rhetorics, demonstrating the need for coalitional thirdspaces toward creating accessible workforce development pathways; 4) reported observations made during critical grounded theory analysis of the 2023 NICE Conference, which led to themes for discussion with members of the cybersecurity community; 5) discussed themes emergent from reflexive semi-structured interviews with members of the cybersecurity industry, engaging with Walton, Moore, and Jones's 3Ps (power, positionality, and privilege) alongside themes emergent from the NICE conference analysis. Themes present in both stages of research, and reported in chapter three of the dissertation include: workforce development, human resources, community and collaboration, pedagogy, gamification, and disability.

As mentioned in chapter two, I chose to engage with Black Feminist theory because of the call within the scholarship to include Black Women, multiply marginalized people, and the most impacted people within a social context into the center of praxis-based conversations focused on solutions. This approach to the work should be constant, even and especially in instances when those people are not in the room where decisions are made. And this absence is often the case: while women make up 24% of the cybersecurity workforce, only 9% are Black women. As with many industries, leadership is even less diverse. Understanding these disparities is only the first step to making real and lasting change. We must engage with the messy work of change, in coalition, navigating margins of maneuverability as we chip away at power inequities. As NICE engages in strategic planning toward closing workforce talent gaps in cybersecurity, scholars in technical communication have an opportunity to work in coalition with members of the cybersecurity industry to influence change toward thriving career pathways.

From here, I will outline key findings from the dissertation research, outlining methods for bridging work and coalitional possibilities; provide best practices and recommendations for

cybersecurity industry leaders; and outline future research possibilities in the field of technical communication.

Storying as Bridge Building: A Holistic Approach

In thinking about the work of equity and justice forwarded in technical communication scholarship within the context of cybersecurity workforce development frameworks, I understood that I would need to start with the work of bridging meanings and orientations between technical communication and the cybersecurity industry. The incorporation of story into communities of practice is one way of bridging gaps and breaking down silos between groups with their own frames and contexts. As discussed in chapters one and two, cybersecurity industry leaders have noted a need for storying as a method for achieving buy-in with business stakeholders and navigating communication barriers between business sectors.

Technical communicators and rhetoricians also note the importance of story as a tool for building community, navigating conflict, and overcoming inequities (Haywood 2019, 2021; Driskill, 2014; Benjamin 2018). In this dissertation I noted instances of use by practitioners at the 2023 National Initiative for Cybersecurity Education (NICE) conference and in the interview portion of research. I contrasted instances of story as method with instances of definitional work in the chapter four plenary speaker discussion, noting the ways story works to forward values of equity and justice through embodiment, object lessons, and repetition, while doing the translational work necessary to convey unfamiliar or unaccepted ways of thinking to insider/outsider audiences.

Coalitional ThirdSpace for navigating margins of maneuverability

In chapter two, I argued for the necessity of coalitional thirdspace as a tool for overcoming margins of maneuverability within communities of cybersecurity workers facing inaccessible

conditions in their workspaces. Taking up Walton, Moore, and Jones's work (2019) focused on power, privilege, and positionality alongside Nedra Reynolds's focus on locational context, there is an opportunity for communities of workers with access needs to create solutions outside the constraints of workplace margins of maneuverability. In Chapter 5, one interviewee describes the importance of community building with coworkers outside of the workplace as well as networking with cybersecurity professionals in digital chat groups.

In some regard, the NICE conference provides a thirdspace for discussing access issues and other barriers to thrivance, but it is important to understand the NICE conference is an initiative within a key institution (NIST) responsible for defining and driving cybersecurity workforce frameworks. NISTs central organizational logics are existent (and forwarded) within the conference space, even in its adjacent location. The adjacent nature of the conference space allows for some flexibility in discussing concepts otherwise not prioritized, but those discussions are still constrained by organizational priorities. For this reason, seeking thirdspaces outside of governing institutions and organization may prove to be more generative and agreeable to centering priorities of care, community, and transformative accessibility.

Best Practices in the Industry: Community Recommendations

In-depth interviews with cybersecurity professionals (n=6) resonated with the NICE conference presenter themes. Interviewees expressed a shared need for the following best practices toward accessible cybersecurity workforce development:

- Communication plans that promote understanding of cybersecurity across business and in various, accessible modalities should seek to identify and address potential barriers as new

- Accessibility built-in and at-scale, spearheaded by culturally competent team members and/or consultations and appropriate to specific contexts and in consideration of a wide range of disabilities and access needs.
- NICE Competency Frameworks should be considered critically and reframed to include access considerations of org and community members
- Intentional holistic community partnership across organizational domains and interest groups within and outside workplace environments.

There is an opportunity to bridge the gap in cybersecurity talent collaboratively and in partnership with other domains of business and academia: people first, pedagogically innovative, and technologically driven. Partnership buy-in from business partners and cybersecurity leaders can be driven through demonstrated alignment with business goals:

1. More secure environment bc we are better accounting for human behavior

2. Alignment with ESG initiatives: driving values, gaining incentives

3. Drive business culture with security in mind

Future research in technical communication and industry

The focus of this project is one of depth, not breadth, attending to conversations at a specific point in time at the 2023 NICE conference, and engaging in interviews with a small number of cybersecurity practitioners discussing themes similar to those present at the NICE conference. As discussed in chapter 4, the conference theme, "Resetting Expectations: Recreating Accessible Cybersecurity Career Pathways," focused on accessibility within a workforce development framework. The research provided an opportunity to observe the ways in which national initiatives like NICE, and the guiding principles promoted by them, are discussed, practiced, and experienced by cybersecurity communities. Future research focused on the accessibility of technology interfaces utilized by cybersecurity practitioners from a Human Centered Design (HCD) perspective would contribute to accessible workforce development in new ways.

Additionally, research focused longitudinally upon the long-term impacts of historical accessibility practices in the field would provide a solid foundation from which to justify the work of accessibility, and provide a more clear and targeted needs-based approach to prioritized focus in this area.

It is my strong belief that academia and industry must intentionally work to foster a de-siloing approach to the work of education and community development within cybersecurity–not just regarding accessibility. Technical communicators have much to offer technical industries in terms of equity, justice, and inclusion. Likewise, in my field of cybersecurity, practitioners have practical first-hand insight into developing technologies and the communication practices that inform them. One way to collaboratively build knowledge around emerging technologies is through research publication in business genres such as a white paper. Creating research communities focused on collaborative interdisciplinary writing, research, and problem solving, is a key next step for the further development of justice-based technical communication in STEM fields like cybersecurity.

REFERENCES

–. (2020) COVID 19 Response: Digital accessibility and other best practices for remote work.

--. (2024) Cybersecurity: Conflict prevention and stabilization." *USAID*. Web.

–. (2021) Essential accessibility guide to ADA web accessibility

–. (2022). Escaping the echo chamber: How to make cybersecurity accessible for all. *NuData Security*. 2022.

—. *Haiku: Join the Next Generation of Cybersecurity Enthusiasts*. Web: Accessed: 2024. https://product.haikuinc.io/haiku?utm_term=&utm_campaign=EB+700+Security+Awareness+B2B+Perf+Max&utm_source=adwords&utm_medium=ppc&hsa_acc=1570691625&hsa_cam=20783199493&hsa_grp=&hsa_ad=&hsa_src=x&hsa_tgt=&hsa_kw=&hsa_mt=&hsa_net=adwords&hsa_ver=3&gad_source=1&gclid=EAIaIQobChMI1e3Ek5jthAMVxVBHAR1FOwhREAAYASAAEgKWxPD_BwE

—. (2024).National Initiative for Cybersecurity Education (NICE) Cybersecurity Workforce Framework. *Cybersecurity and Information Security Agency*. Web. Accessed: 2024 https://www.cisa.gov/national-initiative-cybersecurity-education-nice-cybersecurity-workforce-framework

—. (2024). Using the NICE Framework. *National Initiative for Cybersecurity Education (NICE)*. Web. Accessed: 2024.

—. National Institute for Standards of Technology. Glossary: Cybersecurity. https://csrc.nist.gov/glossary/term/cybersecurity

—. (2024). Nothing about us without us. *Disability Without Poverty*. Web. Accessed: 2024 https://www.disabilitywithoutpoverty.ca/nothing-about-us-without-us/#:~:text=The%20phrase%20"Nothing%20about%20us,cry%20for%20democracy%20ever%20since.

–. (2021) Remote work increases accessibility, widens talent pool. *GovTech*. Web.

—. What is Cybersecurity? C*ybersecurity and Information Security Agency*. Web. Accessed: 2024.

—-. (2024). Insights: neurodiversity in the workplace. Eagle Hill Consulting. https://www.eaglehillconsulting.com/insights/neurodiversity-in-the-workplace/

Allen-Ramdial, S.A., & Campbell, A.G. (2014). Reimagining the pipeline: advancing STEM diversity, persistence, and success. *BioScience, 64*(7), 612.

Arola, K. L. (2010). The design of web 2.0: the rise of the template, The fall of design. *Computers and Composition*, *27*(1), 4–14.

Ben, S. S., & Hopkins, H. R. (2022). AI for social justice: new methodological horizons in technical communication. *Technical Communication Quarterly*, 31(1), 89–102.

Benjamin, R. (2019). *Race after technology: Abolitionist tools for the new Jim code*. Polity.

Bloch, S., & Brasdefer, T. (2023). Edward W. Soja's radical spatial perspective. *Human Geography (United Kingdom)*, *16*(3), 233-243–243. https://doi-org.proxy1.cl.msu.edu/10.1177/19427786231175849

Brown, A. (2017). *Emergent strategy*. AK Press.

Butler, J. (2019). Perspectives of Deaf and Hard of Hearing viewers of captions. *American Annals of the Deaf,* 163(5), 534–553.

Craig, C., Flores, W., & Moeggenberg, Z. C. (2022). Introduction to the special Issue: working toward a definition of queer literacies. *Literacy in Composition Studies*, *9*(2), V–XIX.

Costanza-Chock, S. (2020) *Design justice: Community-led practices to build the worlds we need*. Print.

Collins, P.H. (2000, 2009). *Black feminist hhought*. Routledge Classics. Print.

Cox, M. (2019). Working Closets: mapping queer professional discourses and why professional communication studies need Queer Rhetorics. *Journal of Business and Technical Communication.* Jan 2019, 33(1), p1-p25.

Crenshaw, K. (2005). Mapping the Margins: Intersectionality, identity politics, and violence against Women of Color (1994).

In R. K. Bergen, J. L. Edleson, & C. M. Renzetti, *Violence against women: Classic papers,* (pp. 282–313). Pearson Education New Zealand.

Creswell, J. W. (1998). *Qualitative inquiry and research design: choosing among five traditions.*Thousand Oaks, Calif., Sage Publications. Print

Driskill, Q.-L. (2014). *Decolonial skillshare: Indigenous rhetorics as radical practice*. Utah State University Press, An imprint of University Press of Colorado

Gonzales, L. (2022). (Re) Framing multilingual technical communication with indigenous language interpreters and translators, *Technical Communication Quarterly,* 31(1), 1-16.

Gonzales, L., & Butler, J. (2020). Working toward social justice through multilingualism, multimodality, and accessibility in writing classrooms. *Composition Forum, 44*.

Grego, R.C., & Thompson, N.S. (2007). *Teaching/writing in thirdspaces : The studio approach*. Southern Illinois University Press.

Haywood, C. (2019) 'I do this for us:' thinking through reciprocity & researcher community relationships. *Digital Rhetoric Collective*.

Haywoord, C. (2022). A place of personal and cultural resistance: using Black feminist values, perspectives, and embodied knowledges to (re)examine institutional logics and ethics in digital research. Dissertation, Michigan State University.

hooks, bell. (1989). Choosing the margin as a space of radical openness. *Framework: The Journal of Cinema and Media*, *36*, 15–23.

Kafer, A. (2013). *Feminist, queer, crip*. Indiana University Press.

Klosternman, A (2024). Profile: About. *LinkedIn.*

Knoll, N. (2024) *Hybrid work series: navigating remote work.* Web.

Koerber, A., Provencher, J. & Starkey, J. (2021) Leadership communication in the STEM workplace: A qualitative study, *Technical Communication Quarterly,* 30(2), 123-142.

Kolmstetter, E. (2024). Profile: About. *LinkedIn*

Lauren, B. (2018). *Communicating project management: A participatory rhetoric for development teams*. Routledge.

Lawrence, H. (2024). Technical and professional communicators as sdvocates of linguistic justice in the design of speech technologies. Technical Communication & Social Justice 2(1), 1-22.

Levitt, H.M. (2021) *Essentials of critical constructivist grounded theory research*. American Psychological Association.

Lindquist, J. (2012). *Time to grow them: Practicing slow research in a fast field*. *JAC, 32*(3/4), 645.

Loukissas, Y.A. (2019). *All data Are local: Thinking critically in a data-driven society.* The MIT Press. Print.

Medina, R. A. (2021). Operationalizing relationality for thrivance. *Teacher Education Quarterly, 48*(2), 90.

Mendoza, R., Haywood, C., Pouncil, F., & Minjung Kang, S. (2024). BIPOC graduate students' coalitional healing in writing programs and colonial institutions. *Technical Communication and Social Justice*, *2*(1), 23–43.

Mingus, M. (2011). "Access Intimacy: the missing link." *Leaving Evidence*. Blog. Web.

Oxendine, Z. (2024) Profile: About.*LinkedIn*.

Phelps, J.L. (2021) The transformative paradigm: Equipping technical communication
researchers for Socially Just Work, *Technical Communication Quarterly*, 30(2), 204-215.

Powell, K. M., & Takayoshi, P. (2003). Accepting roles created for us: The ethics of reciprocity.
College Composition and Communication, 54(3), 394.

Powell, M., et al. (2014) *Our Story Begins Here: Constellating Cultural Rhetorics.*
Enculturation: A Journal or Rhetoric, Writing, and Culture.

Piepzna-Samarasinha, L.L. (2018) Care work: dreaming disability justice. Arsenal Pulp Press.
Vancouver.

Price, M. (2011) *Mad at school*. University of Michigan Press.

Puig-Mannah, Z. (2019). The TransAlien ManifestoL future love(s), sex tech, and my efforts to
re-member your embrace. *Trans Studies Quarterly. Web.*

Puntasecca, C., Hall, E., & Ware, J. (2019). Serving all who served: an analysis of the VA's
visual and digital rhetorics for welcoming sexual and gender minority veterans into VA
care. *World Medical and Health Policy, 11*(4), 440.

Reynolds, N. (2003). *Geographies of writing: Inhabiting places and encountering difference*.
Southern Illinois University Press.

Royster, J.J & Kirsch. G.E. (2016). *Cultural Rhetorics: The Struggle for Meaning in a
Community of Practice.* Southern Illinois University Press.

Steelcase. (2022) Creating an Inclusive Workplace: Lessons from the pandemic about
how to support all people.

Stenberg, S. J. (2015). *Repurposing composition: feminist interventions for a neoliberal age.*
University of Colorado Press.

Swartz, J. (2020). Technical Communication is a social medium, *Technical Communication
Quarterly*, 29:4, 427-439.

Shandler, R. & Gomez, M.A. (2023) The hidden threat of cyber-attacks – undermining public
confidence in government, *Journal of Information Technology & Politics*, 20(4), 359-
374.

Soja, E. (1996). *Thirdspace: Journeys to Los Angeles and Other Real-and-Imagined*

Places. Oxford: Blackwell.

Sun, H. (2012). *Cross-cultural technology design: Crafting culture-sensitive technology for local users*. Oxford University Press.

Sun, H. (2019). Extended abstract: from user experience to engagement - a new direction in professional communication and HCI. *2019 IEEE International Professional Communication Conference (ProComm), Professional Communication Conference (ProComm),2019 IEE International, PROCOMM,* 237-238.

Walton, R., Moore, K.R. & Jones, N. *Technical communication after the social justice turn*. NY, New York; Routledge.

Whova Event Application. *2023 National Institute for Cybersecurity Education.* App Store.