

# **The Future of Labor: Designing for Resistance, Relationality, and Collective Power**

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*To Maly*



# Abstract

Dominant narratives around the “Future of Work” often frame AI, automation, and other emerging technologies as inevitable, solely focusing on their impact on workers rather than critically examining the forces driving their development. This perspective has led to technologies that aim to facilitate human-technology partnerships, augment human abilities, enhance worker productivity, and even promote worker wellbeing. However, embedded within many of these initiatives are corporate logics that ultimately lead to increased worker exploitation, surveillance, and managerial control. In response, workers engage in everyday acts of resistance and collective action to challenge these exploitative structures and reimagine and construct alternative labor futures.

This dissertation calls for a shift from the Future of Work to the *future of labor*, a reorientation that centers workers not as a passive subject of technological change but as a proactive force in shaping more just and sustainable futures. To illustrate this, the first part of my dissertation examines three case studies where the growing presence of surveillance technologies, data-driven systems, and AI in the workplace restructures labor conditions and how workers across sectors negotiate and respond to these exploitative structures through infrastructures of *resistance, relationality, and collective power*. By focusing on worker resistance as a critical site of inquiry, I position these acts not merely as reactive responses to inevitable technological change, but as forms of futuring through which more just and equitable labor conditions are imagined and enacted.

The second part of my dissertation examines how HCI researchers can support the future of labor. First, I present insights from an expert review workshop evaluating the Workplace Surveillance Incident Tracker, a public platform that documents cases of workplace surveillance and provides worker-centered resources for capacity building and taking action. I argue that HCI researchers must approach accountability not as a purely technical problem, but as infrastructure, foregrounding the relational and organizational conditions necessary to sustain worker-centered interventions. Finally, I draw on Lisa Lowe’s “Intimacies as Method” to reflect on the connections, tensions, and interdependencies across my studies. Through this lens, I further problematize dominant Future of Work discourses, speculate on possibilities for more just labor futures, and critically interrogate the role of the HCI researcher in these struggles. Taken together, this dissertation extends scholarship on worker-centered design by calling on HCI researchers to serve as active participants, rather than detached observers, in the labor movement.



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# Chapter 1

## Introduction

In recent decades, narratives about the potential of automation, AI, and other emerging technologies to rapidly transform labor have largely fallen under the naturalizing banner of the “Future of Work.” In public discourse, these narratives have centered on whether these intelligent systems will augment human ability or displace workers at a massive scale [31, 36, 373]. However, workers’ lived experiences reveal a more uneven and complex reality that blurs this binary.

Within HCI literature, scholars have explored how the rise of algorithmic management [353, 354], workplace monitoring systems [33, 315, 370], and online gig platforms [219, 232, 329] have restructured the workplace, subjecting workers to intensified surveillance, precarity, and managerial control. Others have examined the potential for more effective worker-technology collaboration to improve productivity, efficiency, and even wellbeing [302, 308, 366]. However, critical HCI scholars have surfaced the corporate logics behind many Future of Work initiatives that emphasize close partnerships with machines [7]. This framing can obscure the underlying structural conditions that drive worker exploitation while minimizing the role of worker struggle in shaping technological change [7].

Instead, scholars have advocated for a more worker-centered perspective on the Future of Work [7, 134, 159, 334]. In 1996, Joan Greenbaum famously argued that CSCW’s focus on work should be expanded to labor issues [153]. In response, a growing body of work has taken a critical turn toward worker-centered design [133] and digital workerism [69, 70], in an effort to develop sociotechnical systems that advance worker wellbeing, autonomy, and collective power [181, 192, 354, 379]. While this scholarship has made important contributions in supporting workers’ capacities to resist, organize, and reimagine the systems that impact them, much of it remains focused on discrete domains of inquiry, such as platform and gig work or warehouse work, and anchored in present-day conditions or near-future scenarios. As a result, it can obscure the broader histories, processes, and infrastructures that connect workers across contexts. I argue that this narrowing of scope may unintentionally reproduce the very assumptions and power relations it seeks to critique, while limiting the range of interventions that can be imagined and acted upon.

Instead, my dissertation takes on a more expansive approach, one that understands labor as relationally and historically constituted through longstanding structures of capitalism and colonialism. Inspired by Lisa Lowe’s *Intimacies of Four Continents* [240, 241], this dissertation uses *intimacies* as an analytic, both to examine how dominant discourses around the Future of Work promote narratives of universality and individualism that obscure the uneven relations of labor upon which these systems depend, as well as to trace the “circuits, connections, associations, and mixings of differentially laboring peoples” [240] that are often rendered invisible within dominant analytic frameworks. From this perspective, workers are not bounded within individual workplaces, platforms, sectors, and nation-states, but shaped through interconnected histories,

infrastructures, and social relations that link them across geographies and temporalities. Rather than universalizing workers' experiences, this approach attends to the asymmetries, tensions, and contradictions that structure these relations. It also treats absences and disconnections not as gaps in the analysis, but as *ruptures* that open up possibilities for imagining alternative labor futures.

Building on this foundation, this dissertation calls for a reorientation away from dominant Future of Work narratives that frame technological innovation as inevitable toward a *future of labor* that foregrounds labor as a site of collective worldmaking. By focusing on how workers build infrastructures of resistance, relationality, and collective power across differences and uneven working conditions, I position these acts not merely as reactive responses to inevitable technological change, but as forms of futuring [402] through which more just and equitable worlds are imagined and enacted. By centering these worker-led practices, I argue that HCI researchers and designers can more meaningfully support workers in shaping these labor futures. To examine these dynamics, my dissertation is guided by the following research questions:

- **RQ1:** What are the sociopolitical logics that underpin dominant narratives of the Future of Work and the technologies designed to help enable them? How do they shape workers' labor conditions, social relations, and capacities for building collective power?
- **RQ2:** How do workers build infrastructures of resistance in response to these systems, and how can these acts be understood as forms of “counter-futuring” or alternative world-making?
- **RQ3:** How might a shift from the Future of Work to the future of labor enable HCI researchers and designers to more meaningfully support worker-led efforts in shaping more just futures?

To answer these questions, my dissertation first draws on three case studies across diverse sectors and contexts to investigate how workers experience, respond to, and contest the implementation of harmful sociotechnical systems, and how these actions reveal competing visions of what the future of work could be. Rather than fulfilling promises of efficiency, fairness, and human-machine complementarity, corporate-led visions of the Future of Work have largely consolidated managerial power and increased worker precarity. In contrast, worker-led visions of the future are grounded in autonomy, dignity, and redistribution of power within and beyond the workplace, which they actively prefigure through their resistance and organizing efforts.

Building on these insights, the second part of my dissertation explores how HCI can support the future of labor. First, I present insights from an expert review workshop evaluating the Workplace Surveillance Incident Tracker, a public platform that documents cases of workplace surveillance and provides worker-centered resources for capacity building and taking action. I argue that HCI researchers must approach accountability not as a purely technical problem, but as infrastructure, foregrounding the relational and organizational conditions necessary to sustain worker-centered interventions. Finally, I draw on Lisa Lowe's concept of “Intimacies as Method” to reflect on the connections, tensions, and interdependencies across my studies. Through this lens, I further problematize dominant Future of Work discourses, speculate on possibilities for more just labor futures, and critically interrogate the role of the HCI researcher in these struggles.

Taken together, my dissertation makes several key contributions to the CSCW and HCI communities. First, I offer a theoretical reorientation away from dominant Future of Work narratives that center technological innovation toward a future of labor that centers worker struggle and solidarity. Through a collection of diverse case studies, I provide empirical insights into how workers experience and respond to harmful sociotechnical systems through everyday acts of resistance and organizing. Finally, this research extends scholarship on worker-centered design by framing labor as a relational, community-sustaining practice, and by calling on HCI researchers to serve as active participants, rather than detached observers, in the labor movement.

## 1.1 Chapter Overview

This dissertation spans across six chapters and two parts. In Chapter 2, I provide background and theoretical grounding, situating my work within Critical HCI, Feminist Science and Technology Studies, and Labor Studies. I begin by reviewing key literature on the Future of Work and its critiques. I then examine scholarship that foregrounds worker resistance, collective power, and the ways they prefigure alternative futures, alongside HCI approaches designed to support workers in these struggles. Finally, I introduce Lisa Lowe's "Intimacies as Method", which provides an analytic for tracing the interconnections and interdependencies across my case studies, while also informing the political orientation of this dissertation.

Part I of my dissertation (Chapters 3-5) introduces how workers actively shape the future of labor through three case studies of worker resistance across diverse sectors and contexts. Chapter 3 investigates how workers across various sectors experience, understand, and resist the growing presence of workplace surveillance technologies (WSTs). While these tools are often promoted to improve productivity, efficiency, and safety, workers described facing numerous privacy concerns, as well as significant stress due to the constant threats of disciplinary action as a result of these technologies. In response, workers engage in everyday acts of resistance that directly challenge the assumptions embedded in these systems. Despite the limited power and legal protections workers have in the face of intrusive monitoring, these tactics signify workers' ongoing negotiations to gain dignity in the workplace, highlighting a future of labor that centers worker agency and autonomy in the building of sociotechnical systems.

Chapter 4 examines how frontline workers within Asian American Pacific Islander community-based organizations (CBOs) contend with disempowering sociotechnical practices, particularly the use of datafication as a means to receive government funding. While framed as mechanisms for accountability and efficiency, these practices often divert CBOs from the relational, community-building work they were founded to do. In response, CBO workers resist by reconfiguring data practices that have historically been used for surveillance, translating numbers into powerful counter-narratives for their advocacy work. This labor of translation, often feminized, racialized, and invisible, presents a future of labor rooted in relationality, care, and collective survival.

Chapter 5 draws on interviews with U.S.-based tech worker-organizers who have unionized and participated in collective action. While dominant narratives often portray tech workers as presti-

gious and immune to traditional forms of labor struggle, interviewees described facing increasing precarity and instability across the industry. As the tech labor force becomes increasingly stratified globally, the ability to organize transnationally and cross-sectorally has been limited. However, tech workers have leveraged spaces like the Tech Workers Coalition and Labor Notes to connect with workers both within and beyond the tech sector. These networks enable workers expand their organizing efforts beyond workplace-specific grievances to include broader concerns such as the ethical implications of AI systems used in warfare and the global displacement of workers by automation. Through their organizing, tech workers articulate a vision of the future of labor rooted in long-term sustainability, cross-movement solidarity, and ethical responsibility over short-term corporate gains.

Part II of my dissertation (Chapters 6-7) explores on how HCI researchers can support the future of labor. In Chapter 6, I present insights from an expert review workshop focused on evaluating the Workplace Surveillance Incident Tracker, a public platform designed to document cases of workplace surveillance, while providing worker-centered resources for capacity building and taking action. While workshop participants saw value in the platform's ability to increase transparency around workplace surveillance, they placed more emphasis in its potential to support knowledge sharing, coalition building, and coordinated action across the fragmented ecosystem of workers, organizers, advocates, and researchers contesting workplace surveillance. I argue that HCI researchers can support the future of labor by moving beyond simply tool building and treating accountability as infrastructure. This perspective foregrounds the relational and organizational conditions necessary for more effective and sustainable worker-centered interventions.

Finally, in Chapter 7, I draw on Lisa Lowe's concept of "Intimacies as Method" to reflect on the connections, tensions, and interdependencies across my studies. Through this lens, I further problematize dominant Future of Work discourses, speculate on possibilities for more just labor futures, and critically interrogate the role of the HCI researcher in these struggles. I then outline my plans for future work.

# Chapter 2

## Background & Related Works

### 2.1 From the Future of Work to the Future of Labor

“Future of Work” discourse has typically centered on two dominant visions. The first suggests that intelligent systems will complement and augment labor, freeing workers from routine tasks to focus on creative problem-solving work, increasing their productivity, wages, and the demand for human labor in the process [31, 373]. The second anticipates mass displacement of workers, including high-paying professionals [36, 373].

This discourse is not new. From visions of fully-automated factories without workers and the Luddite uprisings against mechanized textile production, recurrent anxieties and utopian dreams around automation have occurred since the 19th century [48, 260, 333]. The cybernation debates of the 1950s and 60s were characterized by what Bassett and Roberts [44] describe as “automation fever,” a mix of fear and fascination with intelligent machines. In 1964, the Ad Hoc Committee on the Triple Revolution warned that advances in automation could lead to widespread technological unemployment, calling for policies such as guaranteed income to address the social disruptions automation might cause [35]. At the same time, others saw automation as a means to achieve human liberation from toil, imagining a future of abundance, expanded leisure, and democratized prosperity [44]. These conflicting imaginaries continue to shape contemporary narratives around the Future of Work.

While scholars have shown that automation has not eliminated the majority of jobs [31], the nature of work has nonetheless been radically restructured. The rise of the platform-based gig work—often performed by women, people of color, and workers in the Global South—has introduced new forms of precarity, low pay, and a lack of worker protections [151, 190]. Meanwhile, workplace fissuring and offshoring have fragmented employment relationships and weakened employer accountability [414]. These dynamics are compounded by financialization, deregulation, and austerity measures that have eroded labor protections, undermined collective bargaining, and hollowed out social safety nets [272, 334]. In parallel, workplace monitoring and algorithmic management systems have further constrained worker autonomy, subjecting workers to new forms of surveillance and control [10, 118]. Taken together these conditions have contributed to increased worker precarity, while limiting workers’ ability to shape the conditions of their work.

Despite these transformations, proposed interventions often revolve around individualized responses, such as upskilling workers or introducing modest labor protections [334]. These approaches, however, tend to treat technological change as inevitable, focusing on how workers can adapt rather than interrogating who drives these transformations, whose interests they serve, and the broader structural conditions that shape them [159, 334]. As critical scholars argue, the Future of Work itself is a political project, where corporate actors, consulting firms, and even

academic institutions have played a central role in legitimizing this discourse [7, 159, 334]. In her piece, “Who Owns the Future of Work?”, Ayla Ahmed [7] critiques the corporate ideologies embedded in the U.S. National Science Foundation’s Future of Work initiatives. Through technoutopian narratives of “co-existence” “partnership,” and “trust” with machines, these initiatives advance the idea that transformational change can only come through mutual collaboration with technology rather than through worker struggle. In doing so, they obscure the structural power imbalances and violent settler-colonial histories that have led to expanding worker exploitation in the name of productivity and economic growth.

Critical scholarship across Black studies, ethnic studies, postcolonial studies, and science and technology studies have highlighted how modern sociopolitical and sociotechnical systems are rooted in enduring forms of colonialism and racial capitalism. Cedric J. Robinson, for example, argues that capitalism has always relied upon racial hierarchies and differentiated forms of labor extraction [312], while Lisa Lowe shows how modern liberal ideas of freedom, progress, and social equality are inseparable from histories of violence and dispossession, including the transatlantic slave trade, invasion of indigenous land, and Asian indentured labor [240]. Building on these foundations, critical technology scholars have shown how digital infrastructures, including systems of surveillance, algorithmic management, and platform labor continue to reproduce and extend these uneven relations of power under the guise of technological innovation and efficiency [30, 49, 62, 227].

These narratives not only obscure the deeper structural crises shaping labor today, such as climate instability, social inequality, and the disintegration of the welfare state, but ultimately work to narrow our collective imagination of what is possible, while sidelining the lived realities, needs, and agency of workers themselves [7, 159, 334]. As Gupta et al. [159] argue:

“...it is not the Future of Work that must concern us at this crucial moment, but rather it is the future of workers—whose future is inextricably linked to our ability to promote and preserve equality and democracy—that must be our most urgent concern. Unless we center our thinking around the intertwined and interdependent fates of working people, and their struggles for economic, racial, and gender justice, we cannot plan for a humane and sustainable future.”

Shifting from the Future of Work to the future of labor reorients analysis away from a focus on technological innovation and toward the historical, political, and relational conditions in which futures are produced. Rather than positioning workers as passive recipients of technological change, this perspective positions them as active participants in shaping it. This reframing also broadens the terrain of inquiry to consider how sociotechnical systems intersect with larger structures of domination. Crucially, it rejects the notion that the future of labor is fixed, singular, or universal. Rather, it is dynamic and unstable, continuously contested and co-constructed through ongoing sites of struggle and negotiation.

## 2.2 Worker Resistance, Relationality, and Collective Power

While dominant Future of Work narratives frame workers as passive subjects to technological change, a growing body of scholarship foregrounds the way in which workers resist, organize, and prefigure alternative futures. Across sectors, workers are using creative tactics to directly confront platform capitalism, increased datafication, algorithmic management, and surveillance. These tactics range from more informal, everyday acts of refusal and resistance, to more structural, collective forms of organizing.

In response to opaque algorithmic management systems, some workers engage in “sousveillance” and self-surveillance techniques to monitor their conditions, track pay discrepancies, and hold platforms and customers accountable [79, 113, 136, 156, 166, 247, 248, 329]. These practices align with a longer tradition of “workers’ inquiry,” where workers collect and analyze data to better understand and improve their working conditions [5, 9, 10, 39, 90, 206, 321]. In other cases, workers repurpose technologies to subvert or manipulate systems used for surveillance and algorithmic control. For example, gig workers use VPNs to protect their personal information [329], bots to auto-accept jobs [54], or manipulate geolocation features to exploit platform rules [232]. These hacks serve not only as self-protective strategies but as a way to reclaim worker autonomy and agency within tightly controlled digital platforms.

As labor becomes increasingly fissured, resistance often appears through these everyday, individualized practices. Yet even these individualized actions are scaffolded by collective infrastructures. Reddit forums and WhatsApp groups serve as informal support networks where workers exchange tips, document grievances, and build solidarity [1, 56, 232, 300, 301, 329, 337, 386, 432]. These platforms become spaces for commiseration, coordination, and care, especially for workers who are physically and socially isolated. Critical feminist scholars frame these informal support networks as practices of radical care amid increasing precarity [175]. Acts of relational care, even when expressed through individualized contexts, can lay the groundwork for broader solidarities and collective action. In this light, relationality emerges as a radical political orientation—one rooted in interdependence, mutual aid, and collective survival [175, 294, 352] in the face of atomized and precarious labor conditions. In the context of digitally mediated work, these relational practices have increasingly crystallized into new forms of collective power. As formal union structures struggle to accommodate platformized and fissured work arrangements [264], workers have built hybrid structures of organizing that span both digital and physical spaces, such as mutual aid networks [192, 300, 301], worker cooperatives [157, 230, 326], and grassroots coalitions [101, 309]. Campaigns like the Google Walkout and coordinated strikes by gig workers exemplify how dispersed and precarious workers have been able to mobilize at scale, with support from digital platforms [88, 424, 439].

Taken together, these efforts are not just responses to crisis, but are prefigurative, actively building the futures workers want to see. As a result, this body of work reorients the future of work away from techno-deterministic narratives and toward labor-centered imaginaries grounded resistance, relationality, and collective power. It provides a foundation for HCI and design researchers to move beyond studying or optimizing work, and toward materially supporting these infrastructures that workers are already building.

## 2.3 Critical HCI and Design Approaches to Support Labor

In her seminal 1996 piece “Back to Labor,” Joan Greenbaum [153] challenged the CSCW community to consider issues of labor in their study of work, especially in the face of rising outsourcing, automation, and job precarity. Drawing from Scandinavian traditions of participatory design [61, 121, 185], Greenbaum highlights how early collaborations between designers and unions in the 1970s and 1980s were explicitly political projects aimed at democratizing the workplace and empowering workers to co-determine the tools and systems shaping their labor. Greenbaum warned that when design practices frame “cooperation” solely as a management objective, they risk reinforcing labor exploitation. Instead, she called for designers to be accountable and attuned to the ways systems shape working conditions and divisions of labor.

Building on this foundation, a growing body of work in CSCW and HCI has advanced methods that not only involve workers but materially support their capacity to resist, organize, and reimagine the systems that impact them. Worker-centered design, for instance, centers the lived experiences and needs of workers, positioning them as experts in the design process [134]. For example, Irani and Silberman [192] co-developed Turkopticon alongside Mechanical Turk workers to give them the ability to submit reviews of requestors. Calacci explores how HCI can support “digital workerism” by creating tools that facilitate data sharing and collective action, particularly among dispersed platform workers [69].

Some scholars have also used speculative design methods to engage with workers in envisioning possible futures of work [87, 130, 246]. For example, Cheon & Khovanskaya [87] demonstrate how speculative design can expose the risks of emerging labor technologies, particularly in warehouse settings, where gamified systems threaten to deepen surveillance, intensify productivity pressures, and exacerbate exploitation. Similarly, Ma et al. [246] engage gig workers in envisioning alternative roles in an automated future, proposing “labor as a design material” to challenge extractive logics.

However, much of this work remains anchored in present-day trends and their extrapolation into near-future scenarios, leaving open opportunities for more radical and historically grounded speculative inquiries that connect labor futures to broader movements for social transformation. Addressing this gap, Forlano and Halpern [130] argue for a shift from creating counterfactual artifacts toward enacting counterfactual actions—embodied, performative engagements that leverage historical context to support collective resistance and more just sociotechnical futures. By situating speculative design within a longer arc of labor struggle and infrastructural critique, these approaches emphasize the importance of relationality, historical consciousness, and collective action in shaping transformative futures of work.

In a similar vein, prefigurative design [27] seeks to materialize the values and social relations of more just and equitable futures in the here and now. Rather than waiting for structural change to come from above, it fosters grassroots experimentation with alternative ways of working, organizing, and relating, often in direct opposition to dominant systems of extraction and control. By embedding principles such as mutual aid, solidarity, and democratic participation, prefigurative design becomes an embodied, participatory, and ongoing practice of world-making already underway within labor movements and worker-led initiatives. These efforts reflect how workers

are actively shaping the futures they want to inhabit. Rather than prescribing or assuming what the future of work could look like, HCI researchers can support and amplify the ways workers are actively prefiguring and shaping these futures through their actions.

## 2.4 Intimacies as Method

In this dissertation, I draw inspiration from Lisa Lowe’s “Intimacies as Method” [241]. In her book, *The Intimacies of Four Continents*, Lowe traces the entangled histories of European liberalism, colonialism in the Americas, the transatlantic slave trade, and Asian indentured labor during the eighteenth and nineteenth centuries [240]. Lowe argues that treating these histories as separate rather than mutually constitutive risks obscuring the violence that underpin liberal narratives of freedom, progress, and individualism. Instead, she applies intimacy as a heuristic to attend to the “circuits, connections, associations, and mixings of differentially laboring peoples” and to understand how global systems of labor, governance, and capital are co-produced through uneven and enduring relations of power, extraction, and exploitation. Lowe further suggests that this methodological approach opens space for engaging in *past conditional temporality*, or “what could have been,” as a way of imagining alternative futures within connected histories of exploitation and resistance.

Within feminist science studies, intimacies as method has also been developed as a practice of self-reflexivity that recognizes knowledge as produced through situated and embodied relations [167]. Beyond simply mapping connections between objects of study, this approach critically examines how researchers are themselves implicated within the worlds they study, which requires attending to the power relations, epistemic assumptions, and institutional conditions that shape what becomes knowable and representable. Extending this perspective to the design of sociotechnical systems, Lucy Suchman calls for “located accountabilities” in place of designing from a presumed “view from nowhere” [368]. Suchman further critiques forms of “detached intimacy” that allow technology designers and researchers to claim proximity to users while remaining insulated from the consequences of their interventions, ultimately reinforcing alignment with institutional and corporate power. In contrast, located accountabilities emphasizes the responsibilities that come from one’s situated entanglement within extended sociotechnical worlds. In other words, located accountabilities can be understood as a form of close intimacy that demands sustained engagement with the political, ethical, and material consequences of one’s participation in shaping and navigating these interconnected relations.

Building on these perspectives, I apply intimacies as method to examine the interconnections, tensions, and interdependencies across my case studies. This includes tracing shared experiences of worker precarity, surveillance, and intensified managerial control, while also attending to the uneven ways these conditions are experienced, negotiated, and resisted across different sectors and sociotechnical contexts. In doing so, I further problematize the Future of Work and its discourses, while highlighting the possibilities for more just and equitable labor futures that emerge within and across these sites. Finally, I use intimacy as a lens to interrogate the role of HCI in shaping and supporting these futures.

## 2.5 Positionality

In the spirit of practicing self-reflexivity as part of using intimacies as method, below I reflect on my positionality in relation to my research. I am a second-generation Asian American woman born to working-class Cambodian and Korean immigrant parents. The lingering effects of my family's experiences as refugees fleeing war and genocide, as well as the fallout from U.S. interventions in Korea and Southeast Asia have deeply shaped me as a person and how I view the world. Seeing how specific family members performed essential yet precarious labor — including as warehouse workers for big tech companies — and how they responded to systems of oppression informs my interest in studying the intersections of tech, labor, and resistance for this dissertation.

These experiences also shape my commitments as a community and labor organizer, which in turn prefigured how I choose to inhabit my role as an academic researcher. Two of the case studies (Chapters 4 and 5) included in this dissertation emerged from my long-term involvement in community-based work and organizing outside of research contexts. In particular, my personal experience as a tech worker who was deeply involved in a tech union campaign offered me a first-hand view into the increasingly unstable working conditions of white-collar tech workers, and how these individuals push back. In an academic environment where success is often measured through publication and citation counts, I have sought to hold space for building long-term relationships, providing material benefits, and being accountable to the communities I serve [372]. At times, sustaining these commitments has placed me in direct tension with the institutions of which I am a part. Yet navigating between these multiple spaces has also shown me the critical role academic researchers can play in making knowledge accountable to the communities from which it emerges, connecting scholarly inquiry to broader struggles for social and economic justice, and building solidarities with workers and communities. It is with these experiences and understanding that I pursue this work.

## **Part I. How Workers Shape the Future of Labor**



# Chapter 3

## How Workers Resist Surveillance Technologies on the Job

This chapter is based upon the following previously published work:

Cella M. Sum, Caroline Shi, and Sarah E. Fox. 2025. “It’s Always a Losing Game”: How Workers Understand and Resist Surveillance Technologies on the Job. *Proc. ACM Hum.-Comput. Interact.* 9, 2, Article CSCW004 (May 2025).

In this chapter, I examine how workers across various sectors experience, understand, and resist the growing presence of workplace surveillance technologies (WSTs). While these tools are often promoted to improve productivity, efficiency, and safety, workers described facing numerous privacy concerns, as well as significant stress due to the constant threats of disciplinary action as a result of these technologies. In response, workers engage in everyday acts of resistance, such as commiseration, obfuscation, soldiering, and quitting that directly challenge the assumptions embedded in these systems. Despite the limited power and legal protections workers have in the face of intrusive monitoring, these tactics signify workers’ ongoing negotiations over power, autonomy, and dignity, prefiguring a future of labor that centers worker agency and wellbeing in the shaping of technological systems and policy.

### 3.1 Introduction

*“What do warehouse workers, delivery workers, and call center workers have in common? Their productivity is tracked and compared to the average of other workers. When workers are slower than average, they face disciplinary action. This causes workers to sacrifice work quality and safety to improve their times. When everyone does this, they compete against more unrealistic expectations. It’s always a losing game. Anyone can make a tracking app, but in the end it’s poor management because it doesn’t take into account worker burnout and safety. This harms both worker and employer.”* — Post on Reddit [R141]<sup>1</sup>

As the above Reddit post articulates, the current ubiquity of electronic monitoring, or Workplace Surveillance Technologies (WSTs), has transformed how workers are managed across industries. Often associated with blue-collar jobs in manufacturing and call centers since the 1990s, WSTs underwent a significant expansion in use during the COVID-19 pandemic [202]. This rise has seen these technologies flourish in previously unmonitored sectors, including higher-paying creative and technical professions. This shift has also ushered in an era of granular, real-time scrutiny for workers. A combination of “old” technologies like cameras and “new” technologies

<sup>1</sup>Throughout this paper, Reddit posts have been paraphrased or slightly altered to protect anonymity.

like artificial intelligence (AI) is now being deployed to track employee productivity, location, physical environment, biometrics, computer activity, and even personal data [174].

Paralleling this rise, there has been an increasing interest within CSCW and related scholarly communities in how data are collected about workers' performance, as well as how these evaluations affect pay structures and one's ability to sustain employment [196, 233]. Although initially deployed within the context of gig work, scholars have charted how algorithmic management techniques are now prevalent across traditional workplace settings and employment relationships [211]. Research has also examined how these data-driven management strategies are combined with other forms of monitoring (e.g., customer ratings) to generate an ever more detailed assessment of workers' activities [76, 317]. Scholars such as Sannon et al. [329] have documented how workers engage in risk mitigation strategies associated with such oversight, including self-protective surveillance behaviors, while others describe the potential for collective sensemaking as a strategy for worker contestation [179].

Building on this body of scholarship, this work seeks to understand this growing trend of WSTs cross-sectorally, including impacts on those previously spared from such intrusive monitoring. In particular, I examine the following questions: (1) What are workers' lived experiences with WSTs across sectors? (2) What tactics have workers developed to circumvent harmful forms of surveillance? (3) How do workers create avenues of peer support and information sharing around the use (and circumvention) of these technologies? To do so, I draw together content analysis of a set of 9 work-related subreddits and 10 in-depth, semi-structured interviews with employees and managers from a diverse set of industries who have experienced a variety of surveillance technologies. This includes those who have worked in operations, customer service, marketing, and food and beverage service.

Workers across this study describe how WSTs contribute to a culture of distrust in the workplace that harms both workers and managers alike. Beyond privacy concerns, workers identify these technologies as causing significant stress, reducing their productivity, and increasing their risk of disciplinary action. At the same time, they see these technologies as fostering paranoia and distrust among managers toward their employees. In response, some workers employ various resistance tactics, such as commiseration, obfuscation, soldiering, and quitting to help protect them from intrusive monitoring. However, the reliance on these more individualized tactics points to the limited power and protections workers have when subjected to highly-surveilled and fissured workplaces [414].

In what follows, I first describe the contemporary landscape of WSTs and their impacts on workers. I then discuss current understandings of worker resistance and how they build power in response to overt surveillance and poor working conditions, and the ways past HCI research has supported these efforts. Next, I detail the methods that guide my content analysis and interview process. Drawing on my findings that explore how workers experience and resist surveillance technologies, I demonstrate the need for HCI research to go beyond a focus on mitigating the risks of surveillance and to support efforts in resistance and refusal to its use.

## 3.2 Related Work

### 3.2.1 Workplace Surveillance Technologies

Technological advancements since the late twentieth century have led to the age of digital surveillance, making it easier for employers to constantly monitor their workers both inside and outside the workplace [10, 189, 404]. WSTs have the ability to track and even infer a worker's productivity, behavior, and personal information through digital activity monitoring, camera and audio monitoring, and localization and biophysical monitoring [10, 39, 100]. As AI and sensing technologies become more affordable and accessible, workplaces have introduced more intrusive forms of surveillance that often involve an assemblage of networked devices to generate continuous fine-grained data about their workers [252]. The responsibility of workplace monitoring has also become more distributed in nature, where employees are expected to aid in their own surveillance through participation in workplace wellness programs and the use of productivity apps marketed towards improving their work and wellbeing [5, 9, 10, 39, 90, 206, 321]. The increased gigification of work, coupled with the rise of remote work during the COVID-19 pandemic, has seen a proliferation of these technologies being used beyond the workplace, further blurring the lines between work and private life [14, 69, 150, 330, 440].

As a result, there has been growing interest in HCI and adjacent fields to understand how surveillance technologies are implemented across various workplace settings [254], including transportation [234, 299], warehouses [12, 86, 238], construction [223], gig work [23, 233, 329], call centers [38, 296, 310], domestic work [6, 50, 199, 266], education [243], and remote work [405]. Researchers have cited several potential benefits of its use, including the ability to offer real-time feedback for improved performance [39, 299], mitigation of risk [39], and increased accountability [41].

Although these proposed benefits highlight the potential for monitoring technologies to support workers, there have been numerous concerns that undermine this vision, including threats to worker privacy, autonomy, health, and safety, and the reinforcement of existing biases [33, 96]. These technologies often collect extraneous and irrelevant information that do not meaningfully correlate to attributes of success on the job [299, 316]. In particular, AI systems that capture and infer worker emotion, mood, and affect have been susceptible to inaccuracies and bias [59, 99, 110, 205, 316]. Workers have reported experiencing notable shifts in behavior and interpersonal dynamics, including increased stress, disciplinary action, distrust, and competition [12, 234, 299]. Pritchard et al. [299] found that London bus drivers performed a form of "self-surveillance" that involved proactively altering their behavior to avoid being flagged by monitoring systems or to beat their previous performance scores. Power differentials and a lack of transparency make it difficult for workers to meaningfully consent to these technologies, as they have little power to opt out or be in a position to understand and control the extent of monitoring, their data, or how they are being assessed [8, 9, 90, 329]. In some cases, monitoring systems have led to unsafe working conditions and poorer performance, due to workers being compelled to perform additional labor in the form of continuously checking, negotiating, and responding to these systems [243, 299, 329]. Women and minority workers, in particular, have been disproportionately impacted as they are more likely to be employed in low-wage jobs and

face biases that make them more susceptible to invasive monitoring [23, 39, 276, 361].

While there have been some studies that focus on managerial perspectives on surveillance [206], there has been less research on how managers experience being both the surveillant and the surveilled. In an adjacent context, Lu et al. [243] found that while teachers used surveillance technologies on their students, these teachers were also subjected to monitoring by their supervisors and parents. This informed how they conducted their own surveillance, purposefully choosing to highlight or omit certain data when the act of surveillance itself became a tangible metric that reflected their job performance. Rather than viewing surveillance as a simple interaction between two actors, Lu et al. recognize this phenomenon as a more complex and “wider socio-technical assemblage” involving a myriad of different actors with conflicting expectations, incentives, and power. This may include customers, third-party platforms, and data brokers [329], and even family members [23].

Workers have limited legal protections in the face of workplace surveillance [440]. In the US, there are currently no federal laws in place to protect against invasive workplace monitoring and legislation is limited in piecemeal form at the local and state levels [10]. The California Privacy Rights Act of 2020 is one of the few examples that offers some privacy protections to workers [152]. Although frequently used as an exemplar for omnibus legislation that provides robust data protections, there remain gaps within the European Union’s General Data Protection Regulation (GDPR) that enables organizations to surveil workers while still being in compliance [180, 198]. As a result, there have been calls for stronger organizational and governmental regulation to protect worker autonomy, privacy, and collective rights [72, 110, 120, 279] and for technologists to take a worker-centered design approach that meaningfully engages with workers as collaborators, limits unnecessary data capture, and recognizes the nuanced and contextual aspects of their labor that are harder to measure or make visible [11, 69, 75, 179, 206, 435]. This work expands upon this literature by taking a holistic view on how workers experience and make sense of surveillance technologies across sectors, particularly amid the rise of remote work during the COVID-19 pandemic and shortly thereafter.

### **3.2.2 Worker Power and Resistance**

Since the beginning of workplace surveillance, there has been worker resistance [244, 323]. Earlier studies of WSTs have shown how call center workers manipulate their metrics, such as leaving lines open after hanging up or pretending to talk on the phone [39, 74, 135]. Despite technologies becoming more sophisticated, workers have still found creative ways to circumvent them. For example, gig workers use sousveillance [79, 247, 248] techniques to monitor “up” by tracking payment discrepancies in ridehail work or collecting information about specific requesters on Amazon Mechanical Turk [113, 156, 166, 329]. Additionally, workers use self-surveillance techniques by tracking their own personal data as a way to hold their employers and customers accountable [136, 329]. “Worker inquiry” through data collection and analysis has long been an advocacy tool used by workers and unions since the days of Taylorism [15, 107, 213, 216, 329, 394]. Sannon et al. [329] broadly call these tactics self-protective surveillance that help to shield workers from risky work situations. They outline other resistance tactics gig workers used to protect their work and privacy, including using platforms like Reddit

to commiserate with other workers, creating false personas, or using technologies like VPNs to protect their personal information [329]. Surveillance studies scholar Gary Marx outlines 11 resistance tactics in total that workers use to subvert surveillance, including discovery, avoidance, piggybacking, switching, distorting, blocking, masking, breaking, refusal, explaining and contesting, and cooperation [253]. Other workers have collectively organized to form unions or participate in strikes to fight against overt surveillance and poor working conditions [12].

However, each tactic of resistance carries with it specific risks and barriers that workers must negotiate [113]. Strategies like self-surveillance or employing technological hacks may involve significant amounts of skill and labor that workers may not find worthwhile [329]. Workers also risk facing disciplinary action or getting fired if they are caught enacting resistance. For example, gig workers have to negotiate the potential of violating platform policies or damaging requester relationships when practicing sousveillance due to the potential risk of getting kicked off the platform [113]. Sannon and colleagues highlight that resistance under surveillance serves as a reflection and a response to the unequal power relations that exist between workers and their surveillant actors [329]. The presence of surveillance technologies itself has been used as a deterrent to building worker power and unionization [12, 440].

To address these power asymmetries, some HCI researchers have investigated how technological tools can better support workers in these countermeasures [71, 97, 166, 192, 197, 233, 295, 325, 389, 390, 437]. One of the most well-known examples is Turkopticon, an online platform where Amazon Mechanical Turk workers can rate, review, and vet requestors. Calacci & Pentland [71] co-built the Shipt calculator with worker groups to allow gig workers to track and share wage data and surface pay disparities. While these two tools have helped support workers in collective data stewardship, sensemaking, and organizing, Calacci states that more can be done to support “Digital Workerism” by co-building tools with workers that support their goals in collective organizing while preserving their autonomy, privacy, and wellbeing [69, 70]. While past HCI scholarship has mainly focused on the resistance tactics employed by gig workers, this work examines the countermeasures used by workers across multiple types of employment, including operations, customer service, marketing, and food and beverage service.

## **3.3 Methods**

### **3.3.1 Content Analysis of Reddit Posts**

#### **3.3.1.1 Reddit as a Site of Study**

In line with other studies that focus on sensitive topics such as mental health, addiction, and pregnancy loss, I chose to study forums on Reddit due to its support for anonymous disclosure [18, 20, 21, 140, 395], which allows people to discuss about sensitive or stigmatized topics without having to disclose their real identity [278, 395]. Researchers also have looked to Reddit to understand the experiences of gig workers, since online communities have been crucial for gig workers to share knowledge and build community despite the distributed nature of their work [77, 304, 329]. In particular, Sannon et al. [329] used Reddit to understand gig workers’ experiences regarding privacy and surveillance. Expanding upon this work, I chose Reddit as a

site to understand workers' experiences with surveillance technologies across different sectors and how they used the platform to share knowledge and support one another.

### 3.3.1.2 Data Collection

I first identified posts that discussed workplace surveillance through manual keyword searches using surveillance-related terms such as “track,” “monitor,” and “surveil,” paired with keywords like “work” and “job.” I then randomly selected 66 posts to do a preliminary round of coding to find other relevant keywords, initial codes, and identify worker-centered subreddits to include in my study. I excluded subreddits that did not primarily focus on workers, (e.g. r/Privacy, r/Technology, r/legaladvice), subreddits that focus on managers or professional roles that do surveillance-type work (e.g. r/sysadmin, r/askmanagers), as well as industry or company-specific subreddits (e.g. r/doordash\_drivers, r/mturk, r/Nanny). This allowed me to understand how information was being shared cross-sectorally between workers in different industries and to get a sense of the breadth of different types of bossware and their commonalities and differences. Finally, I excluded 1 worker subreddit that had explicit policies against data collection. In total, I selected 9 subreddits, including 2 general work subreddits (r/jobs, r/work), 5 specific to remote work (r/overemployed, r/RemoteJobs, r/remotework, r/workfromhome, r/WorkOnline) and 2 that had a political lean (r/antiwork, r/WorkersStrikeBack). Based on my initial coding, I finalized my keyword list to the following: “track,” “monitor,” “surveil,” “spy,” “productivity,” “micromanage,” and “bossware.”

Since I was interested in understanding the impacts of COVID-19 on workplace surveillance, I only included posts written between 1/1/2019 and 12/31/2022. I also excluded posts that had less than average engagement, which was calculated by identifying the median number of comments per post according to each subreddit. Based on this criteria, I created my filtered dataset through Pushshift API [365], which contained a total of 9,362 filtered posts. For each post, I extracted the keywords used, their comments, date, title, username, URL, and text.

| Subreddit           | Type      | Filtered | Relevant | Coded |
|---------------------|-----------|----------|----------|-------|
| r/antiwork          | Political | 3441     | 473      | 70    |
| r/jobs              | General   | 2709     | 91       | 58    |
| r/overemployed      | Remote    | 549      | 49       | 12    |
| r/RemoteJobs        | Remote    | 497      | 6        | 6     |
| r/remotework        | remote    | 585      | 30       | 12    |
| r/work              | General   | 637      | 53       | 14    |
| r/WorkersStrikeBack | Political | 33       | 8        | 8     |
| r/workfromhome      | Remote    | 588      | 50       | 13    |
| r/WorkOnline        | Remote    | 347      | 23       | 7     |
| Total               |           | 9,362    | 783      | 200   |

Table 3.1: Work Subreddits

### **3.3.1.3 Data Analysis**

Using my filtered dataset, I manually checked for relevance to workplace surveillance. For example, I omitted posts that discussed surveillance more generally but not in work-specific contexts or used keywords in a way that did not relate to surveillance (“computer monitor”). I also omitted posts that were deleted or removed. This narrowed my dataset further to 783 relevant posts.

From this dataset, I conducted a thematic analysis on 200 randomly selected posts and their respective comments using an inductive approach, first starting with my initial codes developed during my preliminary round of analysis and then using a codebook to conduct my full analysis. Higher-level codes captured the nature of posts (e.g. “Information Sharing,” “Sharing of Personal Experience,” “Information Seeking”), the nature of surveillance (“Reason for Surveillance,” “Surveillance Type,” “Modality,” “Surveillant Actor,” “Industry”) and Experiences of surveillance (“Sentiment towards Surveillance,” “Impact of Surveillance,” “Resistance Tactic”). My initial Reddit analysis provided high-level insight into the various types of surveillance technologies in use, the range of industries implementing these technologies, workers’ understanding of what motivated managers to implement these technologies, and accounts of the impacts of monitoring and surveillance on workers. It also provided a broad view of the different resistance tactics workers employ and how they use Reddit to discuss the topic of workplace surveillance. To further protect worker anonymity, I did not include usernames or other identifying information and paraphrased or slightly altered all quotes included in this paper to reduce their searchability while still maintaining their meaning. Reddit posts are referenced by an author-assigned post ID (e.g., [R1]).

## **3.3.2 Interviews**

### **3.3.2.1 Participant Recruitment**

To gain a more nuanced and in-depth understanding of the experiences and perspectives of workers under surveillance, I paired my content analysis with in-depth interviews with workers and managers with first-hand experiences with workplace surveillance. I recruited participants by individually reaching out to post authors included in my dataset via Reddit’s private messaging system. I also posted a recruitment ad on three of the subreddits with moderator permission (/r/antiwork, /r/remotework, and /r/remoteworks). In the ad, I included a link to a screener survey to determine their eligibility for the study. The survey included questions about their Reddit username, country of residence, as well as their experiences and general opinions regarding workplace surveillance.

In total, I recruited ten participants who came from a range of different work experiences, including in customer support, hospitality, AI data work, marketing, logistics, and construction (See Table 3.2). Six were remote workers and four participants had management experience (P2, P3, P4, P7). Participants came from the US, Canada, India, Mexico, Japan, and the Philippines. All had experiences with at least one type of workplace surveillance technology, including audio and video monitoring, emotion AI, digital activity tracking, and location tracking. To protect their anonymity, participants are referred to by their participant ID (e.g., [P1]).

| <b>Pseudonym</b> | <b>Roles</b>                                                                  | <b>Industry</b>         | <b>Country</b> | <b>Type of Surveillance</b>                                          |
|------------------|-------------------------------------------------------------------------------|-------------------------|----------------|----------------------------------------------------------------------|
| P1               | Customer Support Specialist (Remote)                                          | Finance                 | US             | Audio/Video Monitoring, Digital Activity Tracking, Emotion AI        |
| P2               | Telephone Interviewer/Manager                                                 | Government              | Canada         | Audio/Video Monitoring, Digital Activity Tracking                    |
| P3               | AI Chatbot Prompt and Response Evaluator (Remote), Design Engineering Manager | Technology              | India          | Digital Activity Tracking                                            |
| P4               | Bar Owner/Manager, Food Worker                                                | Hospitality             | US             | Audio/Video Monitoring                                               |
| P5               | Marketing Coordinator (Remote)                                                | Media                   | Mexico         | Digital Activity Tracking                                            |
| P6               | Order Entry Specialist (Remote)                                               | Retail Logistics        | US             | Digital Activity Tracking                                            |
| P7               | Operations Manager (Remote), ESL Teacher (Remote)                             | Construction, Education | US             | Location tracking, Emotion AI                                        |
| P8               | Customer Support Specialist (Remote)                                          | Food Delivery           | Philippines    | Audio/Video Monitoring, Digital Activity Tracking                    |
| P9               | Marketing Coordinator                                                         | Retail                  | Japan          | Digital Activity Tracking                                            |
| P10              | Coffee Barista, University Research Assistant                                 | Hospitality, Education  | US             | Location Tracking, Digital Activity Tracking, Audio/Video Monitoring |

Table 3.2: I interviewed ten workers who have experienced workplace surveillance across a range of industries, professions, and geographical locations.

### **3.3.2.2 Data Collection and Analysis**

With IRB approval, I conducted interviews in English over Zoom between November 2023 to January 2024. During each session, I asked questions about participants' professional backgrounds, their experiences and opinions concerning workplace surveillance, strategies they have adopted to circumvent or receive support around workplace surveillance, as well as ideas for alternatives or improvements. Interviews lasted approximately 40-90 minutes and interviewees were paid \$40 for their participation. Each session was audio-recorded with the interviewee's permission, auto-transcribed, and then manually checked for accuracy.

Using the same codebook from my content analysis, I qualitatively coded my interviews in an iterative manner, adding two additional higher level codes including worker-driven alternatives (e.g., "Opt Out," "Transparency"), and current trends of surveillance (e.g., "Outsourcing," "Lack of Disclosure"). My interviews extended the insights of my initial Reddit analysis, including capturing the experiences of surveilled international workers at US-based companies and managers who experienced both sides of surveillance, as the surveilled and the surveillant. The interviews also provided additional context on workers' perceptions of data and privacy laws, as well as their thoughts on Reddit as a space for support.

Drawing together memos from both the Reddit and interview study, I iteratively revisited and refined my interpretations. Across later rounds of analysis, I identified emergent themes such as the compounding impacts of worker surveillance, workers' resistance tactics, and worker-driven alternatives, which I present as findings in this paper. With each finding, I interweave selected quotes from both my Reddit data and interviews, taking a thematic approach to capture the coherence of insights pulled across both data sources. This approach helps to provide a more holistic understanding of how workers understand and respond to surveillance across sectors, while still leaving opportunity to discuss the nuances and unique contributions that arise from each data source. However, I acknowledge that this approach may not fully capture some of the more specific nuances unique to each data source. Nevertheless, I believe that the thematic structure best captures the overarching trends and challenges that shape workers' experiences with surveillance. I have included labels (e.g., [P1] for interviews and [R1] for Reddit) to clearly indicate the origin of each data point.

### **3.3.3 Limitations**

Although Reddit has certain benefits, as stated above, it has a number of drawbacks that most likely affected my study. Reddit users are not representative of all workers. A majority of Reddit users are young, white, male, middle-class, college-educated, and based in the US. [43]. As a result, it is likely that I have a lack of perspectives from workers who are women, minorities, older, and those who live outside the US. This also most likely omitted certain occupations and industries from my analysis, especially more feminized forms of labor, such as care work and domestic work. In addition, by focusing on general worker subreddits, I may have missed specific nuances in experiences and strategies that are tied to a specific type of job, workplace, or platform. Additionally, my choice in keywords and the use of the term "surveillance" in the recruitment ad and during interviews may encourage participation from workers who had

more negative views on monitoring. However, this was an explicit choice, as I was interested in understanding workers experiences with surveillance and their resistance tactics.

Lastly, I want to acknowledge the ethical issues around studying Reddit. While I adhered to the ethical standards of my institution's IRB for my interview procedures, public Reddit data is not considered human subjects research according to US federal law and therefore not under the purview of my local IRB [287]. Social media posters are typically not aware that their data can be used for research purposes without their explicit consent [129]. One way to mitigate this is to share the research output to the original community or poster. When I asked for permission to post my recruitment ad on subreddits, I let moderators know that I intended to share my findings with their community, and several moderators expressed interest in my project. However, reaching out to the original poster is more difficult. Due to the sensitivity of the issue of workplace surveillance, most posts are likely to be from "throwaway" accounts, intended to be used only temporarily before being abandoned [19]. In recruiting participants, I only reached out to a small group of individuals at a time, prioritizing the ones I felt were the most relevant to the purpose and scope of my research. I conducted my outreach with transparency and sensitivity to avoid undue pressure. Although I implemented strategies to protect posters' anonymity through paraphrasing quotes and not disclosing usernames, a posters' anonymity cannot be guaranteed [63, 250].

## **3.4 Findings**

In what follows, I outline how WSTs create a culture of distrust, stress, and reduced productivity in the workplace, prompting some employees to employ a number of resistance tactics against their use. While there is a desire for stronger governmental and organizational policies to protect workers from intrusive forms of monitoring, workers noted that a fundamental cultural shift prioritizing worker privacy and well-being is needed to drive meaningful change.

### **3.4.1 The Effects of Workplace Surveillance**

While some workers on Reddit and in interviews believed that some monitoring can be beneficial for accountability and training purposes, many were concerned that the level of surveillance they experienced often went beyond what they believed was necessary for their jobs. Employees were often left in the dark concerning how these systems worked, what data they collected, and how this data was used which led to multiple anxieties about privacy and lack of trust in the workplace. Rather than improve performance and efficiency, there were multiple testimonials that described how WSTs actually hindered workers' productivity due to the immense stress they caused when these tools were used for continuous surveillance, control, and disciplinary action. Managers also expressed various anxieties about the addictive nature of surveillance and the lack of confidence it cultivated between themselves and their employees. The compounding anxieties felt by both managers and workers contributed to a culture of distrust that ultimately harmed both.

### 3.4.1.1 Privacy Concerns and Lack of Transparency

P1, who had been working as a remote-based customer service representative since the beginning of the COVID-19 pandemic, described the various types of WSTs she had been exposed to, including call, video, and screen monitoring, keyloggers, and AI-based sentiment analysis. *“It’s gotten progressively worse, I think. Jobs have been implementing more and more stricter guidelines and stricter policies, and just more and more surveillance. Like a lot more...it’s been crazy, honestly.”*

The first few companies she worked for only collected metrics that were standard in the industry, such as call times, wait times, and customer satisfaction. *“That was normal. . . there was no sort of extra surveillance,”* she assured. However, with each subsequent new role, she was subjected to more egregious types of surveillance. One employer had a policy where new workers had to be on camera for the entire workday. *“They started making you be on camera for the whole training, eight hours a day. Constantly on camera. No breaks, just lunch. And if you got off your camera, they would write you up.”* In her last role, she found out that her employer could remote into her computer and phone calls at any point in time without warning. *“I actually left the job because of the surveillance part of it. I just couldn’t handle it. . . they’d be like, ‘Oh, we’re right here.’ I just thought that that was a level of surveillance that I just was not comfortable with.”* Although P1 understood the reason behind call monitoring, especially when used for training and liability purposes, she strongly disagreed with the use of other types of surveillance such as cameras and keyloggers due to privacy concerns. As someone who worked from home, she was aware that she had little ability to protect the private aspects of her home life from being captured on camera while she worked.

Across Reddit and in my interviews, multiple remote workers who were being monitored with activity tracking software such as Hubstaff and ActivTrak reported having multiple privacy concerns, especially when these software continuously tracked their computer screens, mouse movements, keyboard activity, idle time, and app usage [4, 182]. R9 called these systems *“invasive”* due to the level of tracking they were subjected to, adding that the awareness of being constantly watched and having personal data continuously collected about them made them want to resign from their job. P3, a full-time senior-level design engineer based in India who worked as a remote-based data worker training AI chatbots on the side, was especially worried about the screenshot feature of Hubstaff. Knowing that his supervisor could view and take screenshots at any point of time, he was concerned about exposing his personal data on the platform:

*“What if...I had opened some private file and that could be easily taken? [...] Whatever screenshots are taken, how long they will be kept? And the URLs that I visit? Now, they say that they can see the URLs, but can they also check...my browser history? Can they check my cookies? Those thoughts are always there.”—P3*

P5, a marketing coordinator based in Mexico but working remotely for a US-based marketing agency, had similar concerns, especially since the tracking software was downloaded to her personal computer [346]. She said she would feel differently if her company provided her with a work computer that she could use exclusively for work purposes rather than forcing her to use her personal device. She could not afford to buy another computer on her own. She went on to

explain that not only is her personal data exposed to the company she works for, but there was a possibility that the data could be used by other companies [208]:

“If they have the ability to track stuff like how many times I’m clicking on something, or what kind of websites I visit daily, I wonder what other type of things that they store [...] I still sometimes think about if they are the reason why sometimes I get like targeted ads on things... if they somehow create a profile of myself and the websites I visited, and they know that I’m a social media marketing coordinator who lives in Mexico City. There are so many things that they could find in my personal stuff to sell in order to get targeted ads, and I just don’t know how safe that is.”—P5

In their testimonials above, both P3 and P5 expressed numerous uncertainties about how they were being surveilled at work, indicating the lack of transparency and limited amount of information workers have about the nature of WSTs at their jobs. This seemed to be an explicit decision on the employers’ part. When asked whether she informed her workers about monitoring their behavior, P7—a remote-based operations manager at a construction company who used GPS tracking to oversee employee use of company vehicles—explained that she did not disclose this information because she believed it would increase their anxiety. There also were managers that would make workers aware about some type of monitoring that was happening, but who would not offer the full picture. P2, who had experience working for the Canadian government as both an employee and manager, noted that sometimes the managers would notify workers that they were being monitored, but admitted that *“that was maybe not followed all the time.”*

P3 was told by his direct manager that Hubstaff would only track his website activity and take screenshots every 10 minutes and that she did not have access to the screenshots herself, but that they would be reviewed by an upper-level manager. However, P3 had suspicion that not only did his direct manager have access to these screenshots, but that Hubstaff was collecting more information than was initially disclosed. Through watching YouTube videos, he found out that HubStaff had the ability to collect data on his mouse movements, keyboard activity, idle time, and the apps he used. Additionally, he learned only through talking with his coworkers who had previously been disciplined that he must maintain a level of 85% productivity at all times or else risk being removed from the project. However, he was still unsure about how this score was calculated. While managers were reluctant to disclose information about surveillance to avoid making workers feel anxious, these testimonials show how the lack of transparency itself led workers to feel anxiety around their lack of privacy and not knowing the full extent of how these systems worked and how they were being used by their employers. This ultimately resulted in workers feeling more suspicious and distrustful of their employers.

### **3.4.1.2 Discipline and Punishment of Employees**

Workers described how activity monitoring heavily policed them in ways that some classified as *“shaming”* and *“psychological manipulation”* [R134]. P3 likened the feeling to *“holding a gun to your head and [saying], ‘you have to do this like this.’”* This inevitably created a culture of fear where even seemingly minor infractions such as taking a short 5-minute break or checking social media could lead to severe consequences, such as job loss, missed pay, or disciplinary

action. Workers reported getting constantly flagged by their monitoring systems for various “unacceptable” behavior. As R133 put it: *“Take a second longer than expected? Penalized. Stop for a quick drink of water so you can keep working? Penalized. Make a mistake and have to stop what you’re doing to correct it? Penalized.”* R134, who worked in manufacturing, posted a picture on Reddit of their monitoring software interface showing a bright red screen, explaining that if their task took them a couple seconds longer than expected or if they took a 10-second break, the screen would turn red, putting them at risk of being reprimanded. Additionally, this worker said that their workplace made their productivity scores available for everyone to see, which created a dynamic of competitiveness among workers.

Workers also reported instances when WSTs erroneously flagged them for certain behavior. P7, who previously worked as a remote-based English as a Second Language teacher, reported being subjected to emotion recognition software that would assess her bodily movements and facial expressions. Despite these systems being notoriously inaccurate, P7 described how getting flagged for “poor performance” by these systems had the additional impact of affecting her pay:

“It would give you notes like ‘At minute three, we noticed inappropriate hand movements. There’s too much hand movements and we noticed you weren’t smiling as much as you could. . . we only noticed smiles for 17 of the 30 minutes. And your voice inflections weren’t enough.’ It was really crazy [...] And they say that your eye movements need to be more consistent, you need to be looking at the cameras straight on [...] I don’t think they were accurate judges of my classes because I used a lot of props, and I smiled a ton. . . even if I looked away to like get a prop or something that was counted as lack of eye contact. So yeah, I think a lot of it was really unfair and inaccurate.”—P7

P7 added that there was a three-strikes policy where they were subjected to disciplinary action, missed pay, and even the threat of termination for being flagged by the system multiple times. P1 had a similar experience with AI-based “Quality Assurance” systems that performed sentiment analysis on her calls and wrongly assessed her as being angry at customers based on her voice:

“They would flag you for all these things. . . that would have your call reviewed by a supervisor and it was just completely wrong [...] AIs are not good enough to tell me what I’m doing wrong with my phone calls [...] I don’t ever get mad at customers. I’m not ever gonna yell at them. And it had flagged me. . . three times on one call. . . They were doing what it said and reviewing the calls, and then that leads to more surveillance. And it’s just a big snowball effect.”—P1

In both cases, AI audio and video analyses flagged workers for poor performance based on assumptions that the workers felt were disconnected from reality. Their managers seemed to place more trust in the systems than in their employees and relied on the automated reports to determine whether more active surveillance was required or whether an employee should be let go. P2 stated that managers targeted specific workers more frequently when they have a personal vendetta against them: *“If someone had an inkling that someone wasn’t doing something right or maybe even had a grudge, I think people were being monitored more than they should have been.”*

There were multiple reports of workers forgoing breaks to go to the bathroom or to get a drink of water due to the risk of not meeting productivity standards set by WSTs. Every time P5 needed to go to the bathroom or leave her computer even for a few minutes, she would pause the timer to make sure she was not “*wasting the company[’s] time.*” However, she soon learned that she was caught in a predicament—take a break and end up working longer hours, or avoid breaks all together to finish earlier but experience intense fatigue:

“It was very exhausting for me at some point, when I noticed like geez, I cannot even take a break and go to the bathroom because that means that I’m wasting time from work. And I’m gonna have to extend my work hours, or even with lunch, I cannot... take my hour break for lunch because that means that I’m wasting a whole hour that I could use to work and finish my hours earlier... I felt so tired from that dynamic.”—P5

P5 described that there is a common narrative that workers have more flexibility and autonomy with remote work. However, because P5’s experience was one of being constantly tracked to ensure that she was being productive at all times, she argued that remote work is more draining than a “typical” in-person job. The constant monitoring forced workers to continuously be active all the time, even when they had nothing to do. P5 described how her coworker confessed to clicking randomly on the screen to make it appear to the app that she is being productive, even after finishing all her work. “*It’s so senseless, but that’s what some of us do sometimes,*” she explained. She went on to describe the immense physical and emotional toll this type of tracking brought, on top of the isolating nature of remote work:

“I do feel that I have to be productive every single minute. And that has affected my sleep schedule, that has affected my work-life balance in a way. And emotionally, it’s just draining. I feel forced in a way to be more productive than...my peers who have normal jobs...and all that while I’m isolated and working by myself at home [...] In terms of psychological effects, I do think that it takes a toll on remote workers, because it makes you feel like you’re not of trust, it makes you feel isolated from your team. And it...makes you feel like you’re a robot that needs to be tracked every single time for everything they do as if your work is just a machine behind the computer.”—P5

Feelings of intense exhaustion were echoed by many workers on Reddit and throughout my interviews, and some described how overwork led to other health issues, such as depression, anxiety, and panic attacks. Many ended up being pushed to a point where they were no longer able to work and were either let go or forced to quit their jobs. The few who were able to get disability accommodations were still harassed by their managers for taking required breaks. P2 stated that monitoring systems disproportionately impacted people with disabilities because they specifically target outliers outside of the standardized “norms”: “*That would often result in invasive lines of questioning for people. Like, if someone had to go to the bathroom fairly regularly because they had [Irritable Bowel Syndrome], or someone was dealing with a mental health crisis...you’re kind of attacking them for doing this thing that they need to do.*” Further, when P2 requested a disability accommodation that would allow them to take more breaks, they were demoted and their contract did not get renewed:

You can absolutely receive accommodations from this organization, but as soon as you inconvenience them, since you're on a short-term contract, you will just not be renewed. It's happened to so many people, it happened to me eventually, I was demoted. Because I asked for an accommodation. I'd never had a poor work review. But since I asked for this accommodation, they put me down. They said, it'll be easier for me. So I just put up to that...The laws are in place, but they have it structured to circumvent them in the first place.”—P2

As these testimonials demonstrate, pervasive workplace monitoring created a culture of fear among workers as they faced severe consequences for minor and even false infractions, leading many of them to experience high emotional and physical exhaustion. This pressure prompted some to adopt subtle forms of resistance, while others chose to ultimately leave their jobs altogether.

#### **3.4.1.3 Uneasy Relationships in the Workplace**

WSTs created a culture of resentment and distrust amongst workers and managers when used as a disciplinary tool. On Reddit, workers reported having negative perceptions of their managers who heavily relied on WSTs, frequently describing them as “*micromanagers*” [R6, R53, R77, P82]. P2 stated that the surveillance did not go away once they were promoted to being a manager. Initially happy about getting promoted because they wanted “*get out from under [the surveillance]*,” they soon learned that they still were being surveilled by their upper-level managers with the same tracking software, although they did not have much insight into how they were being assessed.

They felt guilty about being in a position where they were doing the same surveillance they were previously subjected to. “*Since it was so bureaucratic...you had to follow things a certain way, even if you had reservations about it.*” Their promotion led them to face distrust from their former peers. They explained that even though their role technically was qualified to be part of the bargaining unit of their union, other union members would not trust them, even though they believed that their role could be an asset due to their “insider” role as a manager. Although P2 stated that they did not want to be a “*cop*” and avoided disciplining workers for infractions found through surveillance technologies, they were still required to report it to their higher-level managers. P1 echoed that her managers were also monitored to make sure they were enforcing surveillance policies despite their negative feelings about it. “*Everything they did was surveilled too...just like us [...] The trainers...you could tell the ones that didn't agree with it because they were being forced to tell us to turn our cameras on.*”

As a restaurant manager, P4 noted that the convenience of viewing camera footage via his mobile app anytime and any place made him “*addicted*” to monitoring, which also made him more paranoid and distrustful of his workers. These feelings grew the few times he did catch workers doing something they were not supposed to:

“I was always just paranoid about sales, so I'd always look and see how busy we are too [...] I was like, why am I watching this? Because then I'd look at it and I would just happen to see someone standing there totally out of context of whatever the

actual situation is, and just assume that they're being lazy or something. So it started to definitely impact how I saw the staff. So I tried not to look at it. But I'm sure that I'm not alone in watching cameras and starting to make assumptions about what's happening in the workplace [...] It just made me paranoid...just always looking at the cameras because they were there...they just got into my brain in an addicting sort of way and definitely led me to assume kind of the worst about a situation [...] It just was one of those things I went to when I opened my phone.”—P4

As these testimonials show, the nature of WSTs creates anxieties for both workers and managers and leads to poorer performance and increased disciplinary action and distrust. These systems, which are supposed to objectively monitor and improve performance instead create a feedback loop of harm for workers and managers.

### 3.4.2 Resistance Tactics

In response to oppressive WSTs, workers used various resistance tactics to regain their autonomy. Alongside commiseration, which fostered community and shared learning, they also developed individualized strategies, often inspired by these collective exchanges. These tactics included researching WSTs, using obfuscation or disabling surveillance, deliberately slowing their work pace (soldiering), and, in some cases, quitting.

#### 3.4.2.1 Commiseration

One of the most common and accessible tactics employed by workers who were facing surveillance was simply commiserating with other workers, both online or in person. P3, for example, said that he was in regular communication with some of his colleagues through video calls, where they discussed strategies or other information, which project managers were not privy to. It was through talking to her coworkers that P7 learned tactics like mouse jiggling. Since activity-tracking apps typically measured productivity through tracking mouse movements and keyboard activity, some workers learned that they could bypass being flagged for inactivity by continuously moving their mousepad.

P5 similarly commiserated with her coworkers over a WhatsApp group. These platforms, which are separate from their company's platforms, provided her and her coworkers with a safer space to talk about work issues. While she appreciated this support, P5 still felt isolated since many of her coworkers did not seem as concerned about the issue of surveillance: *“I don't think that they feel so strongly about this as I do. Because I voiced my concern many times, and they just keep saying, ‘Well, it is what it is, this is what we signed up for.’ [But] I don't think that this is what we signed up for, you know?”* Although P5's friends have suggested that she talk directly to her manager about intrusive monitoring, she feared that she would face disciplinary action if she does:

“The advice that I get more and more often from my peers and from people around me, it's like, why don't you ask your boss to just remove these from your work? Why don't you ask him If it's okay that you work without your timer, and instead

they give you like a base pay wage? [...] I haven't really had this conversation with my boss either. Because I feel scared that... there's gonna be pushback from that or that I might get fired or something like that."—P5

This led P5 to turn to a remote work subreddit for advice. When P5 posted about her experience with workplace surveillance, many posters wrote that she did not deserve this treatment and should quit her job. P5 noted that this advice was completely different from the advice she received from her coworkers. This experience of sharing her story on Reddit made P5 realize that she was being mistreated. She started looking for other jobs, and because of her experiences, she is more mindful of what she values in a job, like benefits and no time tracking.

"I finally understood that I was downplaying a lot [of] what the company's doing to us, and how they're treating their employees. And I was really downplaying it, because nobody around me could tell me that, and they didn't really understand the context of what was going on. And seeing how other remote workers don't have to deal at all with that issue was eye-opening for me."—P5

Taking learnings from the advice she received from Reddit, P5 went back to her peers on WhatsApp to encourage them to take breaks when they needed to without worrying about the time tracker: *"I think I'm an instigator. But I kind of told them, 'guys don't feel guilty if you have to stand up and go to the bathroom and take a little longer than usual because honestly, what's five minutes that you are not clicking through anything?'"* Similarly, P9 commiserated with other coworkers in person about monitoring but faced a similar response. Those close to her were empathetic but told her to deal with it. Feeling isolated, she found the "antiwork" subreddit because she wanted to find a community with people who had similar work experiences. She mostly browsed but also posted from time to time to show support and solidarity for other workers who are going through similar experiences: *"Being able to feel supported on this kind of big issue that was affecting me did make me feel like I wasn't alone [...] it was really helpful to know, just that I wasn't by myself."* Being a part of the antiwork community also changed how P9 navigated her job:

"When I first joined antiwork, I wasn't familiar with sort of the core ideology [...] Back in the day, when I had work to do, I'll do it all. I was quite obedient. But I guess after being on the sub for a while, and after having my personal experiences, I sort of developed the ideology of, don't show your work at the maximum that you can do, because it's never gonna get you anywhere good. You're not going to get a raise your hard work is going to be exploited. So just do what you need to do to stay out of trouble. But don't give them your everything."—P9

For both P5 and P9, as well as many other workers, Reddit provided an accessible entry point for them to start questioning the presence of WSTs and discover tactics of resistance while receiving advice, resources, and support from other workers in an anonymous way. This experience led both of them to face a shift in "*ideology*," as P9 put it, that recognized the agency they had in shaping their working conditions and the wider sociopolitical aspects of their labor. Through commiseration, P5 was able to further transfer the knowledge she learned from Reddit to her coworkers on WhatsApp. By sharing experiences and strategies on these platforms, workers were

able to foster a sense of community that helped mitigate feelings of isolation. This empowered individuals to start questioning and resisting against surveillance practices, while bringing others into the fold.

#### **3.4.2.2 Research**

Doing research was another accessible technique that workers employed. Some workers tried to increase their awareness of workplace surveillance by reading news articles and doing online searches about the topic. Workers on Reddit regularly posted news articles about workplace surveillance, such as to share the latest technologies in the space [R6], as well as companies that were actively surveilling their workers [R105, 192]. P1 reported reading news articles about how companies surveil workers without disclosing it and now assumed that most companies practice it. P3 used YouTube and other sources to learn more about Hubstaff and its capabilities. Through his research, P3 learned that his supervisor had the ability to take screenshots of his screen at any time without notifying him. Both P3 and P5 also tried to look into studies about workplace surveillance, but P5 acknowledged that she found little information available, especially regarding what her rights were as a worker:

“I looked for so many places, so many websites, I look for studies for research for people discussing this, and I didn’t find anything, or I found very little information about it. So I would love to be part of that discussion or kind of also advocate for what I think is right, because it’s so unfair. And I keep saying it’s so unfair that we are expected to comply with this software, without understanding our rights.”—P5

Through their own research, workers gained a better understanding of how surveillance technologies are operationalized. However, for some, there remained a concerning lack of information, highlighting the need for more accessible information made available to workers on the details and parameters of WST applications.

#### **3.4.2.3 Obfuscation and Disablement**

When they were actively being surveilled, some workers employed obfuscation or avoidance techniques to circumvent surveillance. P4 recalled that at his first job at a chain restaurant, he identified where the cameras were and purposefully tried to avoid them. *“You can see where the dead spots are. So you can go outside, or go into the bathroom, or the walk-in cooler. These are all places you could not be filmed and do whatever.”* He remarked that he did this during times when he wanted to take a break or didn’t want to be seen just standing around even when all his work was done for the day.

Remote workers also adopted strategies to keep their work and personal files separate, such as through virtual machines or separate devices in order to keep their personal information and activities outside the purview of management. P3, for example, stated that he kept his social media and banking apps on his mobile phone. While some workers had access to multiple computers that allowed them to keep work and personal files separate, P5, who was not given a separate work computer by her company, had to resort to using her personal computer. One way she kept personal and work files separate was to create a separate user account exclusively for

work-related purposes on her personal computer. However, P5 acknowledged that sometimes it is difficult to separate the two: *“Sometimes I do find that some things collide, just because, while I’m working, I have to do personal tasks. But that has helped me a lot in just mentally separating those things, and not mixing my work so much with my life-related duties.”*

When unable to avoid surveillance, some remote workers like P7 employed technological hacks such as mouse jigglers to simulate activity. On Reddit, workers shared multiple variations of the mouse jiggle, including physical devices you could buy online, script-based versions, and ones constructed with everyday objects. For example, R196 shared a video of their homemade mouse jiggle made of a fan, steel bar, a Tupperware container, duct tape, and a rock, while R197 shared a photo of a bobby pin jammed into a keyboard. P9 reported using a number of apps that simulated the look and feel of common work applications that allowed her to browse the web or read Reddit discreetly during her downtime: *“Each thread pops up looking like an email. So you’re just scrolling along, it looks just like you’re answering your emails.”* Both P7 and P9 said that the obfuscation strategies they employed were successful and they had yet to face disciplinary action or get caught.

Workers also disabled technologies while on the job. For example, P1 would sometimes refuse to turn her camera on, especially on days when she was not feeling well. However, she was careful not to make it an everyday occurrence, since she would be at risk of termination and saw coworkers fired for refusing to enable theirs: *“I have told them that my camera wasn’t working on multiple occasions [...] I’ve shut that little camera door and told them my camera wasn’t working. I’ve told them that I lost my webcam when I moved.”* However, P1 noted that certain surveillance technologies like keyloggers were harder to bypass and many workers did not have the ability to disable monitoring systems. P5 recounted the moment she realized her tracker could not be disabled, stating, *“That’s when I realized, Oh, this is not optional. I just have to deal with this. And I have to suck it up if I want to get paid.”* Although some workers were able to successfully avoid, trick, and even stop the surveillance they were subjected to without detection, in a heavily surveilled workplace, there was often little room for such maneuvers, forcing workers to explore alternative strategies.

#### **3.4.2.4 Ignoring and Soldiering**

In cases where obfuscation and disablement of workplace monitoring were not possible, some workers chose to simply ignore the tracking software and instead alter how they worked. P5, for example, stated that she began to be more flexible with the timer when she realized that pausing it every time she took a break led her to work longer because she had to make up for lost time. *“Every time that I pause the timer, and I’m not tracking time, that means that I have to extend my work hours.”* Additionally, she reasoned that she did not want to give her whole self to a job that didn’t value her. P5 explained that she does not receive any benefits from the job, time off, or bonuses, leaving her with few incentives to work at 100% productivity.

Workers also learned to purposefully slow down their productivity—also known as “soldiering”—sometimes making it seem like they were being productive longer than they actually were. For example, P2 described scenarios where they would call numbers that would be out of service

or click around aimlessly at a case file: *“I think the big thing that went around my office and I definitely did it too was you would kind of take your time in each case [...] I guess I was trying too hard to look like I was doing something.”*

Prior to his company implementing Hubstaff, P3 used a similar tactic with a different monitoring tool that only tracked how much time P3 spent on each prompt. This allowed P3 to finish a task but logging it as taking longer: *“Imagine there’s a prompt, and I could answer it within two minutes. And then probably I can slack off for another five minutes. I can work on other things. But it never used to know about it. And only when I click Submit, it used to record it.”*

P9 caught on that if she got her work done earlier, that they would give her more work to do, so she intentionally slowed her pace to avoid setting a new productivity norm:

“Once they find out that you can do more work than they have assigned you, you will get that new optimum workload. It’s kind of like a new norm, if that makes sense. And they’ll expect you to always work at 110% capacity all the time. And then because you cannot do that, your bonus will be lower because your productivity is lower, right? So no, I don’t see any reason to [...] give myself extra work when I don’t have to.”—P9

R134, the same manufacturing worker who previously stated that they experienced anxiety when their monitoring software showed a red screen eventually learned to ignore it, adding: *“Even though I can’t turn the screen off, I learned to turn the screen to the back of the machine and work at my own pace. I know this is purely manipulation, they will not fire us because we are skilled operators that work for small wages and produce lots of profits.”* Knowing that their employer may have difficulty replacing them due to their expertise gave this worker a sense of power and agency to control their pace of work in the face of constant surveillance.

Still, workers cautioned about the increased likelihood of disciplinary action should they be discovered for resisting, especially in occupations where there is heavier monitoring, such as call center work, as stated by R132: *“Call centers have so many monitoring systems in place that there’s no way to escape it. You either do the job and earn your pay, or you quit.”* P2 further elaborated on this point, *“The trade off is that maybe you’ll get monitored while you’re doing that. And since you’re not on the phone, you won’t notice that they’re listening or looking at what you’re doing. So, it would kind of take the weight off for a little bit unless they caught you.”* When disabling tactics were not feasible, workers adapted by ignoring timers, slowing their pace, and extending task times to appear constantly productive. For some, these strategies provided a sense of control over their work and time, though there remained a risk of disciplinary action.

### **3.4.2.5 Legal Action and Collective Organizing**

Although some posters on Reddit suggested resisting through unionization or taking legal action, many of them admitted the difficulties in doing so. In cases where workers were protected through a union, some found that it did little to change their conditions when it came to monitoring. P2, who was represented by a union, noted that bringing this issue to their representatives had not led to substantial change, especially for workers on short-term contracts:

“This place would put you on very short contracts, because it’s so hard to fire a government employee. If they had a problem with someone, like a legit problem, it would be a really hard process to get rid of them. But it usually would end up [with] people who definitely deserve to be there having their work cut short because of stupid things, because six months [later], they don’t need to renew the contract for any reason.”—P2

Some workers on Reddit described facing strong anti-union sentiment among their coworkers, while others mentioned the trouble of living in a “right-to-work” state. As R134 put it, *“if you mention unionizing, you are immediately fired.”* They added that although workers are legally protected against retaliation for unionizing, their employers *“usually come up with some excuse about attendance or inefficiency and then just like that, you’re out.”* Others noted the difficulties of taking legal action for employment issues. R147 added that they were *“surprised by how many people suggest to just hire a lawyer and sue.”* They described the barriers their spouse experienced while attempting to seek legal counsel in a wage theft case. Because the company used a time tracking system, the poster assumed that it would be a clear-cut case. However, of the twenty employment attorneys R147 reached out to, most did not respond and the few who did told them that it wasn’t worth the time and effort: *“My partner and I are both well-educated and earn reasonable incomes, yet we’ve found it extremely challenging to access the legal system. I can only imagine how much harder it must be for others. In my experience, the legal system provides minimal protections for workers and largely serves to reinforce the oppressive system we live in.”* These testimonials illustrate the difficulties of collective organizing against workplace surveillance, underscoring the lack of meaningful worker protections against its use and the need for alternative approaches.

#### **3.4.2.6 Quitting**

Ultimately, in cases where workers felt like they had no alternatives, many indeed chose to quit their jobs to get away from intrusive monitoring. In fact, quitting was the most frequently named resistance tactic suggested by posters on Reddit to deal with workplace surveillance. During their interview, P1 noted the limited amount of power workers have to combat surveillance, faced with only two real choices: *“You can either quit, or you can stay there and try to get a paycheck and be uncomfortable.”* However, workers stated that their awareness of and experiences with surveillance in previous workplaces informed their subsequent job searches, explicitly choosing jobs with less invasive monitoring and more worker autonomy, and avoiding companies where this was not the case. Together, these resistance tactics, including quitting, illustrate workers’ ingenuity in seeking to gain control over their working condition, even in the face of constant surveillance.

#### **3.4.3 Worker-Driven Alternatives**

As workers reflected on their experiences with WSTs and their methods of resistance, many recognized the limited individual power they had in enacting change. Some advocated for stronger governmental and organizational policies to better account for employee privacy and well-being.

However, there remained skepticism regarding the possibility of these changes occurring in a culture that often prioritizes profits over people. This tension highlights the understanding that a fundamental cultural shift is necessary in order for monitoring technologies to truly value worker autonomy and well-being.

#### **3.4.3.1 Stronger Governmental Protections**

Despite workers' belief that they had limited power to change how WSTs are currently used, both workers and managers surprisingly shared similar visions for how workplace monitoring technologies could be improved. Many of my interviewees advocated for stronger regulation at both the governmental and institutional levels, noting that current laws and policies meant to protect workers against surveillance were insufficient. P9 argued that regulation is needed to protect workers because companies often prioritize profits over their employees' wellbeing. She said that without stronger governmental regulation, companies will continue to adopt more invasive monitoring practices:

“I think the only way that companies are going to stop or slow down or anything is if it comes from the government level. Some companies will adopt procedures and policies that are better and not so invasive, but a lot of them are just going to do as much as they can do legally and that's just what it is. And so I think if it's going to change, it has to come from the government level.”—P9

P1, a US-based worker, looked to Norway as a model for how workplace surveillance should be regulated, believing that the country has implemented stronger data privacy protections as compared to the US. In addition to enforcing the EU's GDPR, Norway introduced the Working Environment Act which limits how employers can access their employees emails and camera surveillance [184]. Other workers called for stronger regulation that would place hard limits on monitoring, provide more transparency around its use, and allow workers to provide meaningful consent and the ability to opt-out of surveillance. More specifically, P1 and P3 called for limits on more excessive forms of monitoring, such as keyboard, browser, and mouse tracking, as this type of data can be easily misused for purposes other than tracking one's productivity. P3 also called for limitations on how personal data is collected and stored by these technologies, advocating for data to be deleted within a year or after a project is over. Additionally, P3 wanted institutions to have clearer policies around handling worker harassment as a result of surveillance: *“They can misuse this in a very bad way where they can micromanage [...] They can actually see exactly what [you're] working on every second [...] They can just use it [for] harassment. So there should be some way of telling your manager that you should not be doing so and so things which are detrimental to an employee, that [prevents] harassment.”*

However, some workers expressed more skeptical views on regulatory approaches and pointed to limitations. P5, who worked in Mexico for a US-based company as a remote worker believed that the US did not have to adhere to labor laws specific to Mexico, which she claimed contributed to poorer working conditions and no paid time off: *“The current condition that I'm in, in my current employment, and the way that they operate should be illegal [...] What measures are they taking in order to comply to the legal standards of the countries that they are hiring at?”* P8, who was

based in the Philippines but served clients in the US was also skeptical of stronger regulation due to distrust of her own government since, she believed, the Philippines did not have a great track record of protecting their citizen's privacy and security: *"[In the] Philippines [...] we don't have a solid foundation regarding security [...] If you're asking if I should have [regulation], for now, no, since we don't have a solid foundation regarding that security."* P6, a US-based worker, also did not believe that regulation would stop companies because of the belief that they worked in direct collaboration with politicians and would continue to do what they wanted, regardless of regulation: *"They're never gonna not collect a certain amount of information on you, because I feel a certain way. So no, they're these corporations will have free rein to do essentially, whatever they want."* While many workers called for stronger government intervention, others were skeptical that regulation alone could adequately curb invasive monitoring practices, especially as workplaces become more fissured and global.

### 3.4.3.2 Stronger Organizational Policies

Beyond regulation, interviewees wanted their workplaces to foster a culture of trust, with an understanding that workers do not have to perform at 100% at all times and also have the ability to dictate the conditions in which they work best. R151 said that it was actually poor management practices that make these tracking systems so popular: *"Easily measurable factors aren't necessarily good indicators of employee performance, while meaningful indicators are often difficult to quantify. In my view, these tracking systems stem from misguided, careless, and lazy management."* P2 added that workers would be more driven to be productive *"if they feel like they're trusted, and in a place that they're happy to work...if you're being watched at all times, it's not the best environment."* P3, who was also a manager in his full-time role, stated that he fully trusted his employees, even during periods where they may not be as productive:

"I clearly state the goals, what needs to be achieved by what date, within what time we have to be at this milestone and all of that. So when I make these goals clearer, and if my team is following that schedule, I have no problems whether they log in two hours a day or...they slack off an entire day, they work during the entire night, I don't mind. I need to get the work done and I don't mind exactly at what time they are active, exactly at what time they are logging in and logging off. Similar is the case with my manager to me. He has given me complete freedom when it comes to me logging in and logging off."—P3

To those I spoke with, building this culture of trust would lessen the general need for WSTs, especially those that continuously track workers by the minute. However, workers and managers acknowledged that some forms of monitoring can be helpful for training and accountability purposes. In such cases, workers wanted to have input on how surveillance is implemented and to determine what metrics are valuable to support the health of the business and workers. P6 stated that although companies do have a responsibility to improve their business, *"employees should have a say in what the metrics are."* As part of ways to use these technologies to support their well-being, workers wanted these technologies to be more accepting of accommodations. P5 felt that it should be up to the worker to determine whether to use time-tracking software: *"In normal jobs, you're not expected to be productive 100% of the time. So why remote workers should feel*

*compelled to do that or feel forced to do that, with this kind of tracking software?”* Similarly, P3 did not believe that maintaining an 85% productivity score daily is sustainable in the long term. Instead, employees should be evaluated by their productive averages over a longer period of time:

“There should be some slack of like, if I meet my productivity goals for one week, then I’ll have at least two chances for the next week. Or there are chances when accidentally we will come get below 85%. They may be some sudden emergency or I forget to turn off things. So there should be some way of making the employee feel comfortable about his continuity in the project.”—P3

P6, who expressed more positive views on monitoring technologies, said that it was because his company did a good job of supporting people who may fall behind on metrics. This included an extensive training period where metrics were not held against new workers. He also stated that workers were still able to manage their own schedules: *“It most definitely starts from the top down, and so seeing that in practice has been a nice reassurance that they’re here to work with me, instead of just get rid of me, if I don’t have metrics.”* Yet, P2 questioned the possibility that WSTs could be built to support workers. They believed that these technologies can never be truly ethical unless the issue of treating humans like machines is addressed first:

“I think, if people were looked at as being human beings and not machines, that would probably be helpful off the hop, just because people do need to have some social connection during their eight-hour shifts and not be punished for it. And people do need to be able to go and take a little walk or get some water and clear their head after someone is screaming at them...just understanding that they can’t just hop from case-to-case-to-case and not having the expectation in the first place. Knowing that the work will get done if they’re feeling cared for and connected and have support from their workplace will probably be very productive, I think.”—P2

Although interviewees expressed a desire for workplace cultures built on trust, flexibility, and limited monitoring, they largely found this incongruent with the use of WSTs. Their testimonials reflect a broader understanding that developing monitoring technologies that prioritize trust and worker wellbeing would first require a drastic cultural shift, fundamentally challenging the devaluation and perceived disposability of workers across the economy.

### **3.5 Discussion**

These findings reveal how WSTs create a culture of distrust and anxiety that negatively impacts both workers and managers. Workers reported fears of privacy invasion and disciplinary action, exacerbated by opaque and unaccommodating monitoring practices. Managers were also subjected to surveillance and experienced paranoia as a result of WSTs. Despite having limited power and legal protections, workers resisted WSTs through tactics like commiseration, obfuscation, and “soldiering,” which emphasized their refusal over compliance. Collective action, though challenging, emerged subtly through the sharing of strategies and growing political consciousness on Reddit. By drawing inspiration from these tactics, I call on the CSCW community

to take an emancipatory approach to worker-centered design that supports worker autonomy, resistance, and collective action.

### 3.5.1 The Losing Game of a Surveilled Workplace

Throughout my interviews and in Reddit posts, workers described the multiple fears and anxieties they experienced as a result of being subjected to WSTs, even ones perceived to be less “intrusive” or “harmful” such as productivity tracking [96]. For remote workers, the ability for companies to surveil them in their own homes created unique privacy concerns not seen in other forms of work involving an overt and often unintended spillage of their private lives into the workplace. Workers were not only concerned about the extensive personal data being collected about them, but also that these tools were primarily used for discipline and punishment rather than support. P1 and P7’s experiences with emotion AI systems demonstrate how workers were placed under a punitive three-strikes-and-you’re-fired policy any time the system flagged them for not adhering to inflexible and unrealistic techniques of the body [255]. As P1 noted, this created a “*big snowball effect*” that made workers more susceptible to additional surveillance, suspicion, and harassment by management.

The constant threat of disciplinary action led some workers like P5 to adopt self-policing behavior such as choosing to forego breaks when they needed them in favor of “*not wasting company time*.” Foucault describes how the power of the panopticon becomes perfected when society absorbs and internalizes the established rules of the system as their own [131]. Its ability to be both “*visible and unverifiable*” allow the panopticon to establish permanence even when not being actively used by those in power. In this case, workers may be aware that they are being monitored at all times, but they were often given little information from their employers about how they were being monitored and assessed. Although some managers, like P7, reasoned that disclosing such information would make workers feel more anxious, workers responded that not having a clear understanding of the full extent of monitoring or what metrics are being used for assessment only worsened their anxieties [68]. The compounding stress of being under constant threat of privacy invasion and disciplinary action often coalesced into feelings of extreme exhaustion and other health issues that greatly hindered workers’ performance at work. As these testimonials show, the inability of the system to accommodate and support these workers, especially those with disabilities, only intensified the punitive measures used by management and, in some cases, led to workers’ termination or resignation.

While the harms of WSTs on workers have been well-documented [33], I also draw attention to the harms experienced by managers. Middle managers like P2 were not immune to the surveillant gaze, as they were subjected to the same type of monitoring as their supervisees. P2’s belief that they “*had to follow things a certain way*” in spite of their internal reservations about surveillance, speaks to how surveillance culture is enforced when the act of surveillance itself becomes a metric used to evaluate the surveillant’s performance. P2 described how the relationships to their coworkers shifted the moment they were promoted to manager. Although power asymmetries are innate within supervisor-supervisee dynamics, P2’s experience shows how the presence of WSTs amplified these asymmetries due to the amount of information P2 now had access to about their former coworkers. P4 also noted that the addictive and convenient nature of WSTs and the ability

to check it at any time and place contributed to increasing feelings of paranoia and distrust of his workers to the point where he assumed “*the worst about a situation.*” Even encountering a single infraction reinforced P4’s belief that he had to continuously surveil people on his team.

Together, these examples show how WSTs created a reverberating culture of distrust that hurt workers and managers alike. The punitive nature of WSTs reinforced divisions within the workplace, where supervisors assumed the worst in their employees, workers felt resentment towards their bosses, and coworkers were pitted against each other. At the root of this dynamic is the dehumanization that occurs when workers and their labor are abstracted into measurable units of accountability and compared against the metrics of others [163]. This in turn disincentivizes workers and bosses alike from investing in the harder-to-measure interpersonal aspects of work, like building trust and open communication that are crucial to creating a healthy work environment [284]. Similar to Veena Dubal’s description of laboring under Uber’s algorithmic management as “*gambling*” when “*the house always wins*” [118], I echo the sentiment shared by the Reddit poster who introduced this chapter—that WSTs pull workers and even their managers into “*a losing game*” where nobody wins.

According to Gould [149, 150], addressing these challenges as HCI researchers requires critical examination of the measurement frameworks that underpin WSTs, as well as the assumptions that guide our understandings and critiques of these systems. I call for a shift toward worker-centered design methodologies [134], where workers are actively involved in envisioning and designing tools and frameworks that can genuinely reflect and support the complexity and variability inherent in their work. Only by prioritizing worker voice over “*stochastic machine witnesses*” [149]—automated systems that reduce human activity to decontextualized metrics—can HCI researchers design systems to enhance the workplace experience such that both workers and organizations might thrive.

### 3.5.2 The Promise and Limitations of Policy

When it came to regulation, during interviews, workers expressed mixed feelings. While there were some workers like P1 who believed that governmental regulation could offer workers stronger data and privacy protections, as well as prevent more intrusive forms of monitoring, others were more skeptical. Although P2, a disabled worker, received accommodations that allowed them to take more breaks under surveillance, they felt that disability laws ultimately failed to protect them from being demoted and having their contract terminated as a consequence of requesting these accommodations. Additionally, P6’s belief that “*companies own the politicians*” in the United States speaks to the incredible lobbying power corporations have at all levels of government. For example, in 2024, the Consumer Financial Protection Bureau introduced new guidance designed to protect workers from digital surveillance [80], but has faced increased scrutiny and calls for abolishment from powerful industry actors [362, 364].

State privacy laws such as the California Consumer Privacy Act (CCPA) introduce important protections granting workers the right to know when employers are monitoring them and for what purpose, as well as the ability to access to their personal data, request its deletion, and limit its sale [128]. However, Calacci and Stein [72] highlight how current data protection laws such

as CCPA fail to protect workers as a whole because they focus on protecting the individual data subject, rather than protecting collective rights. While there had been growing interest at the US federal level to introduce stronger worker protections, there are currently no federal laws in place [95, 286, 335]. We must acknowledge that most meaningful policy change for workers remains a slow and uphill battle.

The experiences of international workers such as P5 and P8 shed further light on the limitations of regulation as more jobs are "offshored" to countries with cheaper labor and weaker labor protections [66]. Since P5 worked remotely for a US-based company, she believed that she did not have the same labor protections as those who worked for Mexico-based companies because her employer did not have to comply with Mexican labor laws. P8 felt little hope for stronger privacy regulation in the Philippines because, in her eyes, the country lacked a "*solid foundation regarding security*" in the first place. As work becomes more fissured and more US-based companies continue to use outsourced contract labor from countries like India and the Philippines for their customer support and data work [376], this brings new questions about the role of HCI in policy to protect workers across the global supply chain. While there remains great promise in the role of worker-centered design to inform governmental policy at the local, state, and even federal level [431], it is certainly not a panacea.

In the face of limited regulation, there could still be opportunities for HCI to inform stronger worker protections at the organizational level. P3, for example, advocated for stronger anti-harassment policies in the workplace to prevent bosses from overly surveilling their workers. In interviews, workers expressed their desire to be in workplaces where they were trusted, valued, and had agency over their working conditions. Taking a worker-centered approach could help to inform whether and how monitoring technologies should be implemented in the workplace, what metrics are valuable to employees, more accommodating to different styles of work, and, perhaps most importantly, contestable [206, 329]. However, I echo P2's sentiment that the implementation of WSTs can never be truly ethical unless workers are valued as full human beings. The logics of productivity and surveillance are deeply rooted in systems far bigger than any individual employee, manager, and workplace and will thus require fundamental cultural shifts from both above and below.

### **3.5.3 The Power of Resistance and Collective Action**

#### **3.5.3.1 Countering Surveillance through Refusal**

In my interviews and on Reddit, workers discussed the various ways they countered WSTs. For some workers like P3, these tactics were learned through commiseration with their own coworkers. However, during times when workers felt isolated and alone, many described turning to Reddit for support. For P5 and P9, worker communities on Reddit provided them with a supportive space to anonymously discuss and seek advice on WSTs. Workers shared technological hacks like mouse jigglers to simulate activity and virtual machines to keep work and personal files separate. Some discussed approaches such as "soldiering" to purposefully slow down their productivity, while others pointed to quitting as outright refusal. While the act of quitting may seemingly speak to the limited power workers have within their current workplaces, it notably

remains one of the few means by which workers have full agency to better their working conditions.

Through these everyday acts of resistance, workers creatively and ingeniously repurposed tools, subverted expectations, and developed new methods to reclaim their autonomy. Drawing from the radical traditions of Luddism and unmaking, I echo Sabie et al.'s [320] call for HCI researchers to take an emancipatory approach to worker-centered design—one that draws inspiration from the existing approaches workers are already using to dismantle, disarm, and destabilize systems of control. This approach could involve designing tools and mechanisms that enable workers to obfuscate, disrupt, or neutralize WSTs, as well as helping workers to safely enact "soldiering" practices that evade detection. More crucially, taking an emancipatory approach would go beyond merely redesigning WSTs to mitigate harms and toward the possibility of their abandonment when they fail to support workers [200].

### 3.5.3.2 Building toward Collective Action

While formal collective action was regularly *recommended* as a resistance tactic by Redditors in my dataset (e.g., union activity or work stoppages such as strikes), its relative absence as a practice *enacted* by those I heard from reveals the difficulty of carrying out such measures. Nonetheless, my findings point to how individual modes of resistance may evolve into forms of collective action. For instance, P2 adopted a slower work pace to prioritize well-being after learning this tactic from coworkers. P5 shared strategies adopted from Reddit to encourage her peers to take breaks and disregard time trackers. It was by engaging with other anonymous workers on platforms like Reddit that enabled some workers like P5 and P9 to critically assess their own relationship to work and build new political consciousness. Worker communities on Reddit were central in educating members on tactics of refusal, helping them to counter the coercive self-policing behavior they previously internalized, as well as inspiring them to motivate others to take similar actions.

Given the difficulties of more deliberate forms of collective action, support for these more subtle approaches remains critical in moving toward more robust policies that truly protect workers' privacy and dignity. While past CSCW and HCI scholarship has developed technological tools to help workers track, share, and make sense of data that can, in turn, be used for collective action [69, 70, 72, 329], there are additional opportunities for CSCW researchers to help bridge the gap between individual acts of resistance and collective action against surveillance. Taking inspiration from communities like r/antiwork as "counterpublics" [387]—or, radical spaces where workers openly and safely share complaints, build solidarity, exchange tactics, and deepen their political consciousness—there are potential avenues for CSCW researchers to facilitate similar forms of information sharing and mutual support [325, 428]. CSCW researchers can also take a more proactive stance by creating knowledge bases and accessible resources [2, 417] that empower workers with information on surveillance technologies and effective resistance strategies, as well as reflective tools that enable workers to critically examine and process their own experiences. More critically, I urge CSCW researchers in this space to more directly engage with online worker communities, taking on roles as community members or accomplices [29].

Rather than largely fixing our gaze, as a scholarly community, on the potential for redesigning surveillance platforms or shifting managerial practice, we can support these more extended forms of worker community building that scaffold political consciousness, circulate tactics of subversion, and prefigure more sustainable and trusting working relations. Unlike technical interventions that might seek to mitigate the most outsized harms caused by intrusive surveillance, this approach would mean the slow and intentional work of collective transformation and cultural change. It is only through this recommitment to meeting workers where they are and sharing in mutual learning that we can finally unmake the surveillance apparatus.

### **3.6 Conclusion**

In this chapter, I outlined how worker experiences with surveillance technologies reveal deep tensions between corporate imperatives for control and workers' fundamental need for autonomy and dignity. Embedded within these systems are corporate logics that prioritize managerial oversight and profit gains, while dehumanizing workers by reducing them to quantifiable metrics that can be manipulated and controlled. In response, workers engage in everyday acts of resistance to subvert intrusive monitoring, while turning to online spaces like Reddit to share strategies, foster solidarity, and build political consciousness. These spaces reveal how small individual acts of resistance can grow into collective and transformative visions for a future of labor that centers worker agency and wellbeing over extractive productivity. For HCI researchers, designing for the future of labor demands a more emancipatory approach to design—one that builds upon these existing worker-led strategies to support workers in the shaping and, at times, resisting sociotechnical systems.



# Chapter 4

## How Frontline Workers Foster Relationality through Translation

This chapter is based upon the following published work:

Cella M Sum, Anh-Ton Tran, Jessica Lin, Rachel Kuo, Cynthia L Bennett, Christina Harrington, and Sarah E Fox. 2023. Translation as (Re)mediation: How Ethnic Community-Based Organizations Negotiate Legitimacy. In Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems (CHI '23).

In my previous chapter, I discuss how workers across diverse industries resist workplace surveillance technologies and the corporate logics that underpin them. Many of these systems sought to control and discipline labor through continuous monitoring and data collection, reducing complex human activity into quantifiable outputs. This chapter narrows the lens to a specific labor context, that of workers within Asian American Pacific Islander community-based organizations (CBOs). Here, I reveal how similar logics of control emerge even in sectors committed to care, community advocacy, and social support. In these contexts, CBO workers contend with disempowering sociotechnical practices, particularly the use of datafication as a means to receive funding. While framed as mechanisms for accountability and efficiency, these practices often divert CBOs from the relational, community-building work they were founded to do. In response, CBO workers resist by reconfiguring disempowering data practices that have historically been used for surveillance, translating numbers into powerful counter-narratives for their advocacy work. This labor of translation, often feminized, racialized, and invisible, presents a future of labor rooted in relationality, care, and collective survival.

### 4.1 Introduction

With the initial public distribution of COVID-19 vaccinations in early 2021, local organizations across the United States were called on to fill the gap in the country's healthcare infrastructure by administering doses to the communities they served. Hoang, a health program coordinator at an Asian American Pacific Islander (AAPI) community-based organization, reflected on her team's response to the inaccessibility of the county's COVID-19 vaccination app. Meant to be an end-to-end digital solution to streamline vaccination administration, the app created multiple barriers from the onset. "There's no language options. Initially, it was just in English," Hoang explained. In her role as a coordinator, Hoang served as an intercultural and interlingual translator, walking clients through booking appointments. When the app went down during their first vaccination clinic, her team stepped in to mediate the situation: *"The county people came over, they set it up and [were] like, let's roll. And then the internet went down. [The] system just collapsed... We ended up doing everything in paper, and then we have to import that back into the system."*

This vignette illustrates the critical role that workers at ethnic community-based organizations (CBOs) play in addressing disparities left unattended by technologies and public institutions through translation—not only in a linguistic and cultural sense but also through data. CBO workers act as service providers, advocates, and community builders for immigrants and refugees, as they are typically embedded within and members of the same communities they serve [177, 409]. The close geographic and social proximity to their communities allows CBO workers to provide culturally responsive programs that adapt to individuals’ social, cultural, and linguistic needs while developing a sense of familiarity, trust, and solidarity with their members [51, 177, 409, 422]. For CBO workers, this often involves translating information from public institutions (e.g., government, health, and social service systems) for their communities [409].

Despite their importance in supporting the wellbeing of immigrants and refugees, CBO workers often face significant challenges related to resource constraints and technological barriers. Prior HCI scholarship has reported on CBO workers’ reliance on an assemblage of “homebrewed” systems consisting of free and low-cost technologies [407]. The data they collect is often imperfect and incomplete [17, 124], and increasing pressures to be data-driven can lead to tensions between meeting the needs of funders and of communities [57, 103, 292]. However, there has also been growing interest in how information and communication technologies (ICTs) can support these workers in service provision, social inclusion, and advocacy for their communities [28, 144, 145, 236, 338]. Despite this growing body of research, there is a need for a more holistic perspective on the interrelationships and interdependencies within technology-mediated philanthropic work [406].

My approach focuses on translation work. Here, I adopt Michael Muller’s [268] definition of translation work as that which “transforms and transports knowledge from one culture to another culture.” In the field of translation studies, translation is recognized as a non-innocent act that reflects power relations between cultures [45]. Past work in HCI has examined the translation work of technology professionals as they negotiate the needs of different stakeholders [268, 291, 368] and how minimizing users’ perspectives for the benefit of software engineers and HCI workers can be an act of violence [268]. Several scholars also highlight the need for translation as a means to co-construct knowledge and mediate between differing worlds [67, 167, 239, 368].

In this chapter, I examine the role of CBO workers as intermediaries between public institutions, funders, and communities through their technology-mediated translation work. Drawing on interviews with 16 members of 7 AAPI CBOs in the Los Angeles metropolitan area, my study addresses three key questions:

- 1) How do CBO workers mediate translation work through data and technology infrastructures?
- 2) What forms of translation work do CBO workers take on to legitimate their practices?
- 3) How does this technology-mediated translation work impact CBO workers’ efforts to improve the wellbeing of immigrants and refugees?

By unpacking the politics of translation work across two sites—as legitimacy work and as (re)mediation—I interrogate how CBO workers negotiate power relations and barriers with insti-

tutions and technologies. As “interstitial sites of social formation in which the national intersects with the international” [239], the data infrastructures and translation practices of CBOs serve as a locus to critically examine how boundaries are reinforced, challenged, and reshaped, and how these practices reflect historical and sociopolitical phenomenon tied to broader migrant and diasporic conditions. I position CBO workers as creative agents who use translation to reshape and defy imposed boundaries, create new forms of knowledge, and resist hegemonic systems that treat them and their communities as “other.” In doing so, I argue that the various forms of translation CBO workers take on can inform HCI research and practice in supporting the wellbeing of communities.

## **4.2 Background**

Before discussing my findings in detail, I briefly describe the social and political contexts surrounding my research site: 7 AAPI CBOs in the Los Angeles metropolitan area. I first offer an overview of AAPI as a panethnic category and later a brief history of AAPI community-based organizations and how they establish legitimacy with different stakeholders.

### **4.2.1 AAPI as a Pan-Ethnic Identity**

Panethnicity is the aggregation of ethnic groups. Ethnic studies scholar Yen Le Espiritu describes this aggregation as forced categorization, where an “imposed category ignores subgroup boundaries, lumping together diverse peoples in a single, expanded ‘ethnic’ framework” [125]. As a panethnic category, Asian American Pacific Islander collapses together more than 25 million people and 50 ethnic groups speaking over 100 different languages [271]. The treatment of AAPIs as a monolithic group in institutional and advocacy spaces has contributed to the exclusion of different communities. For example, the dominant visibility of East Asians can overshadow other groups, including Southeast and South Asians [438]. Additionally, political advocacy that leverages the AAPI label for state-based recognition can elide the needs of Native Hawaiians and Pacific Islanders [165, 209]. Furthermore, the promotion of the model minority myth, which posits that AAPIs are financially and academically more successful than other racial groups, erases significant health, educational, and socio-economic disparities [89]. Even though AAPIs have the highest median household income among all racial groups, they also face the largest wealth gap, with Asian Indians earning a median household income of \$100,000 and Burmese people earning \$36,000 [221]. These issues have prompted advocacy for data disaggregation and even for the dissolution of “Asian American” and “AAPI” as identity labels [195, 438].

State-enforced ethnic and panethnic datafication, such as through the Census, has been part of the long history of Asian racialization in the United States. Shifting and codifying panethnicity has enabled the state to delineate “foreign otherness” by creating racialized categories of “legal” and “illegal” and “citizen” and “non-citizen” [239]. Over a century of exclusionary immigration laws, labor exploitation, incarceration, war, and military occupation wrought shifting legal definitions of “Asian American” and “AAPI” [239]. While AAPIs are often described as the fastest growing demographic segment in the U.S. [64], this history of discrimination has limited their political

power [125, 239].

Building political power has thus meant navigating a system in which “numbers count” [125]. Panethnic identities can help to create a unified front to fight against racial oppression and exploitation. Advocacy organizations and communities strategically use the AAPI label to build coalitions with different subgroups even as they challenge the same boundaries and power structures that such labels impose [125, 356]. For example, Dosono and Semaan [115, 116] have explored how AAPI Reddit communities negotiate and redefine their collective identities to mobilize and resist against white hegemony. “Asian American” and “AAPI” are not static identities. Rather, they represent “a fusion and fission” of complex political and social relations, whose boundaries and connections are constantly manipulated and negotiated by internal and external forces [125]. My research focuses on the complex identity work that staff within AAPI CBOs perform through their technology-mediated translation practices.

### **4.2.2 AAPI Community-Based Organizations**

The Immigration and Nationality Act of 1965, the end of the Vietnam War, and the subsequent passing of the Refugee Act in 1980 brought an influx of both “highly-skilled” immigrants from China, Korea, Japan, India, and the Philippines alongside Southeast Asian refugees from Vietnam, Cambodia, and Laos [423]. Many of these ethnic communities became highly concentrated and urbanized on the West Coast, with nearly a third living in California alone, primarily settling in the metropolitan areas of Los Angeles and San Francisco [65, 423]. This post-1965 influx fundamentally shifted AAPI demographics, leading to disparities in health, educational attainment, and socioeconomic status among subgroups. Southeast Asian refugees, in particular, continue to face significant health disparities due to their experiences of war, genocide, displacement, and resettlement [336, 378].

In response to their communities’ diverse and rapidly growing needs, the number of AAPI CBOs grew in San Francisco, Los Angeles, and New York [125, 183]. Although AAPI CBOs existed prior to the 1960s, pressures from the civil rights movement prompted the US government to provide increased funding for minority-based social welfare programs [125]. As a result, many CBOs transitioned from being self-funded to relying on government funding, fundamentally changing long-established power and organizational structures within communities. Under this new funding model, professionally-trained and acculturated social workers, rather than grassroots activists and established community leaders, became the primary brokers in administering welfare services [125]. Neoliberal policies introduced in the 1970s and 80s led to increased privatization and decreased social welfare spending, which furthered the “professionalization” of CBOs, introduced performance-based contracting measures, and forced organizations to compete with one another for funding [125, 251].

Since funders tend to prefer pan-Asian initiatives over single ethnic ones, many CBOs formed pan-Asian coalitions or became pan-Asian organizations themselves as a tactic to increase funding [125]. However, consolidating different needs and goals can also lead to conflict among organizations, where larger, more established, and better funded agencies are favored over smaller ones [125]. As a result, a CBO’s survival hinges on its ability to broker competing needs and

establish legitimacy across its various networks involving communities, partner organizations, and funders [401, 410]. Here, I define legitimacy as “a generalized perception or assumption that the actions of an entity are desirable, proper or appropriate within some socially constructed system of norms, values, beliefs and definitions” [369]. My work considers contemporary efforts of CBO workers to establish forms of legitimacy with and through data.

## **4.3 Related Work**

In the following section, I draw on literature from multiple disciplines such as HCI, feminist science studies, translation studies, postcolonial studies, and ethnic studies to thread the connections between translation, migration, and the sociotechnical infrastructures of CBOs.

### **4.3.1 Sociotechnical Systems for Nonprofits and CBOs**

HCI scholarship on nonprofits and CBOs has examined a wide array of phenomena such as volunteer coordination [398, 408], internal process management, [34], and fundraising [53, 147, 224]. Several works explore the technological infrastructures of these organizations as a result of resource constraints, such as limited funding [57, 408], expertise, and staff time [262, 408]. Volda et al. [407], for example, introduce the notion of “homebrewed” databases, or bricolage and bespoke information arrangements crafted in response to an organization’s lack of resources. Others have explored how nonprofits and CBOs use data and technologies to support their legitimacy work with different stakeholders, such as communities, policymakers, and funders [124, 292, 377]. For instance, Tanaka and Volda [377] outline how much of the legitimacy work fundraisers do, such as donor interactions on social media, remains invisible in the design of crowdfunding platforms.

However, scholars highlight the tensions in making legitimacy work visible through sociotechnical systems, cautioning that datafication can lead to increased surveillance [57, 103, 292]. Crooks and Currie [103] argue that datafication ultimately creates a double bind. On the one hand, data can be used to build legitimacy and mobilize communities to action. On the other hand, it can perpetuate systemic violence and surveillance of minoritized communities. Bopp et al. [57] uncover instances of “data disempowerment” when nonprofits face data-driven pressures from funders and homebrewed arrangements that move them further from their mission. Since data requirements are usually set by funders and funding is dependent on data, organizations eventually lose control over their data practices.

HCI research has also investigated how CBOs use ICTs and data to support alternative and agonistic ways of working [17, 27, 28, 103, 144, 145, 258, 292, 418]. Asad and Le Dantec frame the ICT usage in eviction and foreclosure blockades as a form of “illegitimate” civic participation because it challenges institutional authority [28]. Alvarado Garcia et al. [17] examine activists in Latin America who make public data on human-rights violations “actionable” towards social change by informing citizens, requesting direct actions, and building capacities. However, these groups are hampered by conflicting or incomplete data and must implement strategic workarounds, usually by building alliances to address the data gaps. Others, like Whitney et al.

[418], suggest HCI researchers should find other ways to align with CBOs beyond the design of technological tools, such as technical documentation analysis or speculative/critical making. Ghoshal's [144, 145] work calls acute attention to this, arguing that the ICTs utilized by CBOs often embody values that are in opposition to the values of social movements, which tend to prioritize inclusion and participation. For example, ICTs designed with interfaces that are only accessible to those with technical expertise can exclude other members of the organization. In response, CBOs engage in additional labor to build technical capacities to mitigate exclusions [145].

I build upon these works by focusing on the technology-mediated practices of ethnic CBOs in the U.S. Although there has been some research into ethnic CBOs, such as Seguin et al. [338] who explore the design of digital systems for an Australia-based Filipino migrant organization, and Li et al. [236] who analyze CBOs' usage of Twitter to empower communities, this work specifically focuses on the work practices of CBOs. I examine how these practices become a socially-constructed space of tension that reflects wider historical and sociopolitical contexts tied to migrant and diasporic conditions.

### **4.3.2 The Politics of Translation**

Translation is a non-innocent act that reflects power relations between cultures [45]. As such, scholars have emphasized the sociocultural aspects of translation to understand how knowledge is transported and transformed from one culture to another. For example, Lawrence Venuti [399] calls for interrogating the visibility and agency of the translator, recognizing that translation is a creative and, at times, subversive practice that involves active mediation and negotiation between cultures.

Scholars have surfaced how translation can be an instrument of colonial domination that promotes violence, erasure, and notions of the "other" when the colonized are subjected to Western understandings of reality, knowledge, and representation [282, 357]. The unidirectional translation from the language and culture of the colonized into those of the colonizer serves as a tool of control and containment. In other words, language can be symbolic of other forms of material violence, such as the case of dictation lessons as a site of colonial authority [81]. This reduces differences between those deemed the "other" and erases their humanity, ultimately creating "hegemonic versions of the colonized" [282] and "representations," or objects, without history [322].

However, translation can also involve more complex and "paradoxical logics of exchange" [403] where new cultural identities and hybridities are formed. Scholars have argued that immigrants are situated within an interstitial and hybrid cultural space, where translation can become a transformative tool to negotiate, resist, and reshape cultural boundaries as a means of survival and subverting domination [52, 239]. Asian American studies scholar Lisa Lowe [239] argues that the hybridity of the Asian American experience is the product of collective experiences of forced migration, nationalisms, imperialisms, and displacement. To survive, immigrants must invent different cultural alternatives that are "partly inherited, partly modified, as well as partly invented," including the appropriation of dominant practices that may subject them as the "other"

[239]. Thus, translation functions as a site and reflection of hybridity and multiplicity that exceeds ethnic and national identity. In this light, translation becomes a sort of border crossing that enables alternative ways of knowing and being, and opportunities for building solidarity across differences [67]. I draw upon these theories of hybridity and exchange to unpack the politics of CBO translation work and its connections to wider sociopolitical arrangements that define migrant and diasporic conditions.

### 4.3.3 Translation Work in HCI

Past work in HCI has explored the translation work performed by HCI researchers and practitioners [268, 368], data scientists [291], programmers [26], community organizers [292], outreach workers [114], community health workers [400], and linguistic translators [172]. For example, Dombrowski et al. [114] highlight how outreach workers use translation to help clients with technological barriers, while Verdezoto et al. [400] call attention to how community health workers use translation to address gaps in data systems due to missing information.

Muller [268] draws upon translation studies to situate HCI research and practice as a form of translation work involving the negotiation of unequal power relations between users, software engineers, and HCI workers. Regarded as experts, HCI workers are not only tasked with translating users' complex worldviews into the fixed requirements of software engineering, but also often called to represent and speak for users. In both instances, the perspectives of users are minimized compared to those of software engineers and HCI workers. In line with a tradition of feminist science studies, Muller argues that HCI work is far from an objective activity, but rather a political practice that requires reflexivity in the choices HCI workers make by asking, "Whose worldview is to be supported? At what cost?"

Haraway [167] cautions against adopting a doctrine of objectivity and universality, as it inevitably leads to the erasure of languages and bodies. Instead, Haraway calls for "the ability partially to translate" across heterogeneous networks as an act of survival. Reflecting on the heterogeneity and multiple divides situated among and between technology producers and users, Suchman [368] builds upon Haraway, calling for designers to develop "partial translations" as a means to co-construct knowledge and cross boundaries within and between technology design and use. Passi and Jackson [291] examine the practices of data scientists to show how translation can be a form of collaborative storytelling, where data scientists co-construct narratives with their coworkers to make judgments about data's trust and credibility. While people largely remain invisible in data, storytelling can bring them back to the fore. Similarly, Pei et al. [292] and Erete et al. [124] demonstrate how community organizers and non-profits translate data into stories to build trust and establish legitimacy among different stakeholders.

Because of its ability to move between boundaries, translation serves as a critical entry point for HCI scholars to problematize the dichotomous distinctions between "designer" and "user" [268, 291, 368], "expert" and "novice," [26], and "human" and "machine" [368]. Treating such categories as rigid and immutable inevitably reinforces dominant power structures and colonial projects that lead to subjection, erasure, and fragmentation [58, 360]. Instead, HCI scholars call for the formation of alternative practices through participatory design [268, 269] or worker-

oriented design [134, 368] that embrace the enmeshing of heterogeneous worlds toward mutual learning and understanding. Building on this research, I focus on CBO workers and how they use translation not only as a tool to address barriers, build trust, and mediate between boundaries but also as an act of resistance to the status quo.

## **4.4 Methodology**

### **4.4.1 Research Context**

My study involves 7 AAPI CBOs located in the Los Angeles metropolitan area. The CBOs serve one or more ethnic communities (e.g., Chinese, Cambodian, Korean, Vietnamese), with one organization identifying as an AAPI panethnic organization. Due to the rich ethnic and racial diversity of their localities, the CBOs also support members of ethnic groups outside of the AAPI umbrella, including the Hispanic/Latino community. While the CBOs are all classified as 501(c)3 “charitable organizations” and are involved in varying levels of service provision and advocacy, 5 organizations primarily operate as direct service agencies, while 2 operate as advocacy organizations. Direct service providers offer a wide range of services related to education, health and mental health access, immigration, citizenship, job training, affordable housing, and transportation access to low-income communities. Advocacy organizations, on the other hand, tend to focus on campaigning around specific issue-based concerns, such as LGBTQ+ or youth empowerment.

At the time of my study, 6 of the 7 CBOs were part of a larger coalition that formed in response to the COVID-19 pandemic to provide culturally responsive education, outreach, and services for the local AAPI community. In an effort to take a “data-driven approach” to health equity, the county contracted with two of the CBOs to lead the coalition in reporting and subcontracting funds out to partner organizations. Separately, the seventh organization was in a coalition with other local organizations and used digital organizing to mobilize its constituents around building a participatory budget that would support youth development at the local city level. In both scenarios, the COVID-19 pandemic forced CBOs to quickly shift from in-person to virtual-based services and ways of operating, which created considerable challenges due to a lack of technology access and issues with digital literacy, communication, and social connectedness. This created additional translation work for CBO workers to attend to, including training, maintenance, and troubleshooting of new technologies.

### **4.4.2 Data Collection and Analysis**

To understand the impact of data and technologies on how ethnic CBOs connect across their various networks, I conducted semi-structured interviews with 16 members of the aforementioned 7 AAPI CBOs. I was introduced to the CBOs through connections at my previous academic institution and as a member of a local AAPI coalition. I volunteered at two organizations: the first in October 2020 as a phone banker to support voter outreach and the second from January 2021 to October 2021 to support their English as a Second Language (ESL) and wellness programs. Interviewees were invited through convenience and snowball sampling facilitated by

these connections. Interviewees occupied various roles, including three administrators who oversaw programs and staff, 12 workers, and one board member. Workers included non-managerial staff such as health navigators, case managers, program coordinators, and organizers. All participants identified as either Asian (N=15) or Hispanic/Latino and White (N=1), thereby sharing similar ethnic and racial backgrounds with the communities they served. Both interviewees and their organizations are referred to by pseudonyms.

I conducted the IRB-approved interviews over video conferencing software from September 2021 to March 2022. The interview questions centered around understanding how CBO workers used data and technologies in their work, both within their organizations and across various networks involving community members, partner CBOs, and public institutions. I was interested in the opportunities these digital tools offered, the barriers they created, and the tactics CBOs used to negotiate them. Interviews lasted between 60-90 minutes and, with the interviewee's permission, were audio-recorded, automatically transcribed, and then edited to accurately reflect the conversation.

I analyzed my data using an inductive and iterative approach guided by contextualized grounded theory [84]. Through multiple rounds of coding and memoing that were reviewed weekly, I surfaced initial themes that were connected to CBO work, including building partnerships, (in)accessible technologies, limited-funded infrastructures, supporting community needs, supporting funders' needs, and doing translation work. Through subsequent refinements of my data interpretations, I elevated and focused on the concept of translation work, as it cut across all initial themes. For my analysis, I defined translation work as any type of work involving an intermediary (human or technological system) that transforms and transports data, information, or knowledge from one language or culture to another. In the sections that follow, I consider the key role CBO workers play as translators, not only in the linguistic and cultural sense but also in their work with and through data.

## 4.5 Findings

In what follows, I outline three circumstances where CBO workers performed translation work and how it either supported or hindered their mission of improving the wellbeing of immigrant communities. This work includes translating community-based work into numbers to access institutional resources, serving as translators between technology and communities, and translating data into stories for political advocacy. These circumstances reflect the tenuous relationships that CBO workers have with funders, technologies, and policymakers, as well as showcase the strategic and creative ways that they use translation to reflexively navigate these relationships.

### 4.5.1 The Cost of Translating Community-Based Work into Numbers

Across my interviews, CBO workers highlighted how data served as an evaluation tool that legitimized their work to funders to receive resources. Ya Mei, an administrator, stressed the significance of her community filling out the U.S. Census. *"No data, no people. No data, no money [...]* *The best way to advocate is...to be counted,"* she concluded. However, this sentiment shifted as

workers spoke about how rigid data practices and measurements of success imposed by funders negatively impacted their work. Although requirements for data varied across programs, funders preferred quantitative data, leading CBO workers to translate their activities (e.g., case management, benefits enrollment, care coordination, education, referrals) into numbers accordingly to meet deliverable requirements. The quantification of CBO workers' efforts to receive institutional support oversimplified the complexity of their work and compromised their relationships with their communities.

#### **4.5.1.1 Prioritizing one-time interactions instead of continuous community engagement**

Multiple workers described how the push to be numbers-driven and the subsequent translation of their work into what program coordinator Ari described as “measurable units of accountability” shifted their work toward meeting funding deliverables and away from community building. Kay, a health navigator, put it bluntly: *“The most important thing is our program goal. The second is our people, like our coworker and supervisor [...] And then the third one is the client.”* This shift to prioritizing programs over people was especially apparent when workers were required to meet funder-defined outreach numbers involving “unduplicated” clients, meaning the same person could not be counted multiple times under a single program. For example, even if a person attended an ESL class multiple times a month, they could only be counted once. This requirement proved challenging for CBOs with limited capacity and compromised their ability to build trust and relationships with communities because it meant prioritizing new clients over existing ones. Ari reflected that funders' rigidly defined benchmarks and constrained definitions of who should be counted in their programs negatively impacted their reporting numbers. When client engagement was inconsistent, such as someone attending infrequently one month and more frequently the next, this made “counting” difficult.

Additionally, data-driven deliverables also played a role in determining the types of interventions CBOs developed with communities. Hoang described an instance where she felt disincentivized from doing in-person canvassing to address COVID-19 vaccine hesitancy due to canvassing's low potential for meeting outreach numbers. Although canvassing may only reach ten people, Hoang believed this method was more impactful than targeting 1,000 people over social media because it led to more personal conversations with community members. However, under the objective of fulfilling high unduplicated outreach numbers, the organization prioritized social media outreach. Others, like Dom, an Outreach and Interventions Specialist, stated that while social media could be an effective tool for targeted interventions to specific members of their community who were active on the platform, it was not recognized as a legitimate method by certain funders. In both instances, workers were disempowered from choosing the interventions they believed would be most effective for their communities.

Pressures to be numerically data-driven also created tensions between managers and workers. Hoang described how some managers who were *“not very grounded in community work”* focused on attending to the needs of funders. While she understood that the implications of not fulfilling the deliverables meant the risk of losing funding, she lamented that there was little investment in the quality of their interventions. Other workers were constantly questioned by their supervisors and other departments: *“Why is it that you guys are having such a hard time getting*

so many?” and “Do you think we’re going to meet our numbers this year?” As an administrator, Ya Mei also felt pressure from funders. “They come up with their own parameters and their own deliverable requirements, and they expect us to run in the red,” she said, alluding to funders’ expectation that CBOs will underperform. The constant negotiation between meeting community needs and funders’ needs deepened the emotional toll that many workers felt doing community work.

On top of this, several participants noted that deliverable requirements did not account for all the labor involved to meet these numbers. “There’s so much behind-the-scenes work that goes on that doesn’t get acknowledged in grants,” Ari explained. With each naturalization application, Ari pieced together a long, intricate history about her client through a collection of documents, such as marriage certificates, income tax returns, travel records, and court documents that were not always readily available. By only reporting on the number of total applications, her hours worked on each application seemed to go unacknowledged.

Hoang pointed out that funders’ “political imaginations,” or assumptions about the community and how changes could be made, kept CBOs focused on attempting to fill gaps left unaddressed by the public sector. Instead, CBO workers felt their time would be better directed toward investing in community advocacy and empowerment, and pushed for trust-based funding models [16] that would allow communities to determine the priorities. “We want more than to survive the crisis,” Hoang asserted, “[but] there’s not time for that because we’re so busy filling in that void.” Through these examples, workers and administrators across CBOs showed how the translation of their work into quantitative data compromised their ability to serve communities’ wellbeing.

#### **4.5.1.2 Aggregating AAPI Communities into a Monolith**

Several workers explained that being a part of an AAPI coalition was a double-edged sword. On the one hand, it allowed organizations to increase outreach numbers and receive more resources. On the other hand, it perpetuated the treatment of AAPI communities as a monolith, which led to decreased access to funding, a lack of culturally responsive interventions, and tensions between organizations.

Hoang explained that one side effect of being a part of an AAPI coalition was the lack of disaggregated data, which led to the erasure of certain communities, such as Pacific Islanders. While COVID-19 data at that time showed that AAPIs had the highest vaccination rates, Native Hawaiian and Pacific Islanders had the highest case rate among all racial groups, and Asian Americans still faced relatively high death rates [168, 358]. She described how the focus on high vaccination rates created a false narrative that AAPI communities were inherently more successful in tackling COVID-19 when, in reality, it involved intensive on-the-ground community work. According to Hoang, this false narrative perpetuated the model minority myth and meant that AAPI CBOs were less likely to receive funding to continue their work.

Hoang further observed that the AAPI coalition no longer operated as a solidarity space but as “a strategic effort to gather funding as a collective and then divide that funding individually.” This divide-and-conquer approach created a fissure between CBOs, due to funders prioritizing certain organizations over others. “It’s like team sports,” Hoang said, “because of the limited funding,

*tensions arise.*” Several workers spoke about encountering issues with distrust, accountability, and transparency among organizations, as well as sociopolitical divisions between subgroups along ethnic, socioeconomic, and generational lines. Hoang stressed that the encompassing term “community” could erase complex social relationships and dynamics. Dom echoed this, adding that the homogenous treatment of AAPI communities erased clear differences and tensions between communities, as well as the critical on-the-ground translation work by CBO workers that addressed differences:

“We are not united...We have different circumstances of migration. We have communities who hate each other because of their colonial histories. It is not an easy battle to even come together, united for things that you would think are our common enemy, right? So for COVID response, there are politics that we have to navigate when doing it in the Asian community to make sure that we’re conscious of the fact that certain communities don’t like working with each other.”

Dom contrasted the deep care CBO workers showed in navigating complex intergroup tensions with the broad strokes that politicians and the media used in painting the Asian community. She and other CBO workers attributed this care to their experiences as members of the local community and their awareness of sociopolitical contexts that contributed to their present-day conditions, including histories of war and marginalization. CBO workers spoke of funders’ lack of cultural competence in introducing interventions due to their preference for tackling issues broadly and their treatment of AAPIs as a monolith. Dom explained how specific national mental health campaigns were rarely created with communities of color or non-English speaking communities in mind. When her organization was asked to distribute suicide prevention materials associated with a national mental health campaign to local schools, they refused due to the materials’ lack of cultural responsiveness to the specific communities they served. *“Sometimes, that means we’re sitting back and just not participating, which doesn’t get us anywhere in terms of fulfilling our contractual obligations,”* she said.

According to the Substance Abuse and Mental Health Services Administration (SAMHSA), AAPIs are the least likely of any racial group in the U.S. to seek assistance with mental health due to stigma [328]. As mental health navigators, Dom’s team not only had the difficult task of translating certain mental health messaging across multiple languages but also of doing so in a destigmatizing way:

“Sometimes even words we take for granted in English...we all know what suicide is, we all know what depression is, we all know what anxiety is...It doesn’t translate the same in Vietnamese, and choosing selectively how to word that so the community members get help, but they’re not having to be subsumed in all of that stigma, is honestly harder than even just getting people help. So translation, language, is the biggest barrier.”

These examples show how CBO workers performed two opposing but complementary acts of translation. On the one hand, to make themselves legible to funders and institutions to receive resources, they translated their heterogeneous communities into a broad AAPI monolith. On the other, they addressed barriers associated with the funders’ homogenizing treatment of AAPI

communities by translating broad health programs into culturally responsive interventions more attuned to community needs.

## **4.5.2 The Work of Translating Technology to Improve Community Access**

Throughout the interviews, CBO workers stated that technologies played a critical role in building connections and capacity with communities. However, many workers noted that technology remained a barrier for many community members. To improve access, CBO workers served as interlingual and intercultural translators between technologies and their communities by providing technical training and supporting multiple modalities. In other instances, CBO workers did manual translation work to repair errors or malfunctions caused by technologies such as Google Translate. Both cases involved CBOs working closely with communities to address their specific needs. However, this technological remediation required significant invisible labor on the part of workers, who were already limited in capacity.

### **4.5.2.1 Translation in Addressing Technological Barriers and Access**

When the COVID-19 pandemic forced many CBOs to move to remote-based services, workers addressed barriers through translation, passing on knowledge of how to use technologies to their communities. Sadia, an administrator, and her team of case managers did 1-on-1 technology training over the phone with their community members to help them get on Zoom. Through their efforts, community members were able to continue attending classes and trainings remotely. Ya Mei attributed the success of transitioning to remote-based services during COVID-19 to their organization's willingness to tackle barriers and meet people where they were, in whatever communication modality they chose. She said, *"technology for us is really important even if it is a barrier...Regardless of that, that doesn't mean we don't address it. Language is a barrier, food is a barrier...All these things are barriers...we'll find a way."*

However, the desire to meet people where they were also meant additional labor for CBO workers. Dom described instances when she and her clients would run into technical difficulties over video conferencing software while clients talked about difficult topics, leaving both her and her clients confused and frustrated:

"Sometimes I'm doing an intake...and somebody has literally given their life story and [in the] process of re-traumatizing themselves, and trying to tell me what they need. And that is the unfortunate reality of getting mental health support. But if we were in person, that would be straightforward. We would see each other. We'd be able to read each other's body language so that we're able to know when to take pauses. When we're either doing phone calls or video calls, that isn't the case, right? Sometimes technology is cutting out. So I have to say, 'Oh, can you repeat that?' And that's an extra layer of re-traumatizing for the client. And then they're not as open to sharing as much [...] My frustrations and my emotional capacity are really just exacerbated by the issues with technologies."

Technology malfunctions like what Dom described not only risks re-traumatizing the client and

frustrating the CBO worker, but also it creates a disconnect between them. In cases where trust is crucial, technical malfunctions make relationship-building all the more difficult. Extending this, Alos highlighted the importance of translation when it came to making sure that technologies can be accessible to communities, but stressed that it can only do so much.

“Tech, at least communication tech, was made with intention to bring communities together to build networks and build bridges, but it’s inherently privileged, especially the nonprofit type of work where you’re interfacing with communities that might not have reliable internet, have access to the specific technologies that are needed, have the technological competence...So it’s being able to also translate those things to our communities. I don’t know if there’s a way for tech to be community-centered [...] Even the apps, even the ways we communicate that are supposed to be community-centered aren’t because some people are always going to be left out.”

Alos’ skepticism of whether technologies could be community-centered alludes to his awareness that technologies are rarely created with immigrant communities in mind, and that translation is necessary to bridge this gap. For other CBO workers, improving access for their communities sometimes meant forgoing the use of technologies altogether. Several participants brought up the inaccessibility of the county’s COVID-19 vaccination app. Workers described not having enough devices to support its use and frequently faced technical issues and downtime with the app. Additionally, when the app launched, it only supported the English language despite 45% of local residents speaking a language other than English at home. Knowing that it would create a barrier for community members, Sadia’s agency decided instead to schedule their clients for vaccination appointments over the phone and provided on-site registration and vaccination clinics using paper-based forms. While some technologies enabled CBOs to extend their outreach efforts and provide services in new ways, workers remained at the heart of making these technologies accessible through their translation work. Central to this negotiation was the refusal of technologies when it became clear they would not work for their communities.

#### **4.5.2.2 Fixing Inaccuracies in Machine Translation**

As trusted translators, CBO workers were essential in addressing language barriers in their communities. However, due to their limited capacity, participants said there were often not enough translators available to support their work. Dom explained that being a panethnic organization made things especially difficult regarding language capacity because the AAPI umbrella covers over 50 ethnic backgrounds and hundreds of languages. *“We’re never going to have enough to target every language... [It] inevitably means we’re leaving someone [out],”* she added.

To provide multilingual support across their media campaigns, Jacob, a program administrator, would create multiple versions of the same flyers in English, Spanish, and Korean. However, his team did not always have translators on hand. As a workaround, he would try to leverage machine translation tools such as Google Translate. However, he noted that these tools were often unreliable and required an external review by a native speaker. Other workers pointed out that many of the terms they used were not easily translatable into other languages. John noted certain English terms, such as “curfew” and “quarantine,” when translated into Khmer,

would not make sense because they do not exist in their language. Sadia told us that her team would have to re-translate materials sent by public institutions that were not in language or were mistranslated. She described how the translation process required review from multiple case managers to ensure translations were culturally appropriate, relevant, and responsive to historical and political contexts. Jimmy, a board member, echoed the need for manual translation, adding:

“We want to make sure that the Vietnamese we’re using is what the community is using... Oftentimes, what Google Translate offers is, for a lack of a better term, [what] Vietnamese people in the diaspora call ‘Communist Vietnamese’... and so a lot of the words are not what people would use here and... can be really triggering. So we have to be really careful with our translations.”

Lynn, a program coordinator, echoed this and explained the complexities of the Vietnamese language in more detail:

“We were refugees because of the war... We’re ‘boat people’<sup>1</sup>... So then if you use [certain] words, you would remind them of the time back then, when they had to go through war. So you need to be very careful when you use certain words and avoiding certain terms. Make sure you don’t offend anyone.”

As members of the Vietnamese diaspora in the US, Jimmy and Lynn demonstrated how experiences of war, occupation, displacement, and political oppression led to divergences in the Vietnamese language. They showed that Google Translate’s failure to attend to the cultural, political, and historical nuances of language opened up the possibility of replicating violence through re-traumatization. These examples show how workers performed careful linguistic translation work with the awareness that some language is difficult or impossible to translate and how machine translation tools failed to attend to the complex dynamics of language.

### **4.5.3 Translation as Storytelling for Community Advocacy**

While translating community-based work into numbers for institutions, CBO workers also translated numbers back into stories to support community advocacy work [103, 124, 292]. At the time of the interviews, several participants from a Southeast Asian youth advocacy organization, ORG K, were in the midst of a five-year campaign that began in 2018 in collaboration with other local organizations and their city council to implement a participatory youth budget. The youth budget aimed to ensure that the city would be held accountable for improving the wellbeing and economic development of youth and that youth members would also have input in its priorities for funding. In 2020, ORG K mobilized voters to pass a ballot measure that would provide \$1M in funding for the youth budget. Their work in using technological tools and translating numerical data for community storytelling demonstrates the possibilities of using translation to enact political change.

<sup>1</sup>“Boat people” refers to refugees who fled Vietnam between 1975 to 1992 following the end of the Vietnam War [392]

#### 4.5.3.1 Providing counter-narratives about communities

Translating numbers into stories allowed CBOs to create new avenues for dialogue with policy-makers. Moon and Lani, who were part of ORG K's communication team, said that data was crucial throughout their campaign to build community empowerment. Moon would pull voter engagement data to assess how many people were registered to vote compared to previous years. Doing voting analysis helped her and the organization understand where to focus their outreach efforts and increase their voter base.

Moon, who started as a youth member of ORG K fifteen years prior, was particularly impacted as a young person watching TV and seeing dehumanizing portrayals of family members and friends who were impacted by deportation, gang violence, policing, and politicians who did not look like her or her community making decisions for them. She said, *"We need to get on the media like that...we need to find a way that we can also tell our stories."* Over the years, Moon transitioned from youth member to staff member to help ORG K uplift their community's stories in different forms. Their civic engagement work involved making zines and documentaries, engaging communities via social media, and translating stories from voters into data that could be used to enact policy changes. She remarked how they were very protective of their data and were mindful of what they shared with the city. According to Moon, *"When we think about how the city views our folks, we know that when we think about data, our communities are just that number. . . [Our strategy] is making sure those numbers have a story behind it, and our folks are viewed as people."*

During the youth budget campaign, Moon's organization surveyed voters about issues that were happening in the community. One finding that surfaced within their data analysis was that young people in the city historically did not have a department to invest in their development, which had long-lasting impacts on their social and economic wellbeing. By having these conversations and sharing this data with community members, ORG K spread awareness about the issue and mobilized youth and voters to act. The final report sent to the city was a collective effort informed by hundreds of testimonials from city residents that also centered on the stories of the youth behind the campaign and their work in co-designing the survey, doing outreach, collecting data, and holding town halls. ORG K utilized social media to showcase findings from the report, paired with photos and quotes from young people that, according to Moon, countered the *"negative narratives they see about our people and show people that young people do turn out. They do care about their community."* Moon's testimonial highlights how exposing the stories and people behind the data provided powerful counter-narratives against the negative assumptions made about the community, while also mobilizing constituents to place pressure on policymakers to act.

#### 4.5.3.2 Supporting Relationships Behind the Data

The move to remote work during COVID-19 also shifted organizing tactics for ORG K. Unable to leverage traditional methods such as door knocking, ORG K began to build up their digital organizing toolkit, consisting of constituency databases like PowerBase, civic engagement apps like PDI and Phone2Action, and phone banking tools such as CalEVO. Lani explained that these

tools allowed ORG K to easily identify and connect with their constituents based on shared interest and past engagement, which helped them be more responsive and impactful in their outreach and advocacy efforts. Lani said, “[It’s] not just about plugging in your contact info...You start to build relationships [with your constituents] and see their activities with how they build with the organization.”

Moon provided an example where these tools were used to mobilize their community and put pressure on policymakers. Before scheduling delegation meetings with elected officials, ORG K would use their civic engagement app to send out text messages to their constituents, informing them about important issues they may care about. They would then ask people to sign up for the Phone2Action app to send letters directly to the mayor or councilmember. By creating a direct line between constituents to policymakers, Moon stated that policymakers were more responsive to meeting with the public. She added, “Knowing that those are their constituents, knowing that voters have the power to vote you in and vote you out. They make those decisions to put you on the appointment, right? So I think this year, they were like, *hella open*. After all those letters they had, we had no problems scheduling meetings with them.” According to Moon, this reflected the inside/outside strategy ORG K took, leveraging digital organizing tools and translation to cultivate more direct and bi-directional dialogue between elected officials and their constituents toward community empowerment.

## 4.6 Discussion

Recalling the notion that translation reflects power relations between cultures [45, 268], these findings reveal how translation work became a rich site to examine the tensions and complexities faced by CBOs. Through interviews, workers shared their perspectives on how data and technologies impacted their roles as intermediaries between communities, funders, and public institutions. First, workers described how translating community-based work into numbers through data-driven mechanisms hindered their community-building efforts. Second, they reflected on how they often performed critical yet unrecognized translation work to address technological barriers. Finally, workers revealed how translating numbers into stories gave communities powerful counter-narratives and more equitable avenues for dialogue with policymakers. Central to these findings is how CBO workers leveraged translation to negotiate, reshape, and defy imposed boundaries. I argue that CBO workers are not merely passive subjects or cultural mediators but creative agents who use translation as a means of subverting the status quo and enacting social change.

I close by unpacking the politics of translation within CBOs and how relationships with institutions, technologies, and policymakers are (re)mediated through the work of translation. I highlight how knowledge is transported and transformed from one culture to another, the (in)visibility of the translator, and the processes of social construction that connect to broader sociopolitical contexts tied to migrant and diasporic conditions. Through this work, I expand the discourse on datafication and justice-oriented HCI to reflect on how the translation work of CBOs can inform HCI research and practice in supporting community wellbeing.

### 4.6.1 Translation as Legitimacy Work

In my interviews, CBO workers described how they used translation to build legitimacy with multiple stakeholders. To receive resources from funders, workers translated their work into “measurable units of accountability” and their communities into a single aggregated AAPI monolith. To build trust with communities, CBO workers disaggregated them to attend to their individual cultural and linguistic differences. These differences speak to the realities of CBOs in their roles as intermediaries, caught between addressing the localized needs of their communities and the abstract data requirements of funders.

Workers expressed frustrations when their legitimacy work for funders hindered their ability to foster trust and serve communities. For example, Hoang and Dom felt disincentivized from choosing interventions that they thought would be most effective because the methods were deemed illegitimate by funders. Hoang said that fitting into funders’ “political imaginations” of their communities kept CBOs more focused on filling in the gaps left by the public sector rather than on community advocacy. Because the translation work between CBOs and funders was primarily unidirectional, this placed the burden on CBO workers to fit into the worldviews of funders with little opportunity for negotiation. This led to real consequences for CBO workers, who saw their relationships with clients weaken, their trust with their peers and partner organizations diminish, and their funding decrease. These examples not only point to how CBOs’ legitimacy work for funders hindered their legitimacy work for communities, but also how the outcomes of this work made future attempts at building legitimacy with all stakeholders increasingly difficult.

While past HCI scholarship has highlighted the double binds of legitimacy work, especially when it involves the surveillant gaze and disempowering nature of datafication [57, 103, 242, 292, 377], fully capturing these complexities requires interrogating the sociopolitical contexts and histories that inform the conditions of CBOs and their communities [103]. As a result of state disinvestment and privatization of social services, organized philanthropy became the state’s method of addressing systemic inequality without needing to cede power [103, 187, 251]. Thus, social welfare responsibilities fell on CBOs to handle. Although datafication has been used as an overt mechanism to disenfranchise and discriminate against AAPIs and other minoritized communities [103, 125, 239], it also became the primary mechanism for CBOs to receive resources [103, 251]. This enabled the state to define the terms for CBOs’ legitimacy, where data serves as a form of social control to maintain the status quo [103, 187].

Ya Mei’s assertion of “No data, no people. No data, no money” puts this into concrete terms. Indeed, datafication increased the visibility of CBOs and their communities, but the only way to be seen by the state was to be reduced to abstract “representations,” [322]. In this light, I argue that the unidirectional transformation of lived experiences into hegemonic abstractions continues the long legacy of AAPI communities being deemed the racialized “other.” This has the potential to lead to serious consequences, as noted by Hoang, who said that the aggregation of AAPIs into a single panethnic category meant that certain subgroups did not receive adequate healthcare access during COVID-19 as a result of erasure and the perpetuation of the model minority myth. Beyond CBO work, there is other evidence of the harms of datafication for AAPIs. The COVID-

19 pandemic saw an increase in racialized violence against AAPIs, prompting calls for increased community and police data collection to track cases. However, Kuo and Bui [225] note that data capture can bolster the carceral state while continuing to ignore institutional forms of violence such as labor exploitation, lack of social safety nets, and deportation. In other words, making racialized communities more legible to institutions can also make them targets of state violence [25, 103, 104]. Therefore, I see the institutional translation of lived experiences into numbers as another form of racialized violence against Asians and Pacific Islanders.

As workers' testimonials show, building legitimacy is crucial for a CBO's survival. However, not all forms of legitimacy are equally impactful and can be disempowering. A study by Walker and McCarthy [410] found that while government grants helped CBOs establish legitimacy with the state, they did little to enhance their longevity and instead increased their likelihood of disbandment. Community-oriented legitimacy work, such as public accountability sessions with local officials, coalition building, and grassroots funding, was found to be more conducive to a CBO's survival [410]. There is an opportunity for designers to support these relational forms of legitimacy work. Ghoshal et al. [145] state that this involves decentering hegemonic technocentric values such as functionality and efficiency towards a culture of "grassroots inclusivity" that prioritizes community knowledge, values, and resources.

Many CBO workers in my interviews called for a change in funding structures toward more trust-based models with less rigid deliverables [16]. Funding structures materially affect the data and technology infrastructures of non-profits and CBOs, which HCI scholars must contend with when working in such contexts. Even though addressing this issue may not involve a sociotechnical solution, there is an opportunity to support policymaking through the use of design [231, 249, 351, 384]. Establishing more equitable funding models may involve working closely with communities, policymakers, and CBOs through participatory design to discuss shared priorities, expectations, and agreements in how and what data is collected, how funding is distributed, and mechanisms for mutual accountability [13, 237].

More broadly, HCI researchers should heavily consider the ethical implications of datafication. Although studies have shown how data can reify patterns of systemic oppression and violence [111, 112, 176, 331], HCI researchers still legitimize data as an accountability metric through the systems we build and practices we promote. The dominant notion that more data leads to more efficient outcomes and thus produces a common good [112] creates a ripple effect within the public sector, repeated across organizational contexts and incorporated as the status quo. However, determining whether and through what mechanisms to collect and classify data is inherently a political question. In their 2020 book *Data Feminism* [112], D'Ignazio and Klein recommend asking the "who" of data: "*Data science for whom? Data science by whom? and Data science with whose interests and goals in mind?*" Through my analysis of CBOs' data practices, I argue that to fully grasp the repercussions of datafication, it is necessary to interrogate the power structures that guide them and consider the sociopolitical contexts of use—here, through the lens of translation.

#### 4.6.2 Translation as (Re)mediation

Through their testimonials, CBO workers revealed how they not only served as intercultural and interlingual mediators between communities and public institutions but also used translation as a form of remediation to address harms under systems that viewed them and their communities as “other.” Recall Jimmy, who wanted to ensure that the Vietnamese used for outreach materials “*is what the community is using*.” He carried an acute awareness of how sentiments over language have undoubtedly been shaped by war, displacement, loss, and political oppression [108, 109]. Knowing how language can diverge and be reshaped from one place to another while carrying with it power, culture, and history, he performed re-translations as an act of care to not re-traumatize his community. Translation work, in this sense, can be a form of intimacy when the translator surrenders “*to the trace of the other in the self*” by attuning to their differences [357]. As Hmong scholar Ma Vang [396] observes, language work “*mediates different practices of healing and care across institutional, belief, and language barriers*” in ways that also incorporate community knowledge-making.

However, remediation also required significant labor on the part of workers, who already had limited capacity. With little opportunity to interact or negotiate with the originators of the barriers—in this case, technology designers—the work was not only unidirectional but also remained invisible. As a result, the root causes of the barriers were left unaddressed, leaving CBO workers to carry the burden of continuously attending to the same gaps. Although machine translation tools may provide mechanisms for feedback, this still requires communities to perform reparative labor (instead of tech companies working directly with communities to develop tools, as with [235]). Additionally, machine translation tools tend to prioritize dominant variations of language over less-resourced ones, while offering few opportunities for users to provide meaningful context into the reasons behind re-translations. If machine translation designers can become aware that certain language is particularly harmful to communities due to their political histories, how might they provide means to ensure their safety?

In the case of the COVID-19 app, by only supporting English in an area where 45% of residents speak another language at home, technology designers wittingly or unwittingly made a choice about their users, which was more representative of the dominant culture than of reality. This excluded a significant portion of the population who were essentially left with two choices: conform or be treated as the “other.” In this case, being the “other” meant that non-English speaking communities were less likely to receive life-saving COVID-19 vaccines because of the app’s inaccessibility. CBO workers leveraged linguistic and cultural translation as an act of care to teach clients how to navigate the platform. Though necessary at the time, this did little to challenge the exclusionary norms that caused this harm in the first place, such as only supporting English monolingualism. This shows how intimacy through translation can itself be a form of violence when it coerces communities to conform to the dominant culture. As Shaden Tageldin [374] asserts, “*translation is perhaps the most seductive of imperial powers*” when it offers the impression of equivalence by adhering to the “likeness” of the colonizer.

When technologies fail to account for the complexities of lived experiences, they open up the potential for real harm. In such cases, CBO workers demonstrated acts of refusal and resistance

in response, such as Sadia's team, who chose to forgo the inaccessible COVID-19 app in favor of low-tech solutions. We also highlight CBO workers' use of partial translations, "*partly inherited, partly modified, as well as partly invented*" [239], involving reconfigurations of dominant processes as a mechanism for resistance. I point to ORG K's use of data and technologies to create new channels for direct dialogue between communities and policymakers. By using storytelling to push back against the abstraction of communities and forcing more direct engagement from policymakers, the translation work was a more complex bi-directional process involving active negotiation and exchange between groups. The worldviews of policymakers were translated into forms understood by the community, and the community was also provided with tools to help reflect their worldviews back to policymakers [127]. While CBO workers' role as mediators remained visible on both ends, creating avenues for direct dialogue meant that their role became less central, enabling the community to interact with policymakers in a more visible way. Building on Wong [426], who calls tactics that rely on dominant discourses and logics *soft resistance*, this shows that such tactics can take a more overt form.

These examples show how CBO workers not only used translation to mitigate harms under a system that viewed them and their communities as "other," but also used it as a creative practice to transform hegemony and existing power structures. As such, I argue for rethinking the role of the CBO worker, not as one subordinate to funders, policymakers, and the state, but rather as a creative agent who is a critical source of community knowledge-making against the status-quo [214]. Past HCI scholarship has challenged dominant narratives of the passive subject under datafication and technologies [116, 242, 391, 426]. As Lu et al. [242] note, such narratives leave little space to interrogate how people enact their own agency and subjectivity, which reify notions of the "other." Building on this scholarship, I add that collective histories of subjugation, which materially affect the sociotechnical infrastructures of CBOs, are also coupled with histories of resistance [116]. Specifically, I recognize how CBO workers' hybridity and careful use of partial translations ensures the constant transformation of migrant and diasporic identities so that their communities remain "untranslatable" to state apparatuses of control [52, 239].

While many CBO workers' translation efforts were directed toward repairing moments of technological and institutional breakdown or harm, I consider what it would mean if efforts were directed instead toward supporting the health and wellbeing of the communities they serve. As CBO workers' translation work demonstrates, this might mean taking a "bottom-up" approach, working closely with communities and building on their existing capacities and knowledge [144, 418]. Supporting heterogeneity and hybridity does not mean building a broad tool intended to support all possible experiences, but rather incorporating mechanisms that reflect nuance through tinkering, reconfigurations, and re-translations [391], creating avenues for reflexive dialogue and relationship building [27, 144], and legitimizing agonistic and careful approaches to data [28, 103, 207, 258, 259, 391, 433]. Though Suchman, Haraway, and Muller encourage translation as a reflexive practice among academics and technologists [167, 268, 368], Ethnic Studies and Critical Refugee Studies scholars recognize translation as a creative practice already embedded within immigrant and refugee communities as a part of their lived experiences and collective histories [126, 138, 239, 396, 397].

As such, I challenge HCI researchers not to represent communities as bounded, fixed, and ho-

mogenous categories but instead to recognize: (1) the histories and power relations that produce subject formations, technologies, and practices [103, 171, 239, 270, 349] (2) the pluralism that exists within a bounded category [58, 239], and (3) the contradictions that may exist when subjects are situated along multiple axes of power and subordination [93, 102, 239, 305]. I argue for the need to consider the complex translation work of those we study as well as the systems that we build—if we only focus on our own translation work, we inevitably flatten the complexity of lived experiences even more. By examining our own translation practices in relation to the practices of those we serve, we can open ourselves up to new ways of knowing and being and new opportunities for building solidarity across differences.

## 4.7 Conclusion

In this chapter, I explored the tensions between funders’ demands for “data-driven” accountability and the lived realities of CBO workers and the communities they serve. Rather than function as objective measures of success, these systems often oversimplify and obscure the nuanced, relational work CBO workers perform, while pressuring them to prioritize funders’ goals over community needs. In doing so, these systems replicate longstanding legacies of racialized violence by reducing marginalized communities to abstracted “others.” In response, CBO workers resist by translating disempowering data into powerful counter-narratives to advocate for their communities. This demonstrates how translation can be a subversive practice that challenges hegemony and existing power structures, while prefiguring futures of labor rooted in care and relationality. For HCI researchers, supporting the future of labor means centering these relational, yet often invisible, aspects of work and recognizing the transformative potential they hold.

# Chapter 5

## How Tech Workers Build Collective Power

This chapter is based upon the following published work:

Cella M. Sum, Anna Konvicka, Mona Wang, and Sarah E. Fox. 2025. The Future of Tech Labor: How Workers are Organizing and Transforming the Computing Industry. *Proc. ACM Hum.-Comput. Interact.* 9, 7, Article CSCW490 (November 2025).

In my previous chapters, I explored the disempowering effects of data-driven monitoring systems on workers in diverse sectors, and how they resisted these systems through their everyday practices. This chapter shifts focus to tech workers who have engaged in more overt forms of resistance through unionization and collective action. These workers turn to collective action to improve their working conditions and to protest unethical practices within their workplaces. Here, I investigate how the infrastructures and ideologies of the tech industry—such as fissuring, platformization, and techno-neoliberalism—have led to increasing precarity among tech workers, both motivating and hindering their organizing efforts. Despite these constraints, organizers are able to break through individualistic silos and challenge dominant narratives by cultivating community, fostering political consciousness, and forging alliances beyond their immediate workplaces. These efforts signify how workers prefigure a future of labor grounded in solidarity, collective power, and more equitable visions of the role of technology in society.

### 5.1 Introduction

The tech industry has long cultivated a mythos of meritocracy and innovation—an elite world of generous salaries, creative autonomy, and world-changing impact. This image has shaped public perception, drawn in workers, and helped legitimize tech’s expanding influence over society. Yet, beneath this carefully crafted narrative lies a much harsher reality. Workers across the tech supply chain—from full-time engineers and product managers to contractors, logistics staff, and platform-based gig workers—now face mass layoffs, algorithmic surveillance, opaque management structures, and diminished job security [117, 329, 348]. In response, U.S.-based tech workers are organizing—from union drives at Kickstarter and among Google subcontractors, to grassroots campaigns like No Tech for Apartheid [375]. These efforts challenge not only exploitative conditions, but also deeper structural and cultural forces that shape how tech work is configured and understood. Wages and job security are not the only things at stake. Tech workers are fighting for a radically different vision of how the tech industry functions and who it serves.

Recent CSCW and HCI research has begun to trace these tensions by documenting the precarity and stratification of computing labor as it is increasingly shaped by outsourcing, algorithmic management, and venture capital restructuring [151, 210, 344]. Other work examines tech work-

ers' resistance to these dynamics through grassroots organizing, mutual aid, and digital tools that support coalition building and advocacy [56, 232, 300, 386, 432]. Examples of this work include platforms like Turkopticon and Dynamo that facilitate collective visibility and negotiation [169, 192, 324], as well as community-driven repositories like *Collective Action in Tech* that track the growing movement of tech worker resistance [375]. While prior work highlights the forces shaping tech labor and the tools for resistance, less is known about the lived experiences and subjectivities of workers who have organized across the tech supply chain.

I build on this literature by centering the voices of 44 U.S.-based tech worker-organizers. Through in-depth interviews, I examine how these workers navigate disempowerment in the workplace and how they develop strategies for collective action. This study is guided by four key research questions: (1) *What are the motivations that drive these workers to unionize?* (2) *What challenges do these individuals face in organizing, and what are their strategies to circumvent them?* (3) *How do these experiences shape their identities as tech workers and perceptions of the tech industry?* (4) *What are their visions for building a stronger tech worker movement?*

Mirroring how organizing spaces strategically define “tech worker” as an umbrella term to foster solidarity [94, 281], I adopt a broad definition that includes engineers, product managers, customer support specialists, QA analysts, logistics staff, platform-based gig workers, as well as staff union organizers involved in tech union campaigns. My findings reveal a complex picture of workers managing to build solidarities across roles and geographies despite facing increasingly fissured and unstable workplaces. Through these efforts, they also challenge dominant narratives by presenting tech workers as collective agents of change rather than autonomous individuals.

To interpret these dynamics, I draw on the *Californian Ideology* [42]—a techno-libertarian worldview that celebrates individual genius, entrepreneurial risk-taking, and market-based solutions, while obscuring the structural inequities that underpin the tech industry. While not the root cause of labor precarity, this ideology functions as a powerful cultural force that discourages organizing by positioning workers as self-reliant innovators rather than participants in a shared struggle [380]. I situate it within a broader political economy shaped by platformization, weak labor protections, and financialization [303, 344], all of which constrain the possibilities for collective agency.

By foregrounding the perspectives of U.S.-based rank-and-file organizers across the tech supply chain, I argue that HCI researchers—often positioned as adjacent to but separate from the tech labor movement—must recognize their entanglement in the industry's material conditions. In doing so, I echo calls for a more politically engaged and worker-centered research agenda [133, 153, 379], one that supports organizing not only through tool design, but also through active solidarity and institutional change. While situated in the U.S., this study surfaces dynamics—precarity, stratification, and fissuring—that are increasingly transnational in scope. As such, this work contributes to broader conversations about labor in computing and the urgent need to build cross-border solidarities for more just technological futures.

## 5.2 Related Work

In the following section, I outline the related work in two areas. I first examine the infrastructures and ideologies that contribute to an increasingly fissured and disempowered tech labor force. I then trace the histories and strategies of collective organizing in the industry and examine how HCI research has engaged with these efforts.

### 5.2.1 Infrastructures and Ideologies of the Tech Industry

The labor force in the tech industry is highly stratified—consisting of higher-paid computing professionals such as engineers, programmers, and data analysts alongside lower-paid contingent workers such as warehouse workers, gig workers, and data annotators [380]. In the U.S., tech companies are increasingly turned to subcontracting and outsourcing [60], shifting both service-based and computing roles. This strategy allows firms to cut costs by employing contractors on a temporary basis with lower wages and fewer benefits compared to their full-time counterparts [123]. Meanwhile, the rise of platform-based gig work has further fragmented the labor force, subjecting ride-hail and delivery drivers, freelancers, and data workers to surveillance, algorithmic control, and job insecurity with diminished labor protections [117, 210, 219, 226, 229, 232, 329, 337, 345].

In addition, U.S. tech companies are increasingly relying on offshored labor in regions with lower wages and weaker labor laws, particularly in the Global South. For example, companies such as OpenAI and Google rely on data annotators in countries such as Kenya, India, and the Philippines to label vast amounts of training data for AI systems [119, 293, 411]. These workers are themselves at risk of being displaced as the industry pursues developments in automation aimed at reducing the need for human oversight [203, 297, 429]. The rapid adoption of AI in the tech workplace has also led to mass layoffs in traditional office-based roles, not only affecting customer support and quality assurance roles, but also engineering [313, 348]. Further, foreign nationals on H-1B visas make up a significant portion of the U.S. tech workforce [188]. Their immigration status is directly tied to their employer, which limits their ability to switch jobs or speak out against their working conditions, making them more vulnerable to exploitation [383].

These developments reflect a convergence of political-economic forces—including the rise of venture capital-backed and platform-based business models—that have restructured the tech labor force [303, 344]. Yet, the cultural narratives that dominate the tech industry often obscure these inequalities. One such narrative is the *Californian Ideology* (CI), a techno-libertarian worldview coined by Barbrook and Cameron in the 1990s [42]. Rooted in Silicon Valley’s early entrepreneurial culture, this ideology merges countercultural individualism with neoliberal market logic, celebrating personal innovation, meritocracy, and technological progress while resisting regulation or structural change. As Barbrook and Cameron argue, this vision “*depends upon a willful blindness towards the other* [42].” While their original critique was in reference to the racism and inequities occurring in Silicon Valley at the time, I argue that this ideological formation persists within contemporary tech culture by obscuring the labor that sustains digital infrastructures. This includes outsourced, gig, and contingent workers—often women, migrants, or people in the Global South—whose essential labor is nevertheless rendered invisible [151, 190].

These structural and ideological forces also influence how the tech industry approaches questions of ethics and governance. Metcalf et al. [263] argue that the industry’s reliance on meritocracy, technological solutionism, and market fundamentalism enables it to sidestep regulation and structural change by framing ethics as a technical problem solvable through internal evaluative frameworks [427]. Widder and colleagues [419] find that the modular and dislocated nature of the tech supply chain causes engineers to feel alienated from the downstream consequences of their work. Further, CI’s emphasis on individualism and technical problem-solving fosters a cultural resistance to organizing by encouraging workers to see success and innovation as a personal achievement rather than a collective struggle [380]. This study expands this discourse by foregrounding worker experiences to show how these frameworks manifest in everyday organizing challenges across a stratified and fragmented tech workforce.

## 5.2.2 Collective Organizing Across the Tech Pipeline

Tech workers in the U.S. and globally have a long, if often under-recognized, history of collective action. While unionization in computing has historically been difficult, workers across the tech pipeline have consistently organized around ethical concerns, poor working conditions, and structural inequities [380]. Tech worker organizing in the U.S. emerged in the 1960s–70s, when groups like Computer People for Peace protested the Vietnam War at ACM conferences [201], and workplace-based groups like the IBM Black Workers Alliance and the Polaroid Revolutionary Workers Movement mobilized around racial justice and anti-apartheid campaigns [161, 256]. Internationally, mass strikes in countries like France and Italy led to sectoral collective bargaining in the tech industry [22], while Scandinavian approaches to participatory design created models for collaborative worker-driven technology development [61, 121, 185]. Despite these global developments, no U.S.-based tech union succeeded during this period [139, 146, 154].

In the U.S., the structure of labor law poses significant obstacles. Unions are typically recognized at the company level and must win majority support through elections overseen by the National Labor Relations Board (NLRB)<sup>1</sup>. This company-specific model contrasts with sectoral bargaining or worker councils found elsewhere [141, 169, 386]. As a result, U.S. workers in fissured tech environments face steep barriers to traditional unionization [264]. Still, worker organizing has adapted to these constraints. For example, gig workers, who are often classified as independent contractors [37, 381], have developed alternative models such as mutual aid networks [192, 300, 301], worker cooperatives [157, 230, 326], and grassroots coalitions [101, 309]. Communication platforms like WhatsApp, online forums, and social media have become critical spaces for gig workers to share knowledge, provide peer support, and mobilize [1, 56, 232, 300, 301, 329, 337, 386, 432].

While these alternative forms of organizing illustrate how workers navigate the constraints of U.S. labor law today, they are part of a broader landscape of labor activism in tech. Starting in the 1990s, subcontracted service workers—including shuttle drivers, security guards, and cafeteria staff—began organizing in Silicon Valley with support from unions like SEIU and UNITE

<sup>1</sup>The National Labor Relations Board (NLRB) is a U.S. government body that oversees union elections and certifications and that also enforces labor laws, including unfair labor practices.

HERE [380, 413]. Later, a renewed wave of activism emerged during the first Trump administration, spurred by #MeToo, Black Lives Matter, and growing discontent with tech's complicity in state surveillance, climate inaction, and militarism [367, 380]. High-profile examples include the 2018 Google Walkout [88, 424], petitions against Project Maven, and the No Tech for Apartheid campaign [148, 170, 343]. In 2019, subcontracted Google workers at HCL America won the first NLRB-recognized tech union [142]. This was soon followed by the successful Kickstarter Union campaign [363] and the formation of the Alphabet Workers Union as a minority union<sup>2</sup> [194]. More recently, Amazon warehouse workers at the JFK8 facility in New York formed the company's first NLRB-recognized union in the U.S. [415], while video game workers launched United Videogame Workers, an industry-wide video game union [106]. National unions such as Communication Workers of America (CWA), the Office and Professional Employees International Union (OPEIU), and the Teamsters have all launched coordinated efforts to organize the tech sector [105, 289, 290].

Retaliation (including firings and mass layoffs) [98, 385] has become increasingly common, signaling the intensifying risks that organizers face [46]. Despite these increasing risks, many tech workers remain motivated by a growing awareness of social and ethical issues. Recent research suggests that participation in social and ethical activism [55, 273, 275, 420, 421] strongly predicts tech workers' engagement in labor organizing [375], and that organizing can be both overt and subtle, including tactics that leverage corporate discourse and demand change from within [425]. Although global in scope, most tech organizing still occurs at the local or company level [280]. However, some notable forms of cross-border solidarity have emerged. Niebler finds that transnational tech organizing—such as Tech Workers Coalition, the Google Walkouts, and U.S.-based support of the 996.ICU movement in China—operates primarily through informal, grassroots, and digitally mediated networks, outside traditional union frameworks [280]. These efforts underscore the importance of digital infrastructure and political community in sustaining distributed movements.

Calls to action within HCI and CSCW communities emerged as early as 1996, when Greenbaum argued that CSCW's focus on work should be expanded to labor issues [153]. In recent years, HCI researchers have increasingly focused on designing tools for labor organizing [169, 192, 324]. Platforms like Turkopticon and Dynamo enable Amazon Mechanical Turk workers to coordinate, share employer reviews, and collectively resist poor conditions [192, 324]. Scholars have also called for worker-centered design approaches [133], as well as broader forms of "digital workerism" that support worker agency through data and collective infrastructure [69, 70]. This study builds on this work by foregrounding the experiences of tech workers across various roles and organizational contexts, revealing emergent strategies and persistent obstacles in building durable labor power in an increasingly fragmented industry.

<sup>2</sup>A minority union represents a non-majority of workers within a workplace who voluntarily join and pay dues but cannot negotiate collective bargaining agreements.

## **5.3 Methodology**

### **5.3.1 Interviews**

#### **5.3.1.1 Recruitment**

I conducted semi-structured interviews with 44 U.S.-based tech worker-organizers across 28 different workplaces. I define “tech worker” as including workers in technical roles at non-technical companies (e.g. engineers at media or non-profit companies) and workers in non-technical roles at tech companies (e.g. customer support or logistics workers). This includes contractors and platform-based gig workers, in addition to full-time employees. I define “organizer” as any rank-and-file worker organizing collective actions or NLRB-recognized unions, as well as staff union organizers involved in tech organizing campaigns. I recruited participants through convenience and snowball sampling, over social media, on the Tech Workers Coalition Slack channel with permission, and by distributing flyers at a tech worker organizing conference. Interviewees were paid \$20 for their participation. The interviews, which lasted about 90 minutes, were audio-recorded with consent, auto-transcribed, and manually reviewed.

#### **5.3.1.2 Participant Composition and Limitations**

The participant composition is summarized in Figure 5.1. The roles occupied by interviewees were diverse, including software engineers, infrastructure and IT workers, product managers, logistics workers, data analysts, customer support staff, QA analysts, and technical writers, as well as full-time and volunteer union staff who supported organizing campaigns at tech companies. Interviewees’ workplaces included large tech companies, start-ups, non-profit organizations, media organizations, and worker co-operatives located throughout the U.S., with many based in San Francisco, New York, and Seattle. I also interviewed two worker-organizers at platform companies and three from companies sub-contracted by large tech companies.

My inclusion criteria restricted this study to U.S.-based participants. This presents a large gap in the study as a growing portion of the labor that powers the U.S. technology industry is located in other countries [78]. Additionally, my recruitment methods may also have skewed the participant composition. Despite my expansive definitions of “tech worker” and “organizer”, the recruitment messages were still most likely to reach individuals who self-identify as both. For instance, most of my participants were full-time employees at technology companies, and I only interviewed a handful of platform or logistics workers, and no vendors (food, janitorial, transportation, etc.) who provided services to tech companies. Although I did not collect demographic data such as race or gender, 12 participants self-identified in my interviews as either a person of color, woman, and/or non-binary. This is another potential gap in my study, as some participants cited workplace discrimination as a catalyzing factor in their unionization campaigns.

### **5.3.2 Data Collection and Analysis**

I analyzed my data using an inductive and iterative approach guided by contextualized grounded theory [83]. Through rounds of coding and memoing, I surfaced high-level themes that captured

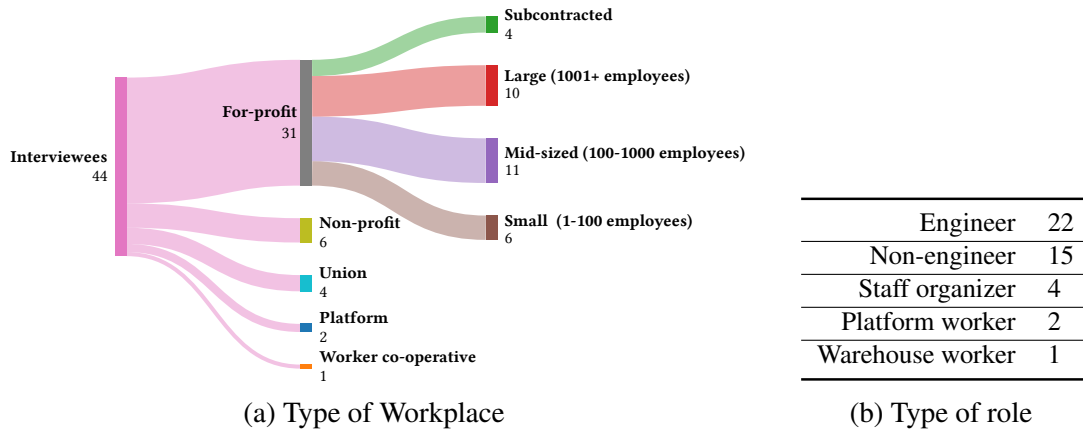


Figure 5.1: Participant composition, split by workplaces and roles.

tech workers’ motivations to unionize (e.g., “Layoffs/Firings,” “Better Pay and Benefits”), challenges of unionizing at tech companies (e.g., “Silos,” “Union-Busting”), unionization strategies (e.g., “Education,” “Relationship Building”), worker gains (e.g., “Community,” “Organizing Experience”), views of the tech industry (e.g., “Negative Impact on Society,” “Devaluing Tech Workers”), as well as future visions of the tech worker movement (e.g., “Building Solidarity,” “Militancy”).

### 5.3.3 Positionality and Ethical Considerations

I perform this research within a particular set of social, institutional, and political circumstances that necessarily inform this work, and actively draw on my own experience in interpretation and analysis. I have been heavily involved in union campaigns in the U.S., including at a technology company. Despite my position as an academic researcher, I also self-identify as a tech worker. After my experience on these campaigns, I was motivated to understand and improve the state of labor organizing, especially in the technology industry, but I acknowledge that these experiences undoubtedly shaped my perspective on this topic.

Due to the sensitive nature of interviews and high personal safety risks associated with labor organizing, including but not limited to the threat of workplace retaliation [204], I was obligated to conduct my work in a manner that does not hinder any worker’s ability to safely engage in collective action. I took several measures to reduce these risks, including removing personally identifiable information such as name, residential location, and place of employment from transcripts. I also did not collect demographic data such as race or gender. All processes were approved by the appropriate Institutional Review Board. I refer to participants via ID and gender-neutral references. I also recognize the possibility that this work may reach an unintended audience that could use these findings to undermine unionization efforts. With this in mind, I chose not to present certain results which might be used for future union-busting.

## 5.4 Findings

In this section, I begin by exploring the motivations driving U.S.-based tech workers to unionize, including striving for better working conditions and increased input in company decision-making. Next, I examine the challenges they face in organizing an increasingly fragmented and unstable tech sector, alongside their strategies to overcome these obstacles, such as fostering community and political consciousness. Finally, I discuss their visions for the future of tech labor, emphasizing the importance of building solidarity and developing alternative organizing frameworks.

### 5.4.1 Organizing Against Precarity in the Tech Industry

Despite the narrative that tech jobs are highly paid, flexible, and have strong benefits [311], multiple interviewees described precarious circumstances, including discrimination, wage disparities, and mass layoffs. Participants also wanted workplace accountability and more input in company decision-making, especially when their companies engaged in unethical projects or practices. These workers organized not only to improve working conditions but also to reshape the tech industry's culture from within.

#### 5.4.1.1 Better Working Conditions

Amid widespread layoffs and terminations across the sector, many turned to unionization to secure stronger protections and severance terms. For P8, the firing of employees who had advocated for change within their company became a rallying point for unionization. They sought to create a *“more durable organization”* to protect those who were vocal at the company. Similarly, P10 recounted that the firing of a *“beloved”* coworker who spoke against management decisions left workers reeling: *“We were like, ‘What are we going to do to protect ourselves? And what are we going to do to push back against this really bad behavior?’”* This catalyzed their union campaign with a central demand for more transparent and fair disciplinary procedures. When their company later announced mass layoffs, the union pivoted to supporting affected workers and used their bargaining power to negotiate better severance packages. Platform-based workers also used collective action to push against arbitrary suspensions without notice or due process, despite their inability to formally unionize. When P11 and others had their accounts suspended without explanation, they organized through a mutual aid group and leveraged public pressure on social media to reverse the suspensions.

Tech workers highlighted other “bread and butter” issues such as low pay, lack of benefits, and unequal working conditions as motivations. P19, a customer support worker, countered the narrative that tech workers were privileged, noting that many—such as customer support, contractors, and logistics workers—were making \$30,000 a year, which they added, *“is really not a privileged position to be in.”* As a logistics worker, P49 noticed that crucial benefits such as childcare that were readily available to office workers were not extended to those in logistics. Similarly, contractors for a large tech company (P24, P35, P41) described how they did not receive the same benefits or pay as their full-time counterparts. Despite being offered a lower salary and

less flexibility than at their previous job, P24 described initial excitement about working at this company:

“Everything I had heard about [COMPANY] was like, ‘This is the greatest place in the world to work. There’s video games and pinball machines and the food’s free’ [...] And that was a total lie, basically. So I got stuck in this job that I couldn’t afford to keep. I couldn’t live off 19 bucks an hour as a single [parent] at that time.”—P24

P41 further described the existence of a “*two-tier system*” that positioned contractors as inferior to full-time employees. They elaborated that this system was not helpful, only creating resentment due to unequal treatment:

“The two-tier system, it still sort of left its mark on every aspect of the work and the work environment [...] It’s hard not to feel resentful at times that you’re making literally a third of what the person sitting across from you is making, and you’re working together on the same project, doing the same work.”—P41

Interviewees further pointed out that contractors, customer support, and logistics workers (who were more likely to be women, people of color, and people from other marginalized groups) were treated as fungible compared to the average engineer. Across the board, interviewees discussed a strong motivation to unionize as a result of persistent cultures of misogyny, gender-based harassment, and racial discrimination unaddressed by management, despite company narratives claiming support for diversity, equity, and inclusion. Recognizing the deep inequities within their workplace, some engineers and full-time staff organized to support their more precarious colleagues, seeing collective action as a way to advocate for fairer treatment across job classifications. Yet, as P9, a former staff union organizer, noted, building “*wall-to-wall*” unions that include all workers in a single workplace remains challenging: “*When their working conditions are so different, it raises this question of, what does solidarity actually mean or look like?*” These testimonials underscore the challenge of fostering solidarity across disparate working conditions.

#### **5.4.1.2 Worker Input in Company Decision-Making**

Many interviewees emphasized the need for greater input in company decision-making, citing poor management and shifting company values as key motivators for organizing. Unionization helped workers hold companies accountable to the values they publicly claimed to uphold, especially at mission-driven organizations. P25, for example, described their startup’s leadership team as “*very volatile*” and saw unionization as a mechanism to influence the company’s direction. They added that employee resource groups (ERGs) created by management aimed to “*make employees feel like they have support, but at the end of the day, didn’t increase their negotiating power.*” P27 shared a case in which their company, once supportive of abortion rights before an acquisition, revoked support for employees traveling out-of-state for essential healthcare after the overturning of *Roe v. Wade* <sup>3</sup>. Similarly, P6, a contracted staff member at a platform company, explained how platform workers consistently faced a lack of transparency and input around

<sup>3</sup>The overturning of *Roe v. Wade* was a landmark decision in 2022 which ended federal protections for the right to abortions, leaving abortion regulation to individual U.S. states.

platform changes that directly impacted their livelihoods. Instead, they wanted gig workers to drive company decision-making.

Although most organizing efforts—especially those led by more precarious workers—prioritized immediate material demands like fair pay and job security, many organizers saw ethical responsibility as inseparable from labor struggle. Interviewees expressed a strong desire to organize around ethical concerns related to tech’s complicity in climate change, policing, and militarism, voicing resistance to the development of harmful technologies. Many of these workers cited the ongoing genocide in Gaza and drew inspiration from notable campaigns, such as Google workers protesting against Project Maven and No Tech for Apartheid [148, 170, 342], while also acknowledging risks of retaliation [385]. A data worker, P28, described feeling powerless when they realized the data they labeled may have been used to train AI-based weaponry:

“I was watching a genocide happen on my Instagram feed, and I was horrified, because it’s obvious that a lot of the tools like [Weapon System 1] and [Weapon System 2], I helped develop, and it just infuriated me, because there’s no way for me to go take my data out of that. Nobody asked me if it was okay if I helped program something that would kill people. I should be allowed to take my data back.”—P28

Their reflections reveal not just abstract ethical concerns, but a visceral response to the material consequences of their labor. For many organizers, reckoning with their contributions to harms perpetrated by the tech industry became a motivating force for organizing, even when publicly opposing harmful technology carried personal risk. Ultimately, unionization efforts were not only driven by a desire to improve workplace conditions but also by a collective demand to hold the tech industry accountable from within, challenging its complicity in global injustice and asserting worker agency over the future of technological development.

## **5.4.2 Organizing Challenges Across Silos**

While many of the organizing challenges described by tech workers are not unique to the tech industry, interviewees pointed to distinct factors tied to tech’s culture, values, and infrastructures that made organizing difficult. These included navigating the complexities of organizing a distributed workforce, balancing transparency and security in digital labor organizing, experiencing retaliation and high turnover, and facing instability from company acquisitions and venture capital influences.

### **5.4.2.1 Organizing a Distributed Tech Workforce**

Interviewees highlighted both challenges and opportunities of organizing remotely. Although meeting remotely allowed organizers to coordinate discreetly without being monitored by management, the absence of informal “watercooler” spaces for casual discussion created difficulties in building relationships with coworkers. Organizers added that being remote also led to impersonal communication methods that further divided the workplace. For instance, P25 described how their company’s Slack channel became “*extremely hostile*” and a “*battleground*,” due to management’s ability to control its discourse, which complicated organizing efforts. P16 high-

lighted similarly significant barriers in fostering trust remotely, which is necessary for people to take more radical action: *“People are not as willing to really go to the mat and make really radical action, strike, stand up to the boss with people who [...] they’re not shoulder-to-shoulder with on a daily basis.”*

These challenges were compounded in companies with workforces distributed across multiple countries. P6, whose organizing committee spanned nearly twenty countries, described the challenges of coordinating across time zones, noting that even *“a little scheduling hiccup can postpone us a whole week.”* Legal restrictions also complicated efforts to include international workers in unionization. P25 explained how organizers failed to engage their international coworkers, as U.S. labor laws prevent them from being included in bargaining units. P25 reflected that this was a *“huge error,”* as it allowed management to drive a wedge between workers and to paint the union as being explicitly anti-international worker, contributing to the loss of their union campaign.

Platform workers like P11 also discussed challenges of determining shared goals with an international workforce with varying needs and expectations, especially around pay. P6, for example, suggested that while the base rate on their platform was not a viable living wage in the U.S., it could adequately support multigenerational families in other countries. P6 anticipated two concerning outcomes from the increasing precarity of tech workers: a rise in gig work as a result of mass layoffs and a growing reliance on outsourced labor from the Global South, both to exploit more workers and to suppress collective organizing:

“Gigification is the biggest tool that capitalism is going to use to absolutely crush worker movements [...] There is no legal protection, there’s no sort of International Labor Board or anything like that. There’s not even international labor law [...] It’s all about the exploitation of the Global South. That’s our entire system. There is always someone you can exploit more.”—P6

P10, a customer support worker, reflected on growing trends of outsourced labor, especially with the rise of AI. When their colleagues got laid off, P10’s company hired support workers from the Philippines to help fill gaps. Feeling that there was not enough alarm raised among their coworkers about outsourcing, they expressed equal concern with AI’s impact on labor, particularly its use to justify job cuts. AI drastically transformed the nature of P41’s work as a data analyst. Complex, intellectually stimulating work was replaced by monotonous tasks as their responsibilities shifted toward data labeling for AI systems created to automate that very labor. P41 reported feeling disposable as a result of this change: *“I think it’s also hard to feel motivated to do work that makes yourself obsolete.”* Their disillusionment deepened upon learning that hundreds of their data labeling collaborators in India had been laid off due to AI being deemed sufficiently trained enough to replace them. As work becomes more siloed, temporary, and gigified, and workers become deskilled, my interviewees envision that the only path forward lies in building international solidarity.

#### 5.4.2.2 Balancing Transparency and Security in Digital Labor Organizing

While certain tools are essential for organizing, interviewees acknowledged that an over-emphasis on technical solutions and security infrastructures could hinder the ability to build strong campaigns. Several organizers discussed how tech workers tend to “*over-index*” on technical tools and problem-solving rather than building relationships (P2, P22, P40). P40, an engineer, noted that although tech workers may excel at logistical tasks, they often neglect relational skills that are core to organizing: *“If I’m giving advice to people building unions in tech, [it’s] that the actual thing that does the work is not a skill that you’d learn as a software engineer. It’s one-on-ones. It’s really deeply understanding your coworkers. It’s emotions.”*

At the same time, organizers emphasized the crucial role of data in organizing, from creating promotional materials to bring awareness to workplace issues (P5), to developing disciplinary action trackers for those going through performance improvement plans (P4). A common practice in early stage union organizing is “workplace mapping,” which involves gathering data on employees’ level of support for the campaign. While P3 noted that these practices can feel intrusive to those unfamiliar with organizing, they emphasized their necessity: *“Without data, you just can’t effectively organize without that high level view of things.”* To secure member trust, P3 advocated for privacy-respecting approaches—such as storing data locally rather than on public platforms. However, some digital tools designed to support labor organizing raised ethical concerns. P21, for example, felt “*sketched out*” by *Unit*, a VC-backed platform for signing union cards. Introduced in 2020 to streamline the unionization process without needing to affiliate with a national union, the app raised questions about its for-profit model and long-term sustainability before shutting down in March 2023 [160].

Surveillance by management added another layer of complexity. Organizers recounted being acutely aware that they were being monitored by management for union activity, through corporate Slack or social media. P40 described how their company’s productivity tracking systems could easily be used to surveil union activity: *“There’s a database of every keystroke you’ve ever entered and your mouse movements and what app you were using...They could be like, ‘All right, who typed ‘union?’ Who typed ‘organize?’ This is possible, which is scary.”* To protect against surveillance, organizers relied on non-workplace communication channels via Signal, Slack, or Discord and implemented security protocols. Organizers acknowledged the risk of creating friction, in terms of building momentum, trust, and accessibility. P3 described the challenge of balancing security with accessibility, as choosing technical tools with steeper learning curves *“made it less inclusive, or made it more difficult for people who are not tech savvy to join.”* Overly burdensome security protocols also created distrust among workers. While P2 understood the need, this made them feel less trusted and risked replicating the same silos that management used to separate workers.

Others discussed tensions between security and visibility. P22 noted that *“balance between security and impact”* was important, emphasizing that despite the risk of disciplinary action, building strong public campaigns was critical for building momentum. P5 similarly said that visible organizing made other workers feel more comfortable supporting the union. For example, P4 became more comfortable supporting union efforts after seeing their coworkers show support

on Slack. These testimonials reveal that over-reliance on tooling and stringent security protocols in union organizing can create friction, and exacerbate existing divisions between workers. These organizers stressed the importance of prioritizing trust and relationship-building over security culture.

#### 5.4.2.3 Retaliation and High Turnover

Many organizers' companies retaliated against workers in response to union organizing. Several organizers observed how company leadership limited workers' access to information as a response to union activity (P2, P5, P22). After becoming aware of union activity, P2's company shut down their internal Slack for several weeks, indicating that leadership was *"trying to break down every communication channel we have."* This disconnection amid mass layoffs hindered outreach efforts as there was no way to see who was still at the company. Further, companies that had once promoted flexible remote work began enforcing stricter working conditions and return-to-office mandates. Some workers viewed these changes as a union-busting tactic and a pretext for further layoffs, as many employees were unable to suddenly restructure their lives to accommodate these changes.

While the threat of layoffs mobilized many, they also posed a significant barrier to organizing. Multiple interviewees were directly impacted by layoffs or firings at their workplaces, some perceiving it as direct retaliation for organizing. These layoffs created a *"chilling effect"* on union organizing, as described by P1: *"We had just done one layoff, and then another round came in fall, which made everybody scared [and] made organizing difficult, because people were worried that their name would be added to the next list."* P31 explained that tech's culture of individualism and meritocracy further complicates matters by framing layoffs and firings as personal failures, pushing workers to prove their worth through hard work instead of challenging the systemic causes.

The turmoil of widespread firings and layoffs weakened unionization efforts, made it difficult to build sustainable campaigns, and, in some cases, contributed to the dissolution of unions. P27 observed that not only were organizing committees targeted in layoffs, but also that trans and Black employees were disproportionately affected, pointing to systemic biases against historically marginalized groups. Workers on H-1B visas had to be cautious about publicly supporting the union out of fear of retaliation and threats of deportation. Although U.S. labor laws are meant to protect workers against retaliation for union organizing, several interviewees argued that these safeguards did little. P5, for example, highlighted that because workers are under "at-will" employment, companies can fire workers for any reason, making it difficult to prove retaliation. While some organizers had successfully filed unfair labor practice charges<sup>4</sup> for being unjustly fired and later received back pay, P2 reasoned that *"the fee [COMPANY] got slapped on them by the Labor Board was nothing compared to the amount of money that they make every year."*

Another tactic companies used was offering voluntary severance. After layoffs, P10 and P19's union dissolved when each employee was offered a buyout option to "voluntarily" exit. This led

<sup>4</sup>Unfair labor practices are actions by employers or unions that violate U.S. labor laws. This includes retaliating against union activity or refusing to bargain in good faith.

the remaining organizers, as well as most employees, to leave. P19 said that many who took the seemingly lucrative buyout eventually questioned their decisions, as many remained unemployed or could not find equally well-paying jobs. Other interviewees, including engineers, disclosed that they were unemployed at the time, with some being jobless for well over a year. These experiences counter the common narrative that tech workers can job hop without needing to take a pay cut. P10 observed that this narrative previously served as an excuse by workers who did not want to organize. P10 challenged this view, noting that as the systemic issues pervasive in the industry are inescapable, it is better to invest in making their current environment better:

“People are very much like, ‘Well, I don’t want to get involved because I’m just already looking for something else’ [...] I always have this thing where I want to scream, ‘But where are you going to go?’ It’s not better anywhere.’ [...] The only thing you can do is build a better community where you’re at.”—P10

These testimonials illustrate that, despite enduring corporate retaliation and navigating a climate of fear that undermined collective efforts, organizers rejected the notion that they could walk away from poor workplace conditions. Instead, they recognize that these issues are systemic to the industry and require a sustained commitment to changing them from within.

#### **5.4.2.4 Instability from Company Acquisitions and Venture Capital Influences**

Many interviewees highlighted the obstacles of organizing smaller companies under threat of acquisition or backed by venture capital (P1, P18, P25, P33, P34). P25 observed that venture capital actively suppressed union activity, due to investment agreements that required company leadership to attest that there was no union activity within the organization. After their union campaign went public, the company’s funding was withdrawn, resulting in a drastic decrease in company valuation and low employee morale, as many were financially invested in the company. According to P25, company leadership leveraged this loss to crack down on union support: *“We lost a ton of people straight away and management hammered that home: ‘We lost this funding, we don’t have much runway. This company is going to shut down. If you vote for union, you probably are going to kill the company.’”*

Another tactic used to undermine unions is restructuring through company sales. Several interviewees (P9, P17, P19, P27) provided examples where unions were effectively dissolved after acquisition. Often, personnel were sold as assets rather than stock, allowing the acquiring company to treat workers as new hires and not have to recognize the union. P27 detailed how the sale of their company allowed the new ownership to lay off most of their workforce, effectively dissolving their union and leaving workers without severance pay or worker protections.

The structural challenges posed by venture capital and acquisitions point to broader limitations in traditional labor organizing methods in the tech industry. P44 criticized the *“shop-by-shop”* model to union organizing, arguing that it fails to keep up with the tech industry’s volatile ownership structures. In an industry that prioritizes rapid growth and short-term returns over sustainable business practices, organizers expressed a desire to adopt alternative organizing strategies to build a stronger movement.

### 5.4.3 Worker Gains and Losses

Across the board, interviewees described the immense emotional toll of union organizing, especially in the face of stressful workplace conditions, tensions in workplace relationships, layoffs, firings, and union losses. P16 compared their unionization journey and subsequent layoff to a “*heartbreak*.” Others expressed feelings of burnout and even trauma. Reflecting on these challenges, P25 admitted that they “*would pause before doing it again*”:

“Do I have the energy? Am I willing to lose this job? Am I able to perform at the same level while doing this extra work? What are the odds of winning? I would want to say that I would do it again if given the opportunity. But you know, it’s not an easy decision.”—P25

This highlights the immense personal sacrifices that tech worker-organizers often make, risking their livelihoods and emotional well-being in pursuit of better working conditions and workplace accountability. Despite these challenges, many interviewees highlighted the concrete wins they achieved through their efforts, including increased salaries, better healthcare, job security protections, expanded PTO, wellness stipends, workplace accommodations, as well as stronger protections against discrimination and intrusive monitoring, among others. However, it was the intangible gains, such as community building, organizing experience, and political consciousness that interviewees felt were equally, if not more, significant in shaping their identity as tech workers and organizers.

#### 5.4.3.1 Breaking Down the Silos and Building Community

The deep sense of community formed through organizing was consistently brought up by interviewees as one of the most rewarding aspects of unionizing, especially in contrast to their siloed workplaces. Many workers described how organizing connected them with people within the company whom they would not otherwise have engaged with. Despite being remote, P6’s organizing committee cultivated strong bonds, deep trust, and mutual support that extended beyond collaboration on union activities. P6 stated they felt supported in ways they have never experienced in other workplaces: “*There’s no substitute for that feeling of complete trust. I trust these people. I’ve not even met two of my [co-organizers] in person, but I trust them so deeply [...] I feel like they see me and I see them.*”

Similarly, P16 reflected on how the connections made through unionization efforts led to “*transformative*” personal growth and building a sense of shared struggle and mutual support, despite coming from diverse backgrounds: “*We tried and failed to do a lot of things, but I feel like people were able, and willing, in so many ways on their journey, [to stand] up for one another.*”

Building community also extended beyond the workplace. Multiple interviewees named the Tech Workers Coalition (TWC) and the Labor Notes Conference as two important avenues to connect with workers inside and outside the tech industry and across the globe. P52 described TWC as an important community space where tech workers gather, find resources, and support one another, noting that this space was intentionally created as a result of tech work being highly atomized and isolating. The Labor Notes Conference serves a similar role as a broad grassroots network

of labor organizers across different sectors and unions. P33 highlighted the value of meeting members of a nursing union at the conference who had secured algorithmic transparency in their contract, noting how it underscored the real-world consequences of tech work. Additionally, P41 said that their experience at Labor Notes was life-changing because they were able to meet people who did not fit the “tech bro” trope, including women, people of color, and disabled individuals. They believed that this diverse representation was a more accurate depiction of the tech industry: *“It’s a disservice to the industry to depict it as this sort of white, cis-het male monolith, because that’s not what the industry looks like...I think unions are some of the best ways for those marginalized voices to be amplified.”* These spaces not only helped P41 realize that they were not alone in their struggles, but also gave them hope that, through the simple act of sharing space, listening, and talking to each other, tech workers could break through silos and collectively build a better future: *“There’s a community there, even if we can’t always see it.”*

#### **5.4.3.2 Gaining Organizing Skills**

Many organizers brought the skills they learned into new workplaces. P3, for example, got involved in their university’s union campaign and felt that the organizing skills they learned through tech were directly transferable, elaborating that *“experience begets more experience.”* P1 added that they felt *“galvanized”* from their experience, recognizing how far they have come since their initial engagement with unionization. As someone who had previously been a supporter of political causes rather than an active organizer, P1 described how their involvement marked the first time that they enacted direct material change over their daily realities:

“That gave me fuel, that differences can be made, even if they’re small, even if it’s within a small organization. And if we’re being told that the world works one way, there are alternatives that can make it work differently. And to see that happen, and especially to watch the process through almost start-to-finish was really valuable.”—  
P1

Participating in unionization was often the first organizing experience for many tech workers. P17 described it as *“helpful baby organizing”* because it made room for small, tangible wins that helped them realize both their individual and collective power, which can be used for future organizing with broader social impact. P31 described training organizers as the *“most important thing in the union drive, arguably more important than winning an election is training people to be excellent organizers and being able to move people to action.”* Together, these experiences demonstrate that the knowledge learned through union efforts extended far beyond the original workplace. Wherever they ended up, workers applied these skills to new contexts to continue advocating for better working conditions and catalyzing others, creating ripple effects beyond the tech industry.

#### **5.4.3.3 Building Political Consciousness**

One of the most important takeaways from interviewees’ experiences organizing in the tech industry, was breaking free from its narrative of prestige. P1 argued that it’s *“easy to think you’re at the top,”* but that this sense quickly faded amid mass layoffs and stagnant wages as

companies report record profits: *“That high-tech salary might be great, but it might still be a sliver at the end of the day of what you collectively have worked towards. And maybe we all deserve more than a sliver.”* P16 hoped that the mass layoffs and treatment of workers as replaceable assets throughout the tech industry will *“help provide a sense of consciousness of our mutual precarity.”* Others began to challenge the artificial boundaries between different roles that enforced the siloing of workers. For example, P41 challenged the binary distinction between white- and blue-collar workers, asserting that they have more shared experiences and struggles than differences: *“White-collar and blue-collar aren’t mutually exclusive, binary groups that one never moves from... We all have a lot more in common than we think.”*

This growing political consciousness inspired interviewees (P5, P6) to read more about the broader labor movement’s political history, helping them understand that their struggles are part of a longer legacy of workers fighting for justice. Through this perspective, P5 recognized that the systems companies use to exploit workers are deliberately constructed, and therefore can be dismantled: *“If you know what’s happening and you know how it’s being manufactured to happen in a particular way, then it can also be destroyed... I think that did save my life. And I think that can save other people’s lives.”* P6 echoed the need to learn from labor history to help connect tech workers’ current struggles to those in other sectors: *“Tech work is not divorced from manufacturing, is not divorced from any other career pathway.”* P6 referenced early Ford factory workers and their mass injuries, siloing, deskilling, and replaceability due to the assembly line as a cautionary tale around the misuse of AI to fix social problems. P40 directly challenged techno-optimism, claiming that it has not delivered on its promises to improve people’s lives due to its prioritization of corporate greed, while also giving no control to workers:

*“We had this... utopian vision, maybe 20 years ago, of like, tech is going to save the world [...] Instead we’ve gotten, like, gilded poo [...] Every single person I’ve worked with, with maybe a few exceptions, is motivated to help users and to build good products and to do good things. And so why is it that everyone doing the work wants these things, but the outcomes are bad? And the answer is capitalism, the answer is management, the answer is greed.”—P40*

In response to this disillusionment, some workers transformed their relationship with their work. Learning about the inherent disposability of tech workers, P2 realized that they should not give their whole selves to their workplace: *“I’m more than my work... at any time, employers could get rid of me. So why am I giving 200% to my employer, when they think of me at a 50% value add to the company?”* For P5, organizing gave them a deeper sense of purpose than their job ever could:

*“I am a tech worker, and I produce things for my coworkers and for my stakeholders. And I’m like, this does not matter. This means nothing, I could disappear, this job could disappear [...] And then on the flip side, I get to do all this organizing work where I get to produce literally a pamphlet, like one single sheet of paper. And that can change the trajectory of many people’s lives.”—P5*

P10 likened this growth in political consciousness as a *“light being turned on inside a person.”* As workers connected their struggles to a broader movement and legacy, they brought this political

awareness into new contexts. *“The light went on inside so many people, and they’re taking that with them wherever they go.”*

#### **5.4.4 Future Visions**

Despite the challenges of unionizing in the tech industry, interviewees remained steadfast and hopeful about the future of the tech worker movement. They noted a significant shift in the conversations surrounding tech worker organizing, and growing interest in unionization. As the tech worker movement becomes more mature and established, interviewees stressed the importance of shifting towards building a long-term future. P19 argued that the concept of a future is inherently linked to unions, stating that *“without a future, a union cannot exist.”* They elaborated that unions are intentionally designed to bring long-term sustainability into a capitalistic industry that prioritizes short-term profits. P19 contended that capitalism actively undermines futures by promoting narratives of dystopia and hopelessness, which discourage workers from investing in long-term goals. P19 therefore viewed unions as a means to reclaim better futures, asserting, *“I truly believe that unions and organizing help you create a future while they’re trying to take our future away from us.”*

To build a stronger, more sustainable labor movement, organizers expressed the urgency of building solidarity with workers across sectors and internationally. Noting the limitations of existing labor-organizing frameworks, they imagined new possibilities for tech unions. This often involved the need to look back in order to look forward.

##### **5.4.4.1 Building Solidarity**

Recognizing the limitations of U.S.-based labor laws to protect workers against the volatility of the tech industry, interviewees highlighted the necessity of moving beyond the traditional *“shop-by-shop”* model of union organizing. Organizers referenced examples of sectoral-based collective actions that could serve as models. For example, P2 and P18 drew inspiration from the Writers Guild and SAG-AFTRA strikes, where workers in a broad sector with significant pay disparities came together to organize [220, 222]. Similarly, P14 envisioned a future where tech work can be supported through trade union structures, complete with union halls, apprenticeships, and worker-managed job pipelines, offering a more stable alternative to the volatility of capital-driven employment.

At the local level, P41 recognized the inherent power of being affiliated with a local branch of a national union based in their city, which represents over 1,000 cultural and education workers, as well as tech workers: *“The cultural impact that we can have on the city would be kind of immeasurable.”* Likewise, P1 called attention to service workers striking with teachers at Pratt in 2019 [298] as an example: *“More union power is better than less, even if it’s not your union, even if it’s not your grievances. I’d love to see more tech spaces, say, ‘Here’s where UAW’s next picket is, let’s join it.’”* P5 echoed this call, advocating for tech workers to build solidarity, not just across the tech supply chain, but also across sectors: *“If there was a walkout from the tech workers on top of a walkout from the warehouse workers, all of [COMPANY] would shut down...And so you can just weave this large web of how things can build off of each other.”* As a logistics

worker, P49 appreciated seeing the show of support from office-based tech workers for their unionization campaign and welcomed opportunities for further collaboration. While they did not self-identify as a “tech worker,” they acknowledged the superficial divisions between logistics workers and engineers, alongside a growing mutual understanding of their shared challenges and demands.

In addition to building worker solidarity, interviewees emphasized the importance of going beyond workplace issues to connect with local communities and broader social movements. P49 highlighted that collaborating with immigrant community-based organizations was crucial for building their campaign, due to many logistics workers being immigrants themselves, and that too often the community aspect is not taken as seriously as it should be within the labor movement. Further, P44 emphasized the importance of drawing strategies from broader social movements, which have been less focused on establishing material victories and more about “*shifting the weather*” to become more favorable for concrete victories in the future. Reflecting on the 2018 Google walkouts where 20,000 employees worldwide participated, P44 observed that although the walkouts did not secure immediate material gains, they were instrumental in inspiring tech workers across various companies to unionize. They further argued that effective organizing should function as an interconnected ecosystem rather than as isolated efforts, with looser activist-and social movement-based organizing working in tandem with more structured organizing to push for material change [122].

Interviewees also acknowledged the importance of building transnational solidarity. P6 envisioned multinational collective actions in solidarity with vulnerable workers in other countries: “*If we had a strike of all the [COMPANY] workers in California, and all the workers in China, that would make a big difference.*” While P6 acknowledged that it’s currently illegal under U.S. labor law for workers at the same company to strike in multiple countries, they also said, “*that doesn’t mean we can’t do that,*” reflecting their belief that labor laws should not be seen as a barrier to collective action, especially when demanded by working conditions. These testimonials demonstrate a growing urge among tech worker-organizers to build solidarity across divisions. As tech workers increasingly recognize their interdependence with workers in other sectors and countries, there is a growing awareness of the limitations of traditional labor frameworks.

#### **5.4.4.2 Alternative Frameworks**

Some organizers saw the need to push the boundaries of unions and envision alternative frameworks that accommodate a wider range of tactics and worker experiences. Several interviewees expressed frustration with the limited impact of existing tactics, especially those that require unfavorable compromises. As a result, some tech workers revealed a growing urgency for more militant organizing within the tech industry. P3, for example, argued that “*striking is the only way to get results,*” adding that workers do not necessarily need a union to strike, but that stakes are higher without one. P39 echoed this, calling attention that “*militant unionism,*” despite its higher risks, offers the potential for greater wins. They further recommended pushing back against the status quo of a traditional union structure. P40 too stressed the need for experimentation in navigating an unstable and unpredictable landscape [186]:

“We have to try stuff, and we’re in an era of tech labor organizing where we don’t know what the tactics that will work are [...] that part of the work is to experiment and figure out what the hell is going on and what is effective. We don’t know in the same way that people of a century ago were figuring out what tactics work, and we got to be talking to each other.”—P40

Platform workers like P28 have had to explore alternative forms of organizing, such as mutual aid groups, given their exclusion from traditional union structures. Despite these constraints, P28 emphasized that they still possess meaningful collective power to resist unethical uses of technology and demand greater control over their labor: *“We still have collective power... A lot of people will say collective bargaining. I don’t want to bargain. I’m not talking about bargaining. We have power. We are the users, and we are the creators, and we have the power.”* According to P47, a staff union organizer, minority unions in Big Tech such as Alphabet Workers Union remain valuable even without collective bargaining power, as they bring *“education and experience of class struggle into the heart of Big Tech,”* where forming a majority union has proven extremely difficult. Recognizing these challenges, P52 became a volunteer organizer with the Emergency Workplace Organizing Committee (EWOC), which aims to train and support non-unionized workers through grassroots organizing.

Several interviewees (P5, P6, P39, P40, P43, P53) noted that today’s tech worker-organizers can draw valuable lessons from labor history to navigate the rapidly changing landscape of the tech industry. P6 explained how Luddites destroyed mechanized factory equipment during the Industrial Revolution to resist the intensification of worker exploitation caused by these technologies, describing a possible inspiration for modern-day resistance against AI. P6 also cited the Black Panther Party as another source of inspiration for integrating labor activism into everyday life, with its active presence in churches, schools, social clubs, and support groups. P43, a QA analyst, highlighted that historically, the most marginalized workers—such as garment workers and immigrant farm laborers—have led labor organizing because they had the most at stake. Today, P43 observed that QA testers—the lowest-paid workers in the gaming industry—are playing a similar leading role in tech unionization efforts [430].

Others (P6, P22, P27) expressed hope for a future where the tech industry can fully embrace worker-cooperative models, where profits are shared and decision-making is democratized. This vision is not just a distant aspiration, as represented by P45, a unionized worker-owner of a tech cooperative whose position involves balancing the interests of both workers and owners equally. Although this model poses challenges in terms of scalability and funding [85], it has allowed workers like P45 to promote accountability within their company, prioritize worker wellbeing, and uphold shared values, offering a concrete example of how a more equitable tech industry might be realized.

## 5.5 Discussion

These findings foreground the experiences of U.S.-based worker-organizers who have advocated for better working conditions in an increasingly stratified and precarious tech industry. While

some campaigns won improved pay, protections, and visibility, others were thwarted by siloed workplaces and retaliation. Despite these setbacks, many tech workers described organizing as a source of profound transformation, enabling them to build community and foster political consciousness. Situating their struggles within broader historical contexts, they began to challenge the dominant logics of the tech industry and envision a stronger, more resilient tech worker movement rooted in cross-sectoral and international solidarity. I argue that HCI researchers can draw valuable insights from these efforts. In this section, I revisit three interrelated themes: how the tech industry disempowers worker organizing (5.1), how organizers build solidarity across boundaries (5.2), and how CSCW can align itself with the tech worker movement (5.3).

### 5.5.1 How the Tech Industry Disempowers Workers

In my interviews, tech workers described the many persistent challenges that make collective organizing in the tech industry difficult. These barriers are not only structural, but also ideological, shaped by forces that influence corporate practices as well as organizers' tools, strategies, and beliefs. Across the industry, tech jobs are increasingly stratified and precarious as tech firms adopt platform-based business models that rely heavily on subcontracting and outsourcing to cut labor costs and avoid employment responsibilities [303]. The high volatility of venture capital-backed firms undergirds precarious work arrangements, as companies are incentivized by investor-driven pressures for rapid growth and profitability to employ contingent labor [344]. Meanwhile, AI-driven restructuring and task automation have further contributed to mass layoffs and the deskilling and devaluation of workers, affecting even highly paid engineers [272, 348].

Workers in more precarious positions—such as contractors, gig workers, and those on H-1B visas—described facing heightened risks when organizing due to unstable employment and limited protections. These material differences often translated to divergent organizing goals, with some workers prioritizing basic protections and others seeking values-based participation in organizational governance. Restrictive labor laws often hinder the unionization of contractors, gig workers, and other contingent employees who make up a significant portion of the workforce. Finally, fragmented legal frameworks across different states and countries pose further challenges, making it difficult to adopt universal strategies for organizing.

While these dynamics are materially grounded, my interviews also reveal the enduring influences of ideological forces, such as those associated with the *Californian Ideology*, in shaping how workers and employers make sense of and respond to these transformations. I find traces of these ideological logics in both employer strategies and worker beliefs alike, highlighting values of entrepreneurialism, meritocracy, and innovation while obscuring class stratification, labor exploitation, and opposition to organizing efforts [42, 380]. For example, workplace tools like Slack were often used by management for surveillance and discipline—actions not unique to the tech industry, but nonetheless resonant with the ideology's preference for a kind of individualized accountability that frames unions as antagonistic and unnecessary. Employment Resource Groups (ERGs) allow workplaces to project a progressive image without enacting meaningful change. Similarly, stock options and buyout packages were deployed to incentivize higher-paid workers to opt out of organizing, appealing to the belief that advancement stems from individual talent rather than collective struggle. This mindset also shaped the affective attachments workers

formed to their jobs, leading them to perceive layoffs and firings not as systemic failures but as personal shortcomings, which discouraged organizing efforts [348].

I also observed how some organizers, especially those in technical roles, gravitated toward solutions that emphasized optimization, data tracking, or security protocols, sometimes at the expense of trust-building. These tendencies reflect an internalization of workplace norms that echo the CI's valorization of technical mastery and rational design over collective deliberation. Believing that data-driven workplace practices could be easily translated and applied in organizing contexts, some organizers inadvertently created silos, eroded trust, and prioritized technical expertise over relational organizing. [212, 217].

In short, while structural forces such as atomization and platformization contribute to the precarity of tech workers, ideological forces associated with the Californian Ideology reinforce these structures of exploitation by casting them as natural or inevitable. In this way, CI serves not as a root cause but as an interpretive frame—a set of widely shared narratives that can make structural inequality harder to name, contest, or imagine otherwise. Yet, my interviews also point to moments of ideological rupture. Workers increasingly questioned the promises of upward mobility, tech exceptionalism, and managerial benevolence, particularly as rolling layoffs, pervasive surveillance, and wage stagnation undermine these assumptions.

For HCI researchers, this analysis carries important implications. Even in technologies ostensibly designed for workplace communication or coordination, deeply embedded assumptions about workers, power, and value shape their functionality and effects. As we turn our attention to designing systems for organizing and worker empowerment, we must ask: which cultural logics do our systems reproduce? Which values do they assume? Are those values aligned with the labor futures we hope to support?

#### **5.5.1.1 Workplace Communication Platforms as Sites of Surveillance**

Prior CSCW scholarship has examined how algorithmic management and surveillance suppress worker autonomy [24, 210, 232, 329, 434]. Building on this literature, my findings surface how seemingly ordinary enterprise workplace communication platforms such as Slack can be abused by employers to surveil workers, violate workers' privacy and their protected right to organize in the U.S. [288]. At the same time, they also highlight how workers tactically respond to and appropriate these same platforms to support their organizing efforts. Recall how P4 became more comfortable supporting union efforts after seeing many of their peers visibly show support for the union on their workplace Slack. Other examples show how workers repurposed Slack's emoji feature to subversively respond to their employer's read-only messages [267] and developed platform counter-strategies against union-busting tactics [393]. These cases point to the tactical possibilities within mainstream workplace communication technologies when appropriated by organizers for counter-power, even as these platforms are used by employers for surveillance and control. I argue for greater attention and engagement by the CSCW community to the potential conflicting uses of such platforms and their tensions. This includes exploring opportunities to support worker privacy and collective organizing in the design and governance structures of these platforms, including supporting end-to-end encryption for private work channels [3], more

flexible access management to limit managerial oversight on certain channels and data [277], and clear and transparent data and surveillance policies [204].

#### **5.5.1.2 Technosolutionism in Labor Organizing**

My findings in 4.2.2 also point to how worker-organizers can unintentionally reproduce technosolutionist logics when they “over-index” on digital tools, data practices, and security protocols. Consistent with prior HCI and CSCW research, I find that ICTs can undermine organizing efforts—reinforcing hierarchies, introducing accessibility barriers, or shifting focus toward efficiency and rigid data practices rather than relationship building [143, 145]. These systems are often repurposed enterprise software designed for managerial efficiency—logics often at odds with the values of grassroots movements. Yet they remain prevalent due to their accessibility, affordability, and ease of maintenance, particularly when alternatives are resource-intensive or require advanced technical capacity [82, 230].

Drawing from Ghoshal’s [143] design tenets of inclusivity, privacy/security, and social translucence, I suggest pathways for reorienting organizing technologies to better support relational labor practices. This involves adopting tools with lower barriers of entry, prioritizing accessibility for the most technologically marginalized members, and critically evaluating whether chosen tools align with the values of the labor movement. While privacy and security are important in organizing contexts, I echo P22’s need to find a “*balance between security and impact*.” As seen in the #TechWontBuildIt campaign—where workers mobilized on platforms like Twitter to oppose militarism—and in the rise of Game Workers Unite, which used Discord and Facebook to organize across geographic boundaries, digital technologies have played a crucial role in building momentum and visibility for the tech worker movement [341].

### **5.5.2 Organizing Across Borders and Boundaries**

Labor organizing in the tech industry is facing an unprecedented moment of change and challenge. The question posed by P9, “*When their working conditions are so different... what does solidarity actually mean or look like?*”—lies at the heart of understanding broad-based labor organizing in this sector. As the industry continues to evolve rapidly, traditional union strategies in the U.S., particularly the “*shop-by-shop*” model, are increasingly inadequate in addressing the challenges faced by tech workers. In response, my interviewees expressed a desire for new forms of organizing—ones that draw on grassroots networks and broader movements that can adapt to diverse labor conditions and transcend the institutional and legal boundaries of traditional organizing.

#### **5.5.2.1 Supporting Transnational Labor Organizing**

While interviewees strongly desired to coordinate more militant collective actions—such as cross-sectoral or international strikes—these efforts are hindered by both structural and legal barriers. Nonetheless, such actions are occurring within the tech industry. One notable example is the 2018 Google Walkouts, where employees from over 50 cities worldwide organized a mass protest in just a few days [88, 424]. While prior work has emphasized the importance of

informal networks in localized labor organizing, particularly for gig workers who cannot formally unionize [1, 300, 301, 386], my findings suggest that these structures are equally critical at the international level. As Niebler [280] notes, transnational solidarity within the tech industry largely takes shape through informal and grassroots forms of organizing, lacking institutionalized structures.

The Tech Workers Coalition (TWC) emerged repeatedly in interviews as a key space for this type of informal organizing. TWC is a transnational network with global and local chapters, connecting workers across geographies while responding to localized labor issues. Workers reflected on how its low barrier to entry, focus on mutual support, and emphasis on community events and political education make it particularly effective at cultivating organizing capacity among workers who might otherwise be excluded from traditional union pathways. TWC [265] and other labor networks [283] have been critical in supporting transnational and even formal labor campaigns, such as Labor for Palestine [228] and SEIU's effort to unionize janitorial workers [339].

As CSCW researchers, there is an opportunity to not only design tools to support decentralized and grassroots forms of organizing, as many others have done [169, 192, 324], but also to complement and bridge efforts together towards more structural interventions that can drive policy change at the international level. For example, Fairwork [245] is a transnational action-research project and online platform co-developed by researchers from 38 countries alongside workers, platforms, unions, policymakers, and activists that aim to support platform workers. The project evaluates platforms and employers based on principles, such as fair pay, fair conditions, and fair management. To date, this initiative has pushed over 60 companies to improve their worker policies, and even gained the attention of the International Labour Organization (ILO), which has demonstrated interest in establishing international guidelines informed by these principles.

#### **5.5.2.2 Drawing Strategies from Broader Social and Labor Movements**

Rather than existing in isolation, the tech worker movement also draws strength and strategic insight from historical and contemporary labor struggles. The success of the Writers Guild and SAG-AFTRA strikes showed interviewees that it is possible to mobilize workers across disparate pay scales, job roles, and levels of precarity. Learning about the Luddites and the Black Panther Party provided my interviewees with alternative models for militant action and community-based forms of resistance. These references suggest that tech workers actively see themselves not as isolated cases, but as part of a longer lineage of workers and activists fighting for justice. This recognition aligns with calls for more historically grounded approaches to CSCW that might inform the way we design technologies [350]. Notably, Sabie et al. [319] also draw inspiration from the Luddites on unmaking as a form of technological emancipation. Similar arguments for refusal and destruction have increasingly been taken up across the field, as scholars seek to confront the harms posed by dominant technologies such as biometric surveillance in the workplace, emotion AI, among others [32, 314]. We can look to the Luddites for inspiration for modern-day resistance tactics against these systems. This may include dismantling and abolishing algorithmic management systems used for surveillance and control [371], designing AI technologies to be worker-centered [133, 436], and developing tools to support collectively reporting or tracking workplace harms [71, 192].

### 5.5.3 The Role of CSCW in the Tech Worker Movement

In “The Making of the Tech Worker Movement,” Ben Tarnoff [380] argues that the contentious and contradictory “middle layers” that tech workers are situated in as part of the “virtual class” can be ripe ground for organizing. I extend this insight to HCI researchers who also occupy these “middle layers,” not as external observers but as entangled participants within the tech ecosystem. As tech researchers, we often move between academic, industry, and even activist spaces, collaborating across them while navigating their contradictions. This positionality grants us a rare opportunity and responsibility to build stronger solidarities with tech workers and materially support their organizing efforts. In this section, I unpack how HCI researchers can support the tech worker movement within and beyond academia. Second, I reckon with our own labor power as an HCI community in shaping more just futures for tech labor.

#### 5.5.3.1 Supporting the Tech Worker Movement Within and Beyond Academia

Just as the organizers in my study had to confront internalized contradictions between their roles as tech workers and as organizers, HCI researchers must also contend with similar tensions. While HCI have increasingly engaged with questions of tech labor, this research is often shaped by Global North politics and institutions, and entangled with some of the same ideological and structural forces associated with the tech industry [193, 307]. As a result, even well-intentioned scholarship can inadvertently reproduce the very dynamics it seeks to critique: emphasizing technological solutions over political struggle [7], centering managerial or corporate perspectives [132, 217], or treating precarious workers—especially those in the Global South—as peripheral subjects or illustrative cases rather than agents of knowledge and resistance [193, 306, 307]. These practices risk disconnecting research from the lived realities of those most impacted by technological harm, and may inadvertently expose them to further precarity, surveillance, or retaliation. To address this, we must critically examine how we conduct research and the political and epistemic frameworks that shape it [91, 379]: *Who do we center in our work? Who ultimately benefits from it? What structural forces shape how we study labor? Rather than solely focus our gaze on those most vulnerable, how might we direct our analytical gaze upward to make structures of power visible, while holding companies and institutions accountable for systemic harms?*

As scholars and organizers have emphasized, the tech worker movement must be led by the most precarious workers—warehouse workers, gig workers, and others whose labor is foundational to the industry and who have led its most militant actions [274, 280, 380]. HCI researchers must follow their lead, not only by documenting their struggles but by aligning our research agendas, partnerships, and institutional resources with their demands and visions for change. In line with the political traditions of participatory design [40], researchers and workers have been turning to digital workers’ inquiry that reorients design practice toward collective empowerment [69, 137, 178, 285, 340] The Data Workers Inquiry project is just one example, where data workers from five different countries served as community researchers to surface their labor conditions, while academic partners provided support in data collection and analysis. Such projects demonstrate how HCI research can redistribute resources and amplify worker-led knowledge production.

Additionally, my interviewees emphasized the importance of organizer training, skill-building, and the development of political consciousness alongside a desire for stronger transnational ties. As a global and interdisciplinary community, HCI researchers are well-positioned to contribute to this work [193]. Political education initiatives might include co-creating zines on organizing strategies [92, 332], collaborating with workers to host workshops on building solidarity and collective action in computing [181, 307, 379], co-developing digital security training for organizers [204], or designing curricula that connect ethical questions in technology to historical and contemporary labor struggles—both local and transnational [382, 420].

### 5.5.3.2 Recognizing Our Own Labor Power as HCI Researchers

I also invite the HCI community to consider its own collective power. In examining activism within the AI community, Belfield [47] notes that this loosely defined group holds power both as an epistemic community and as a site of labor organizing. This dual positioning—researchers both as knowledge producers and workers—has enabled AI practitioners to form coalitions, challenge unethical practices, and push for institutional change. The HCI community holds similar potential.

Taking inspiration from Computer People for Peace in the 1970s, a modern coalition of HCI researchers could similarly form a bridge between academic inquiry and political action to oppose militarism, racism, corporate control in computing, and demand accountability from industry and academia while advancing more just technological futures [158, 181]. Signs of this are already emerging. Unionization efforts across higher education in the U.S. are growing, led by graduate students, adjunct faculty, and postdoctoral researchers [327]. These efforts reflect a growing recognition that academic labor, like tech labor, is shaped by precarity, power asymmetries, and extractive logics. This work is particularly urgent amid the rise of tech oligarchy and escalating attacks on U.S. institutions of higher education [318]. For HCI researchers, acting in solidarity means supporting organizing efforts within our own institutions, resisting exploitative research practices, and forming broader coalitions.

Looking ahead, the future of tech labor and HCI's role in it requires a fundamental reimagining of work, technology, and justice. As P19 observed, "*Without a future, a union cannot exist*," highlighting the vital role unions play in enabling workers to collectively envision and build more just futures, while resisting the imposition of pre-determined trajectories that erode hope and long-term sustainability. Dominant "Future of Work" narratives often position AI and automation as inevitable, reinforcing the techno-utopian determinism of the Californian Ideology and masking the labor exploitation and power asymmetries that undergird it [7]. While HCI research has offered critical interventions into the present and near-future harms of these trajectories, much of this work remains reactive—focused on mitigating the consequences of systems already in motion [218, 388].

In contrast, my interviewees show that the labor movement is not only a site of resistance, but also a force for articulating and enacting affirmative visions of futures, grounded in collective care, equity, and sustainability. One example is the *Worker as Futurist* project, a paid writing workshop in which Amazon workers crafted speculative fiction envisioning "The World After

Amazon” [164]. Reclaiming the future from corporate techno-utopianism, the project illustrates how organized labor can advance worker-led approaches to technological design and policy.

Recognizing labor organizing as an essential act of “futuring” [402] demands a broader, more speculative research agenda. Drawing on Greenbaum’s [153] “Back to Labor,” and building on recent efforts that center worker wellbeing and their collective power [7, 71, 181, 192, 345, 354, 379], I argue for a shift away from designing individualized responses to technological harm. Instead, I propose moving from a focus on Future of Work to the *future of labor*: a future in which HCI engages with labor not as a passive object of technological change, but as an active, world-making force capable of shaping sociotechnical futures through struggle, solidarity, and structural transformation.

## 5.6 Conclusion

In this chapter, I traced how the infrastructures and ideologies that drive the tech industry create new forms of precarity that both motivate and constrain collective action among tech workers. While these forces reinforce siloing, individualism, and corporate control, workers counter them by building cross-sector and cross-border solidarity and expanding political consciousness. These organizing efforts not only challenge the immediate working conditions but also prefigure futures of labor that center long-term sustainability, democracy, and collective wellbeing. For HCI researchers, supporting this future requires not only aligning with these worker-led movements, but also recognizing and mobilizing our own collective power. In Part II, I will discuss how we might support a future of labor that centers these shared visions.

## **Part II. How HCI Can Support the Future of Labor**

## Chapter 6

# Accountability as Infrastructure: Lessons from the Workplace Surveillance Incident Tracker

In Part I of my dissertation, I presented three case studies that examine how workers across diverse contexts experience, navigate, and contest the expanding use of surveillance technologies, data-driven systems, and AI in the workplace. While these technologies have intensified worker precarity and centralized managerial power, workers' responses reveal how they actively shape a future of labor grounded not only in autonomy, dignity, and the redistribution of power, but also in the cultivation of solidarity across communities, workplaces, sectors, and national boundaries.

Building on these insights, the second part of my dissertation explores how HCI can actively support workers in shaping the future of labor. In this chapter, I present insights from an expert review workshop focused on evaluating the Workplace Surveillance Incident Tracker, a public platform designed to document cases of workplace surveillance while also providing worker-centered resources for capacity building and taking action. Building on my research on workplace surveillance technologies, worker resistance, and labor organizing, this platform was envisioned as a tool for increasing corporate accountability and empowering workers to respond to surveillance harms. However, this chapter shows how documentation alone is insufficient unless it is embedded within broader infrastructures of solidarity, care, and collective action.

## 6.1 Introduction

As I discussed in Chapter 3, workplace surveillance technologies (WSTs) are now widespread in nearly every sector, with over two-thirds of U.S. workers reporting some form of electronic monitoring [173]. WSTs are often designed and deployed without worker input or consent [90, 354], causing significant harm including privacy violations, risks to health and safety, and undue disciplinary action [33].

Despite their widespread deployment, WSTs remain largely opaque to workers [90]. In response, workers employ tactics of everyday resistance, including conducting their own research and commiserating with peers through online communities to gain a better understanding of WSTs. However, much of this information remains incomplete, hard to access, and fragmented across multiple sources [173]. Recall P5 in Chapter 3 describing how she found little information about workplace surveillance, as well as information about her rights as a worker. This situation is further complicated by the fact that worker accounts of surveillance are difficult to collect, as workers may fear retaliation for speaking out due to power asymmetries and a lack of legal protections [162]. Despite these barriers, there remains a strong demand from workers, policy-makers, and advocates for a more comprehensive picture of the broadening use and impacts of WSTs that could help shape policies with stronger worker protections [173].



Figure 6.1: WSIT Homepage

To address this need, I developed the Workplace Surveillance Incident Tracker (WSIT)<sup>1</sup>, a publicly accessible database that documents incidents of workplace surveillance to enhance transparency and accountability. Through a systematic content analysis of public reports of workplace surveillance from several data sources (e.g., news outlets, academic publications, vendor websites), WSIT has documented over 250 cases of workplace surveillance across more than 200 companies occurring in the U.S. since 2010. WSIT aims to:

1. Increase public awareness about WSTs and inform evidence-based policy recommendations that strengthen worker privacy
2. provide privacy-preserving mechanisms for workers to safely share their experiences, alongside access resources for capacity building taking action
3. provide guidelines and mechanisms for accountability for companies to design and implement workplace monitoring technologies that uphold worker privacy and autonomy while actively mitigating potential harms.

WSIT builds on a growing ecosystem of transparency tools, including the AI Incident Database<sup>2</sup>, which documents incidents of AI harms, Coworker.org's Bossware and Employment Tech database<sup>3</sup>, which tracks workplace surveillance vendors, as well as worker-led "sousveillance" tools that enable workers to track their working conditions and employers, such as Turkoicon [192]. While these initiatives aim to push for corporate accountability, they have also played a critical role in promoting public awareness and supporting organizing efforts [192]. At the same time, prior research has outlined the tensions in building and sustaining these systems, including concerns around worker privacy [73], unequal governance structures [193], and the often invisible labor involved in the long-term maintenance of these platforms [191].

In this chapter, I build on these lessons to further investigate the role of worker-centered tools in promoting transparency, accountability, and collective action around workplace surveillance. To

<sup>1</sup><https://wsit.work/>

<sup>2</sup><https://incidentdatabase.ai/>

<sup>3</sup><https://home.coworker.org/worktech/>

do this, I conducted an expert review workshop with 29 members from unions, advocacy groups, and privacy and civil society organizations to evaluate WSIT. While participants highlighted WSIT’s ability to document cases and patterns of workplace surveillance that could inform research, policy, and organizing strategies, they also surfaced concerns around worker engagement on the platform, worker privacy and safety issues, data interpretation and validation, and the platform’s ability to be sustained long-term. Participants emphasized that realizing WSIT’s potential would require stronger partnerships with unions and advocacy organizations, clearer protections and support structures for workers, as well as more focused attention to the broader ecosystems and downstream harms shaping contemporary workplace surveillance, especially with the proliferation of AI.

More broadly, participants viewed WSIT not as a standalone tool, but as part of a broader sociotechnical infrastructure that can bring researchers, policymakers, unions, and workers together to collectively understand and respond to workplace surveillance. From this perspective, accountability does not emerge through technical systems alone, but through the networks of relationships and collective practices that can help to translate information into meaningful action. I argue that treating accountability as infrastructure allows for more durable and sustainable forms of stewardship and solidarity against workplace surveillance.

## **6.2 Background and Related Work**

### **6.2.1 Using Data for Transparency, Accountability, and Advocacy**

There have been numerous efforts to systematically collect, aggregate, and disseminate data in order to advance transparency, accountability, and advocacy. This includes government-led open data initiatives, such as Data.gov, which aims to increase governmental transparency by making federal, state, and local government information publicly accessible. Civil society organizations and watchdog groups have also developed their own datasets to document institutional and systemic inequities. This includes the Innocence Project<sup>4</sup>, which compiles evidence of wrongful convictions, while Good Jobs First’s Violation Tracker<sup>5</sup> documents corporate misconduct. These initiatives generally use public records to mobilize public awareness and drive reform.

Related efforts have emerged to document harms associated with technological systems. One prominent example is the AI Incident Database<sup>6</sup>, a crowdsourced repository that catalogs incidents in which AI systems have contributed to real-world harms [257]. Similar mapping and transparency projects have focused on surveillance technologies. For example, Electronic Frontier Foundation’s Atlas of Surveillance<sup>7</sup> tracks surveillance technologies deployed by law enforcement, while Coworker’s Bossware and Employment Tech Database<sup>8</sup> tracks workplace surveillance vendors. Similarly, Surveillance Watch<sup>9</sup> maps surveillance companies, investors,

<sup>4</sup><https://innocenceproject.org/>

<sup>5</sup><https://violationtracker.goodjobsfirst.org/>

<sup>6</sup><https://incidentdatabase.ai/>

<sup>7</sup><https://www.atlasofsurveillance.org/>

<sup>8</sup><https://home.coworker.org/worktech/>

<sup>9</sup><https://www.surveillancewatch.io/>

and government deployments globally.

Within labor contexts, initiatives to document working conditions have had a longstanding legacy through traditions of workers' inquiry, where workers collect and analyze data about their own experiences [15, 107, 213, 216, 329, 394]. This includes the development of "sousveillance" tools that enable workers to monitor their employers and platforms, such as tracking wage discrepancies or problematic clients [113, 156, 166, 329]. Beyond documentation, several efforts have sought to generate worker-generated data to help drive collective action and policy changes [71, 73, 192, 325]. For example, the FairFare project was developed in partnership with a labor organization to collect aggregated and crowdsourced payment data of rideshare workers. This data was used to support their organizing efforts and help to push the passing of Colorado Bill SB 24-75, which mandates greater transparency for rideshare drivers regarding their earnings [73].

While these projects do not always succeed in enacting institutional change or corporate accountability, they have nonetheless played an important role in fostering collective awareness, supporting mutual aid and organizing efforts, and making opaque systems more visible and understandable to affected communities [192].

## **6.2.2 Tensions and Considerations in Designing Worker-Centered Tools**

Despite the promise of worker-centered tools in supporting wellbeing, accountability, and collective action, researchers have highlighted some of the tensions involved in their design and maintenance. One recurrent challenge is that it is often difficult to collect worker-generated data, particularly in gig and platform labor contexts where workers are geographically distributed and classified as independent contractors who typically work in isolation from one another [113]. Workers may also have uneven access to technical literacy, time, or institutional support needed to contribute data consistently [73].

Others have noted the tensions in designing platforms that collect worker data, including privacy issues [73], the use of third-party systems that are outside of researchers control [73], and a reliance on sourcing quantitative data as a form of legitimacy over worker testimonials [73, 355]. For example, trip data collected from rideshare drivers could potentially identify individual drivers and subject them to retaliation [73, 113]. Researchers have typically added privacy-preserving measures, such as aggregating data and removing personally identifiable information and providing mechanisms for submitters to control and even remove their data [73]. Additionally, some have noted the risks of using third party platforms within their tools, as they can change their terms and conditions [73]. In considering how sousveillance tools should be designed, Do et al. [113] recommended that workers' wellbeing and needs should be centered in the design process, while providing accurate data to promote transparency and accountability, and supporting mutual benefit between workers and their employers or clients, as to not put workers at risk of retaliation.

Researchers have also discussed the complexities of maintaining and sustaining these tools. Although one of the goals of Shipt was to build capacity for workers to collect their own data and run their own analysis, they discussed how the project largely remained a researcher-driven project [71]. While Turkopticon has been largely regarded as a success story by HCI researchers

My initial prototype was created in Notion, an online workspace that allowed me to create and customize pages and databases without the need for complex coding or backend infrastructure.

This prototype was then pilot tested with three participants, including two subject matter experts in HCI and worker-centered design and one worker. Feedback included having a clearer definition of workplace surveillance, additional context about the site’s mission and target audience, more information about the team and their values, and a stronger explanation on why it matters to submit cases.

6.3.2 Case Collection and Assigned Metadata

To create the initial corpus of public cases of workplace surveillance, I conducted a search through Nexis Uni using a set of predefined terms tied to workplace surveillance, workplace or vendor, and associated harms (see Table 1). I then filtered articles to be US-based and English language only and that have been published from January 2010 to December 2025 <sup>10</sup>.

My initial search returned 3,762 news articles, and I extracted the first 1,000 results for analysis due to the limits NexusUni places for its export feature. From this corpus of 1,000 articles, I manually checked each article to make sure that it (1) described a company or vendor implementing a technological tool used to monitor, track, or surveil worker and (2) named at least 1 harm. This narrowed our dataset to 255 cases.

|                                                 |                                                                                                                                                                                                                                                         |
|-------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Keywords associated with workplace surveillance | "employee surveillance" OR "workplace surveillance" OR "worker surveillance" OR "employee monitoring" OR "workplace monitoring" OR "worker monitoring" OR "algorithmic management" OR "bossware" OR "productivity monitoring" OR "productivity tracking |
| Keywords associated with a workplace            | "company" OR "employer" OR "vendor" OR "business"                                                                                                                                                                                                       |
| Keywords associated with harms                  | "bias" OR "discrimination" OR "harassment" OR "fired" OR "termination" OR "privacy" OR "stress" OR "health" OR "retaliation" OR "safety" OR "autonomy" OR "wage" OR "union"                                                                             |

Table 6.1: Search terms used

Each case was then added into an Airtable database and assigned corresponding metadata based on the information provided by our sources, including title, company, description, year first reported, sector, device/mode, vendor, information collected, impacted workers, surveillance reason, surveillance harm, whether there was resistance from workers, and source URL(s) (See Appendix for the full taxonomy).

<sup>10</sup>Limiting cases to the U.S. was a deliberate choice to support more targeted resources, legislation, and recommendations with the understanding that even within the U.S., the policy and advocacy landscape around workplace surveillance varies considerably across jurisdictions.

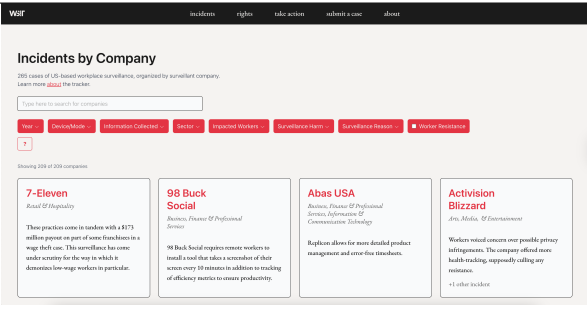
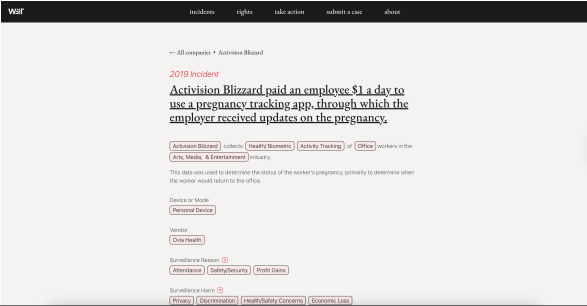
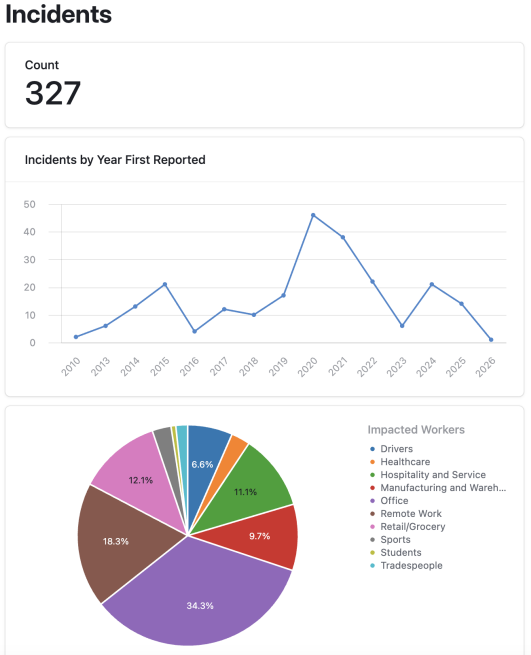
| Feature                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Description                                                                                                                      |       |      |   |      |   |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |   |      |    |      |    |      |   |        |            |        |       |                             |       |                |       |            |       |              |      |          |      |       |      |                                                                                                                                                                                                                                                  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|-------|------|---|------|---|------|----|------|----|------|----|------|----|------|----|------|----|------|----|------|----|------|----|------|----|------|----|------|---|------|----|------|----|------|---|--------|------------|--------|-------|-----------------------------|-------|----------------|-------|------------|-------|--------------|------|----------|------|-------|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  <p><b>Incidents by Company</b></p> <p>200 cases of US-based workplace surveillance, organized by surveillance company. <a href="#">Learn more about the tracker</a></p> <p>Type here to search for companies</p> <p><b>Sectors:</b> Retail, Manufacturing, Information Collection, Security, Impacted Workers, Surveillance Harm, Surveillance Reason, Worker Resistance</p> <p>Showing 200 of 200 companies</p> <ul style="list-style-type: none"> <li><b>7-Eleven</b><br/><i>Retail, Of Hospitality</i><br/>These practices come in tandem with a \$17.5 million payout as part of some franchisees in a wage theft case. This surveillance has come under scrutiny for the way in which it discriminates low-wage workers in particular.</li> <li><b>98 Buck Social</b><br/><i>Business, Finance Of Professional Services</i><br/>98 Buck Social requires workers to install a tool that takes a screenshot of their screens every 10 minutes in addition to tracking of efficiency metrics to ensure productivity.</li> <li><b>Abas USA</b><br/><i>Business, Finance Of Professional Services, Information Of Communication Technology</i><br/>Employees allow for more detailed product management and error-free instructions.</li> <li><b>Activision Blizzard</b><br/><i>Art, Media, Of Entertainment</i><br/>Workers raised concerns over possible privacy infringements. The company offered more health tracking, supposedly calling any resistance.</li> </ul> |                                                                                                                                  |       |      |   |      |   |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |   |      |    |      |    |      |   |        |            |        |       |                             |       |                |       |            |       |              |      |          |      |       |      |                                                                                                                                                                                                                                                  |
|  <p><b>Activision Blizzard</b></p> <p><b>2019 Incident</b></p> <p><b>Activision Blizzard paid an employee \$1 a day to use a pregnancy tracking app, through which the employer received updates on the pregnancy.</b></p> <p><b>Filters:</b></p> <ul style="list-style-type: none"> <li><b>Industry:</b> Activision Blizzard, Health/Biometric, Activity Tracking, Office</li> <li><b>Device or Mode:</b> Personal Device</li> <li><b>Vendor:</b> Own Health</li> <li><b>Surveillance Reason:</b> Absence, Safety/Security, Health Data</li> <li><b>Surveillance Harm:</b> Privacy, Discrimination, Health/Data Concerns, Economic Loss</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <p><b>Incident Database:</b> Users can view, search, and filter public cases of workplace surveillance organized by company.</p> |       |      |   |      |   |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |   |      |    |      |    |      |   |        |            |        |       |                             |       |                |       |            |       |              |      |          |      |       |      |                                                                                                                                                                                                                                                  |
|  <p><b>Incidents</b></p> <p>Count: <b>327</b></p> <p><b>Incidents by Year First Reported</b></p> <table border="1"> <thead> <tr> <th>Year</th> <th>Count</th> </tr> </thead> <tbody> <tr><td>2010</td><td>2</td></tr> <tr><td>2011</td><td>5</td></tr> <tr><td>2012</td><td>10</td></tr> <tr><td>2013</td><td>15</td></tr> <tr><td>2014</td><td>20</td></tr> <tr><td>2015</td><td>22</td></tr> <tr><td>2016</td><td>10</td></tr> <tr><td>2017</td><td>12</td></tr> <tr><td>2018</td><td>10</td></tr> <tr><td>2019</td><td>18</td></tr> <tr><td>2020</td><td>48</td></tr> <tr><td>2021</td><td>38</td></tr> <tr><td>2022</td><td>22</td></tr> <tr><td>2023</td><td>8</td></tr> <tr><td>2024</td><td>22</td></tr> <tr><td>2025</td><td>15</td></tr> <tr><td>2026</td><td>2</td></tr> </tbody> </table> <p><b>Impacted Workers by Sector:</b></p> <table border="1"> <thead> <tr> <th>Sector</th> <th>Percentage</th> </tr> </thead> <tbody> <tr><td>Office</td><td>34.3%</td></tr> <tr><td>Manufacturing and Warehouse</td><td>18.3%</td></tr> <tr><td>Retail/Grocery</td><td>12.1%</td></tr> <tr><td>Healthcare</td><td>11.7%</td></tr> <tr><td>Tradespeople</td><td>9.7%</td></tr> <tr><td>Students</td><td>6.6%</td></tr> <tr><td>Other</td><td>7.3%</td></tr> </tbody> </table>                                                                                                                                                                                         | Year                                                                                                                             | Count | 2010 | 2 | 2011 | 5 | 2012 | 10 | 2013 | 15 | 2014 | 20 | 2015 | 22 | 2016 | 10 | 2017 | 12 | 2018 | 10 | 2019 | 18 | 2020 | 48 | 2021 | 38 | 2022 | 22 | 2023 | 8 | 2024 | 22 | 2025 | 15 | 2026 | 2 | Sector | Percentage | Office | 34.3% | Manufacturing and Warehouse | 18.3% | Retail/Grocery | 12.1% | Healthcare | 11.7% | Tradespeople | 9.7% | Students | 6.6% | Other | 7.3% | <p><b>Trends:</b> Users can access trends such as incidents by year first reported, vendors by number of incidents, percentages by sector, impacted workers, information collected, device/mode, surveillance harm, and surveillance reason.</p> |
| Year                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Count                                                                                                                            |       |      |   |      |   |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |   |      |    |      |    |      |   |        |            |        |       |                             |       |                |       |            |       |              |      |          |      |       |      |                                                                                                                                                                                                                                                  |
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| 2026                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 2                                                                                                                                |       |      |   |      |   |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |   |      |    |      |    |      |   |        |            |        |       |                             |       |                |       |            |       |              |      |          |      |       |      |                                                                                                                                                                                                                                                  |
| Sector                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Percentage                                                                                                                       |       |      |   |      |   |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |   |      |    |      |    |      |   |        |            |        |       |                             |       |                |       |            |       |              |      |          |      |       |      |                                                                                                                                                                                                                                                  |
| Office                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 34.3%                                                                                                                            |       |      |   |      |   |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |   |      |    |      |    |      |   |        |            |        |       |                             |       |                |       |            |       |              |      |          |      |       |      |                                                                                                                                                                                                                                                  |
| Manufacturing and Warehouse                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 18.3%                                                                                                                            |       |      |   |      |   |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |   |      |    |      |    |      |   |        |            |        |       |                             |       |                |       |            |       |              |      |          |      |       |      |                                                                                                                                                                                                                                                  |
| Retail/Grocery                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 12.1%                                                                                                                            |       |      |   |      |   |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |   |      |    |      |    |      |   |        |            |        |       |                             |       |                |       |            |       |              |      |          |      |       |      |                                                                                                                                                                                                                                                  |
| Healthcare                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 11.7%                                                                                                                            |       |      |   |      |   |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |   |      |    |      |    |      |   |        |            |        |       |                             |       |                |       |            |       |              |      |          |      |       |      |                                                                                                                                                                                                                                                  |
| Tradespeople                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 9.7%                                                                                                                             |       |      |   |      |   |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |   |      |    |      |    |      |   |        |            |        |       |                             |       |                |       |            |       |              |      |          |      |       |      |                                                                                                                                                                                                                                                  |
| Students                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 6.6%                                                                                                                             |       |      |   |      |   |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |   |      |    |      |    |      |   |        |            |        |       |                             |       |                |       |            |       |              |      |          |      |       |      |                                                                                                                                                                                                                                                  |
| Other                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 7.3%                                                                                                                             |       |      |   |      |   |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |    |      |   |      |    |      |    |      |   |        |            |        |       |                             |       |                |       |            |       |              |      |          |      |       |      |                                                                                                                                                                                                                                                  |

Table 6.2: Features of WSIT

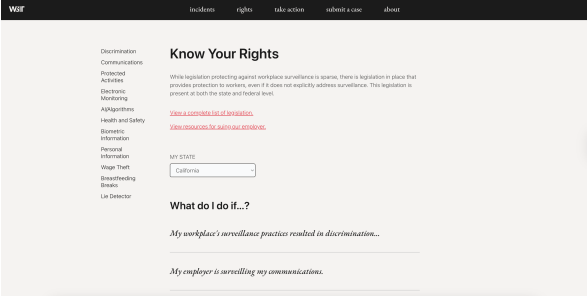
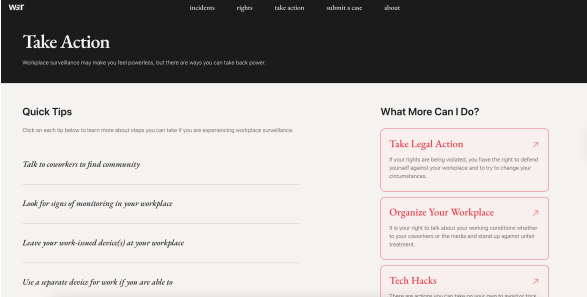
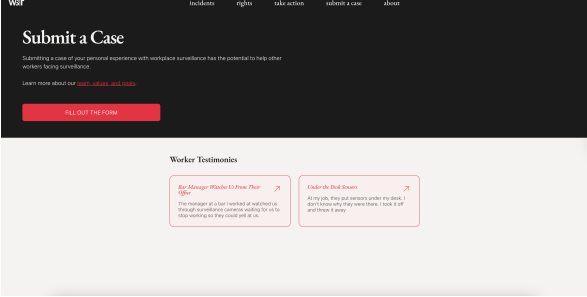
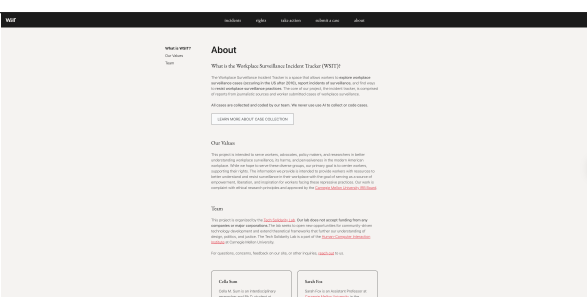
| Component                                                                           | Description                                                                                                                                                                                  |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | <p><b>Rights:</b> Users can access know-your-rights information, including state and federal legislation that offer certain protections against workplace surveillance.</p>                  |
|    | <p><b>Take Action:</b> Users can access resources for taking action such as quick tips, tech hacks, avenues for legal support, worker centers, and organizing your workplace.</p>            |
|   | <p><b>Submit a Case:</b> Users can submit cases detailing their personal experiences with workplace surveillance and can choose to share it publicly while keeping themselves anonymous.</p> |
|  | <p><b>About:</b> Users can access information about WSIT, the team, and our values.</p>                                                                                                      |

Table 6.3: Features of WSIT (continued)

### 6.3.3 Final System Design and Architecture

The Workplace Surveillance Incident Tracker is a web-based application built with Next.js and deployed and hosted on Vercel. I used Airtable for our case database, and used Airtable’s API to fetch data dynamically within our Next.js application. The codebase is stored in a private GitHub repository. See Tables 6.2 and 6.3 for a full list of WSIT’s features.

### 6.3.4 Expert Review of WSIT

To evaluate the Workplace Surveillance Incident Tracker, I conducted a 90-minute remote workshop via Zoom in March 2026 with 29 participants with IRB approval. Participants included rank-and-file workers, union organizers, worker advocates, labor researchers, and experts in privacy, security, and technology policy. Participants were recruited through existing professional networks and snowball sampling via participant referrals and were compensated \$40. See Table 6.4 for more detailed information about my participants.

| PID | Expertise                |
|-----|--------------------------|
| P1  | Labor Researcher         |
| P2  | Labor Researcher         |
| P3  | Tech Policy              |
| P4  | Worker-Organizer         |
| P5  | Privacy & Digital Rights |
| P6  | Worker-Organizer         |
| P7  | Labor Researcher         |
| P8  | Labor Researcher         |
| P9  | Labor Researcher         |
| P10 | Union Organizer          |
| P11 | Worker-Organizer         |
| P12 | Labor Researcher         |
| P13 | Worker Advocacy          |
| P14 | Labor Researcher         |
| P15 | Labor Researcher         |
| P16 | Worker Advocacy          |
| P17 | Labor Researcher         |
| P18 | Labor Researcher         |
| P19 | Union Organizer          |
| P20 | Worker Advocacy          |
| P21 | Labor Researcher         |
| P22 | Labor Researcher         |
| P23 | Union Organizer          |
| P24 | Labor Researcher         |
| P25 | Labor Researcher         |
| P26 | Labor Researcher         |
| P27 | Labor Researcher         |
| P28 | Labor & Tech Policy      |
| P29 | Privacy Researcher       |

Table 6.4: Expert Review Participant Table

The workshop was structured to elicit expert critique grounded in participants' domain knowledge and lived experiences. The day before the workshop, a link to WSIT was sent to participants to allow time to explore the site on their own. The workshop began with a brief presentation introducing the project's motivations and goals, followed by a live demonstration of WSIT. Par-

ticipants were then given some time for individual exploration of the platform before they were divided into randomized breakout groups of 5-7 individuals for facilitated discussions lasting approximately 35 minutes. In these sessions, participants were prompted to share their initial impressions of WSIT and to offer suggestions on how it could be improved to better support worker advocacy. After the breakout discussions, participants reconvened as a larger group to report back on what was discussed, as well as offer any additional questions or suggestions. With participants' informed consent, the workshop was audio-recorded, and detailed notes were taken.

I then conducted an inductive thematic analysis of the transcribed audio transcripts and detailed notes from the workshop. I developed memos to capture emerging patterns, which were then reviewed by the larger research team during our weekly meetings. Through multiple rounds of iteration and refinement, these memos were then consolidated into larger themes, which are presented below.

## 6.4 Findings

### 6.4.1 WSIT as a Research and Advocacy Tool

Participants described WSIT as a resource that could benefit multiple audiences, including researchers, policymakers, unions, and workers. P9, a labor researcher, remarked that WSIT could serve as a valuable repository of case studies to support their empirical work, explaining that *“one kind of persistent issue for researchers is finding out what’s going on in workplaces... so it seems very useful, just from a discovery kind of perspective.”* P2, a labor researcher, praised the tool’s ability to filter by surveillance type, recalling a situation in which they had difficulty finding cases of anti-union surveillance through conventional search methods, such as Google.

Participants also noted WSIT’s relevance for policymakers and advocates. P17, a researcher at a university labor center, suggested that the tool could help identify concrete examples and broader trends to inform policy interventions. Another participant said they wanted to *“send it to every legislator,”* explaining one of the main challenges is convincing policymakers that workplace surveillance is a pervasive issue. By offering both aggregated trends and individual cases, WSIT seemed useful in this regard. P25, who worked at the intersection of tech policy and worker advocacy, added that *“being able to look at [WSIT], especially trends and stuff like that may inspire the few state-level privacy regulators we have in this country to consider how to address this and the scale and the type of issues that are coming up.”* Similarly, P10, a union organizer, also saw benefit in WSIT to help with their organizing efforts to hold companies accountable: *“I think a lot of groups and a lot of unions are trying to figure out how to push back against companies and surveillance, and so this could be a way to figure out what may be organizing issues.”*

Finally, participants highlighted WSIT’s potential to directly support workers by increasing awareness about workplace surveillance, providing resources, and offering pathways for taking action. P24, a tech policy researcher, *“liked the pages that are geared towards the workers and telling them that there is something that they can do about it, that is more than just reporting that this is happening,”* an aspect they felt was often missing in similar documentation tools. P2 also

emphasized WSIT's educational value, noting that the tool could help workers build awareness around the different types of surveillance and terminology associated with it:

“It's a good way to help build a vocabulary, especially if you're a worker who's coming into this without necessarily being aware...of the different kinds of applications of surveillance. To be able to have specific terms around location, GPS tracking, loss prevention, interpersonal harm, all of these terms to label both the actual mechanisms of surveillance and the effects.”

Most importantly, participants envisioned WSIT not only as a simple informational tool for documenting surveillance harms, but as a potential avenue for deeper and sustained engagement with researchers, unions, policymakers, and workers who seek to strengthen protections and accountability around workplace surveillance.

## **6.4.2 Challenges in WSIT Adoption and Use**

### **6.4.2.1 Getting Workers to Use WSIT**

Participants raised the potential challenge of getting workers to discover and use the platform, especially if they are not already activated or organized around issues around workplace surveillance. As P21, a labor researcher, noted, *“it seems like the target is workers, but I think...it might be a little bit difficult for those folks, unless...they're already interested in either worker organizing or issues of workplace surveillance and things like that. I feel like those are going to be the folks that are going to be...most directly brought on.”*

Further, participants highlighted potential accessibility barriers that would further prevent certain workers from using the platform. P1 asked, *“What if English is not their first language? Even if they found this and it was in a different language, it's going to take a lot of effort to try to type an answer, translate it into English, or translate or use a keyboard in a different language.”* Additionally, while WSIT was developed to be both mobile- and desktop- friendly, some participants like P1 and P10 asked whether the platform was usable on a mobile device, since they primarily worked with workers whose internet usage primarily involved cell phones. P1 even suggested providing a hotline service to make it easier for workers to call and report experiences of workplace surveillance.

Several participants also observed that the purpose and value of submitting a personal testimonial was not immediately clear, and that this may deter workers from contributing cases. A union researcher referenced Wikipedia as a model for incentivizing people to contribute to public knowledge, adding that participation is more likely when workers can clearly understand WSIT's purpose and goals up front, such as raising awareness or holding companies accountable through organizing or policy change. P21 added that unless it is clearly articulated why it's important to submit cases, workers may choose alternative channels for reporting, such as commiserating with their coworkers or going to the press.

Others noted that workers may hesitate to submit reports because they may not personally feel like they have enough “proof,” given the opaque nature of many surveillance systems. As P24 explained, building credible evidence often involves extensive organizing and documentation,

as was the case with Uber and Lyft drivers who through their coordinated efforts to track data and share information, were able to prove wage theft. However, P24 emphasized the immense value of workers sharing their experiences, even in the absence of solid proof: *“How do you lower the bar for workers to be able to identify, of course, but also be able to say, it’s okay if I don’t have the evidence. . . but can I submit an incident nevertheless?”*

Overall, it cannot be assumed that workers would automatically come and use WSIT and additional infrastructure and design considerations are necessary to support their discovery and engagement on the platform.

#### **6.4.2.2 Preserving Worker Safety**

Considerations for how to keep workers safe via the platform was also brought up by participants. Some, like P18 and P28, raised concerns around WSIT being an academic project, which may deter some workers from submitting cases, while opening up questions around how their data would be used, as P18 mentioned:

“I think it’s pretty clear what the goals are, but. . . as a worker submitting something on surveillance, I think it’s really important to make that mission front and center and also tell workers on that front page what’s going to happen with their data. Because I could see someone reading this and being like, oh, researchers at a university are collecting my data on workplace surveillance. What are they going to do with that?”

More broadly, participants pointed to the *“tough balance”* between promoting transparency and preserving worker safety. While collecting information about surveillance practices can support transparency and accountability, it may also expose workers to retaliation, or provide companies with insights into how workers are responding. P11 mentioned that even if the site did not collect any personally identifiable information, some workers in small or localized workplaces could still be identifiable: *“This site may not take any of your personal data, but if you’re in one singular location, it’s still very easy to figure out who you are within a workforce.”* Others also raised the possibility of workers submitting cases on their workplace devices, which could be monitored and thus compromise worker safety.

Some participants also felt that some of the suggested tech hacks WSIT listed to help workers respond to surveillance, such as running a VPN, setting up a virtual machine, or using a mouse jiggler could lead to getting workers fired if implemented. P18 called attention to the fact that workers still may still face retaliation even for purported “concerted activities,” such as talking to coworkers about pay or working conditions that are legally protected. In general, participants stressed the need for clearer guidance and disclaimers up front to inform workers about the potential risks of disclosure and how to best protect themselves when engaging with the platform.

#### **6.4.2.3 Interpreting and Validating Data**

Participants raised questions around how cases and aggregated data are vetted and interpreted, especially with potential threats of defamation and legal risks when calling attention to specific companies as implementers of surveillance. As P23 put it: *“One concern you might want to*

*raise is if what you're putting on your website is what... someone... submits online and claims it is [surveillance] and a company says, Hey, this is presenting us in a bad light. Share your source, or we're going to sue you. Are you kind of making sure to protect yourself?"*

Others pointed to the limitations of relying on media reports as a data source, particularly when insights drawn from them could paint an inaccurate picture of the emerging trends of surveillance. For example, P9 pointed to the graph that depicted incidents by first year reported that showed a decline in reported cases after 2020, which they said may be misinterpreted as a decline in surveillance technology use, rather than a shift in reporting patterns: *"I'm actually somewhat worried about the way it's presenting data [...] someone could pretty easily misinterpret that graph to suggest that workplace surveillance is going down when, of course, that's not really what this is showing."*

As P1 emphasized, workplace surveillance has only become more pervasive and normalized since the COVID-19 pandemic, which makes it difficult to capture prevalence accurately through media reports alone because "It wasn't a single incident, it's just now continuous [and an] entrenched system now. So the number of companies that have them has gone up. The number of incidents has probably gone significantly up, which is hard to capture, maybe in the news."

While participants still saw value in accessing and understanding aggregated trends from media reports, they stressed that it must be paired with a clear explanation of what these trends actually represent.

#### **6.4.2.4 Maintenance and Sustainability**

Finally, some participants questioned how WSIT would be sustained long-term. P1 and P21, in particular, commented on how similar trackers to WSIT often become outdated without dedicated time, money, and resources. For example, P28, who has experience creating a similar database reflected on the difficulties they faced with maintenance and importance of funding to sustain the project:

*"I wanted to hear what is the long term plan for this, because...even with [my tracker project], and the realities of sustainability and funding for this kind of work...I wasn't able to maintain this piece of work [...] What's your long-term plan for sustainability and keeping up the data? Is this a one-year project? Do you need help fundraising?"*

While participants stressed the importance of providing state-specific and local resources and legislation based on workers' locations, much of this information can quickly become out-of-date. For example, at the time of the workshop, WSIT claimed that California's No Robo Bosses Act was still under consideration in the California Assembly. However, P25 pointed out this information needed to be updated on the platform, since the act was vetoed by Governor Gavin Newsom back in October 13, 2025. To help mitigate this issue, P10 recommended having a clear notice of when the legislation page was last updated. However, these reflections demonstrate the importance, and also difficulties, in building a sustainable infrastructure to support WSIT long-term.

## **6.4.3 Opportunities for Expanding WSIT**

### **6.4.3.1 Partnering with Unions and Advocacy Organizations**

The importance of partnering with unions and worker advocacy organizations was brought up by many participants, which they saw as crucial to addressing some of the challenges mentioned in the previous section concerning worker engagement and long-term sustainability (P24, P1, P28, P25, P10). P24 stated that these partnerships could be mutually beneficial, where WSIT could help connect workers to existing organizing efforts, while unions and advocacy groups could help to drive adoption of WSIT using their existing networks.

Participants also highlighted how such partnerships could help to sustain the platform over time. Some suggested pooling resources across institutions, with P28 proposing a consortium model involving academic institutions, unions, and advocacy orgs that collectively work together to maintain and develop WSIT. Others situated WSIT within a broader ecosystem of organizations and tools focused on workplace surveillance, opening opportunities for cross-collaboration. As P25 mentioned, strengthening alignment across this broader ecosystem could help to pool existing resources together, reduce fragmentation, and advance shared goals:

“There’s a whole ecosystem of organizations that do little pieces of this, and we all kind of play a role on this call...it really just raises questions that are, like, beyond the scope of this project as well, which is, like, do folks want to have a more intentional conversation over time about how we’re mapping the ecosystem of, like, what resources do exist for workers actually on this topic. And like, what does it look like to effectively move the field forward? And like, work together more collaboratively on this project?”

Through these partnerships, WSIT’s impact can extend beyond the tool itself, becoming part of a larger connective infrastructure to support workers facing workplace surveillance.

### **6.4.3.2 Surfacing Broader Surveillance Ecosystems**

Beyond documenting individual workplace surveillance incidents, participants also recommended that WSIT surface the broader ecosystem of workplace surveillance and its downstream effects. This included giving more attention on the role of AI in workplace surveillance (P11, P18, P28). While surveillance is a broadly understood concept, P11 explained how workers may not fully grasp how AI systems contribute to continuous monitoring, often without their knowledge:

“I think bringing AI into surveillance is a good point around education, because everybody understands the word surveillance. Not everybody understands exactly what AI is, but when you put the two of them together, surveillance no longer requires an observer because of AI. So if you can educate people around the fact that you know people love to say, well, I don’t care. I’m not doing anything wrong, but now we have AI that can, in milliseconds, dissect every little thing you’re doing in your entire life, and they don’t understand it’s not a detective sitting behind a desk, surveillance no longer requires an observer, and that’s that’s where a lot of the danger comes from.”

P18 added that policymakers have been increasingly interested in regulating AI, particularly in the context of algorithmic decision-making tools. However, they noted there is a gap in connecting these tools to surveillance, especially because many are third-party tools that workers may not immediately associate with their employer:

“I think having language about how chat bots are surveillance too is really important, especially when a lot of this stuff is branded with a company that might not be your employer. It’s really easy for workers to forget that. So just as much as can be done to stress, like, AI is also surveillance and also, like, this is a very nascent field, but like, look into those specific protections too. Like, algorithmic decision making is huge, and I know a lot of policymakers are trying to take action there right now.”

Participants also stressed the importance of documenting indirect and systematic harms such as chilling the right to organize, furthering the fissuring of workplaces, and accelerating automation. While these harms are often less visible and harder to document through discrete cases, they are nonetheless deeply consequential in contributing to broader patterns of worker disempowerment. Additionally, several participants raised concerns about the downstream use of surveillance data, particularly how it can be sold to third party brokers without workers’ knowledge. P11, for example, imagined a scenario where health data could be used in opaque and discriminatory ways, such as influencing hiring decisions without workers’ knowledge:

“Your data is bought and sold all the time, so you could potentially not even knowing it, and be setting yourself up to in a position where you’re not hireable somewhere, like maybe they saw that you took an Uber to an ER twice, so they don’t want a medically fragile person, so they’re not going to hire you, and you’re never even going to know that to be able to protect yourself against it if they’re selling your data.”

While WSIT primarily focuses on companies that are surveilling their employees, and attempts to document the vendors used in these cases, it currently does not support the ability to explore a comprehensive list of vendors. However, participants argued that being able to have a searchable database of vendors, as well as a mapping of their relationships with companies would be helpful. As P25 explained:

“I do think a vendor search would be really helpful, because I hear a lot from folks. . . feel however about their employer, but they’re like, but I fucking hate Workday or like, I read about the stuff that gets people really amped up is like, press coverage of like Slack or Zoom, adding new features that are like invasive and also, I think that for an organizing perspective, that there’s a lot of opportunity that I think is unrealized for cross-industry and cross-employer corporate campaigns against some of the main vendors. So surfacing vendors that are creating problems across employers could be equal.”

Beyond simply documenting individual workplace incidents, WSIT could provide more education around the broader data ecosystems in which surveillance operates, and the ways in which it continues to affect workers over time in ways that are often hidden.

## 6.5 Discussion

### 6.5.1 The Difficulties in Documenting Workplace Surveillance and its Harms

Our findings highlight the difficulties in fully documenting workplace surveillance and its associated harms. While WSIT aims to increase visibility into surveillance practices across workplaces, participants emphasized the limitations of relying on media reports as a primary source of information. These limitations include the risk of producing a distorted view of the workplace surveillance landscape, as well as difficulties in verifying and validating reported information. Media coverage also tends to disproportionately focus on more well-known cases involving large, multinational companies like Amazon, and on cases that involve more visible and immediate harms of surveillance.

Even as workplace surveillance becomes increasingly normalized and embedded in everyday work practices, our participants stressed the importance of continuing to draw attention to the issue, even if media coverage on the topic has declined. This includes placing more attention on the broader surveillance ecosystem, including vendors, third-party systems and data brokers, along with less visible, indirect harms such as increased automation and the fissuring of workplaces. Efforts to map the surveillance ecosystem already exist, such as Surveillance Watch and Coworker.org's Bossware and Employment Tech Database. However, fully tracing out these relationships and harms is extraordinarily difficult, if not impossible, because of the opacity and complexity of these ecosystems.

These limitations highlight the importance of including worker testimony as a critical source of knowledge about workplace surveillance. Workers often possess knowledge and expertise that is missing in media reporting, including how surveillance systems are experienced in practice, how workers respond and resist them, and how these systems produce a range of harms over time. However, as our participants pointed out, workers are often unaware of the surveillance tools their workplace has implemented, because employers are rarely required to disclose their use. While worker testimonials provide grounded insight into surveillance practices, workers themselves may only have partial visibility into the systems shaping their labor conditions. As P24 explained, demonstrating that Uber and Lyft drivers were experiencing wage theft required an extensive amount of organizing and collective data gathering before workers could even recognize and substantiate the harms. Workplace surveillance operates in similarly opaque ways, making its effects hard to identify at the individual level. Despite these limitations, the process of collecting worker testimonies remains valuable because it can help workers build collective awareness of surveillance practices, surface patterns, and inspire organizing efforts.

At the same time, incorporating worker testimony also brings with it ethical challenges around managing worker privacy. As past scholarship has discussed, there are real risks when workers share their stories, including threats of retaliation and job loss [73]. While there are tangible steps to protecting workers in these cases, such as removing personally identifiable information and clearly outlining the potential risks upfront, more importantly, getting workers to feel safe enough to share their story involves building trust and relationships. This involves moving beyond the platform itself and strengthening the relational infrastructures necessary to support this. In the

next section, I'll discuss why WSIT must be treated as infrastructure rather than a standalone tool.

### **6.5.2 Treating WSIT as Infrastructure Rather than as a Standalone Tool**

Our findings also reveal that participants viewed WSIT not merely as a standalone tool, but as situated within a larger existing sociotechnical infrastructure broadly focused on resisting workplace surveillance. One of WSIT's main strengths lies in its versatility and relevance across a diverse range of stakeholders. Researchers saw value in using the database to find cases to support their empirical studies, while policymakers and labor advocates saw value in finding evidence to inform policy changes and organizing efforts. Participants also noted that workers themselves could use the tool to better understand surveillance practices affecting their workplaces and access resources to help protect themselves.

However, what was most interesting was that participants also highlighted WSIT's potential to serve as an avenue for policymakers, labor advocates, and researchers to engage more deeply with workers facing workplace surveillance off the platform. Rather than functioning solely as an information hub, they saw potential in the platform serving as a conduit to help facilitate knowledge sharing, coalition building, and coordinated action across a fragmented ecosystem of stakeholders fighting against workplace surveillance.

At the same time, in asking about how WSIT would be maintained and sustained over time, participants understood that the long-term usefulness of WSIT would require robust institutional support, ongoing maintenance, as well as funding. Their concerns echo broader critiques within HCI literature that show that technical interventions alone rarely achieve impact without the social and organizational infrastructures needed to sustain them [191, 192]. In reflecting on their experiences with Turkopticon, Irani & Silberman [191] argue that the platform's success depended less on their role of designers and more on their role as repairers and maintainers. Rather than framing this maintenance work as secondary or peripheral, they position it as central to building collective infrastructures of care and solidarity. As they explain, "repair work strengthens ties and builds solidarity among workers collaborating on the practical, shared, and political circumstances we share in addressing issues of fairness in crowdwork."

Participants' suggestion of forming a consortium of organizations and actors that could collectively support and maintain WSIT closely aligns with this perspective. Such a model would help to support the pooling of resources, expertise, and maintenance responsibilities, including adding and maintaining cases, worker outreach, legal support, and technical maintenance. More importantly, it could create opportunities for stronger coalitions around workplace surveillance.

Although our workshop initially focused on improving WSIT as a platform, we found that the project's broader value lies in the relationships it can help cultivate. Viewing WSIT as infrastructure rather than simply a tool helps to reframe the challenge from one of technological intervention to one of supporting long-term collective stewardship and solidarity against workplace surveillance.

## 6.6 Conclusion

In this chapter, I investigated the opportunities and limitations of technological tools for worker advocacy by presenting insights from an expert evaluation of the Workplace Surveillance Incident Tracker. While participants highlighted WSIT's ability to document cases and patterns of workplace surveillance that could inform research, policy, and organizing strategies, they placed greater emphasis on its potential to support knowledge sharing, coalition building, and coordinated action across the fragmented ecosystem of workers, organizers, advocates, and researchers contesting workplace surveillance. I argue that HCI researchers can support the future of labor by moving beyond isolated tool building and towards treating accountability as infrastructure. This requires foregrounding the relational and organizational conditions necessary for more effective and sustainable worker-centered interventions.

# Chapter 7

## Discussion and Future Work

Across my three studies, workers reported that technocentric transformations at their workplaces largely benefited those in power while subjecting workers to more precarious conditions. Workplace monitoring tools, ostensibly aimed at improving efficiency and safety, intensified managerial surveillance while increasing worker stress and undermining both their productivity and autonomy. Within community-based organizations, the push for data-driven accountability reshaped care work around rigid metrics, forcing workers to shift focus away from community members and towards meeting funder demands. Meanwhile, in the tech sector, mass layoffs, the growing presence of AI, and the gigification of tech labor produced unstable working conditions for even highly paid engineers.

Taken together, these cases challenge the core promises of the Future of Work—that technological change is both inevitable and desirable [334], that worker abilities will be augmented through human-machine complementarity [7], and that constant data collection will yield unprecedented efficiency, transparency, and fairness in the workplace [10]. In reality, these narratives operate less as shared visions of progress and more as political projects that consolidate managerial power among executives, investors, and funders, rendering workers increasingly disposable [7, 159, 334].

Yet, workers are not passive recipients of this future. Across contexts, they have resisted, reconfigured, and refused the technologies and narratives imposed upon them. Confronted with constant surveillance, workers subverted monitoring technologies and slowed down their work pace. Frontline workers at community-based organizations translated disempowering data practices into narratives to support their advocacy efforts. In the tech sector, where labor organizing had been historically largely absent, workers responded to growing precarity by organizing for better conditions and greater influence over company decision-making. Despite increasing atomization and siloing, workers forged solidarity through online networks, union drives, and broader coalitions, creating spaces where alternative futures could be imagined and pursued. Through these spaces, they developed a deeper political consciousness that connected their struggles not only to broader histories of systemic injustice but also to issues beyond their workplaces, transforming how they understood and engaged with labor in their communities.

These practices rooted in resistance, relationality, and collective power reveal that the “Future of Work” is not a predetermined trajectory driven solely by technological innovation, but a deeply contested terrain actively shaped by workers from below. In the sections below, I draw on Lisa Lowe’s “Intimacies as Method” to more closely examine the interconnections, tensions, and interdependencies across my studies. This includes tracing shared experiences of worker precarity, while also attending to the uneven ways these conditions are experienced, negotiated, and resisted across different sectors and sociotechnical contexts. In doing so, I further problematize the logics and infrastructures behind the Future of Work and how it relies on worker exploitation

and disempowerment. I then speculate on the possibilities for more just and equitable labor futures by tracing how alternative practices, relations, and imaginaries emerge within and across these sites. Finally, I interrogate the role of HCI in shaping and supporting these futures.

## **7.1 How the Future of Work Relies on Worker Exploitation and Disempowerment**

In *The Intimacies of Four Continents*, Lisa Lowe demonstrates how modern liberal ideas of freedom, individual rights, and economic mobility were historically made possible through the exploitation and dehumanization of colonized people. Although presented as universal, these ideals depended upon global systems of unequal and highly controlled labor whose violences and coercions were largely obscured from dominant narratives of economic and political progress. In this dissertation, I argue that dominant discourses around the Future of Work operate through a similar logic. In order for the Future of Work to sustain its promises of progress, productivity, and technological innovation, it must both rely upon — and obscure — conditions of worker precarity and disempowerment that make such promises possible.

In Chapter 3, I discuss how the growing use of workplace surveillance technologies across sectors amplified worker precarity. While these technologies are often justified as tools for improving productivity, efficiency, and accountability, workers discussed how they created highly stressful work environments centered on cultivating distrust and competition. Workers reported being subjected to increased disciplinary action, even when these technologies erroneously flagged them for unacceptable behavior, while managers described heightened feelings of suspicion and paranoia, placing more trust in technological systems over their workers. By reducing work into quantifiable metrics that could be easily monitored and compared, these technologies also encouraged competition among workers. Remote-based contingent workers were particularly vulnerable to more invasive forms of surveillance, and subjected to a level of scrutiny and control that made them skip breaks and work longer hours, which countered dominant narratives of flexibility and autonomy that often comes with remote work. The experiences of international workers further highlighted how these dynamics are exacerbated by the global fissuring of work, as employers increasingly offshore labor to regions with lower labor costs and weaker worker protections, leaving many workers with limited recourse and few opportunities to build collective solidarity against invasive monitoring.

In Chapter 4, I describe how pressures to be data-driven as a form of accountability and legitimacy also led to the disempowerment of community-based organizations and the communities they served. Workers described how rigid metrics often oversimplified their work, while obscuring the extensive relationship-building and care work necessary to meet these requirements. Limited funding and pressures to be data-driven also fostered competition among organizations. While these organizations formed coalitions, these operated more as a strategic effort to obtain resources rather than genuine solidarity. Consequently, workers found themselves spending increasing amounts of time managing funder expectations, while repairing harms created by technological systems, and compensating for their limitations, further reducing their capacity to

engage in meaningful community work. Rather than empowering organizations to better serve their communities, these systems often redirected their labor toward satisfying institutional demands, reinforcing forms of precarity and disempowerment that extended beyond the workplace itself. Workers connected these harms to longstanding legacies of racialized violence on their communities.

In Chapter 5, I examine how similar dynamics appear within the tech industry. While this sector promotes narratives of entrepreneurialism, innovation, and meritocracy, its business models increasingly rely on contingent and outsourced labor, volatile venture capital funding structures, and recurring waves of mass layoffs as a result of the rapid adoption of AI-driven systems, which contribute to increasingly unstable working conditions across the tech supply chain. However, as the tech workers in my interviews made clear, this precarity is not uniform, but rather experienced unevenly across occupational roles, workplaces, and geographies. Interviewees described how distinctions between full-time and contract workers, domestic and international labor, and technical and non-technical employees led to divergent working conditions and interests. Employers often leveraged these divisions to pit workers against each other and to undermine unionization efforts and weaken solidarity.

Through Lowe, we can understand that these conditions are not novel or isolated consequences as a result of inevitable technological progress, but are part of longstanding legacies where liberal promises of freedom, mobility, and progress are used to justify structures of labor exploitation and control. Far from being neutral, we can see how the Future of Work's narratives around progress and innovation relies on the ongoing production of worker exploitation and disempowerment through digital infrastructures that intensify the quantification, abstractions, fragmentations, and surveillance of workers. Recognizing this allows us to more critically examine the mutual precarity of workers, as well as the divisions and asymmetries that make it difficult for them to build collective power and resistance. By attending more closely to the power relations and histories that underpin the dominant narratives behind the Future of Work, we can open up space for imagining and pursuing more radical interventions that tackle the deeper structural crises shaping labor today. This may involve implementing more democratic controls in governance within and beyond the workplace, strengthening public services, and confronting issues of climate change and its effects on social and economic injustices [334]. In this way, interrogating the Future of Work shifts attention away from narrow mitigation strategies aimed at adapting to inevitable technological change and towards a broader project of rethinking the social, economic, and ecological foundations of work and life itself.

## **7.2 How Workers Build Solidarity & Alternative Futures**

Throughout this dissertation, I also highlight the creative ways in which workers were able to resist, negotiate, and reconfigure the harmful narratives and sociotechnical systems associated with the Future of Work, and how these actions prefigure alternative futures.

In Chapter 3, I show how workers subjected to surveillance technologies relied individualized and informal forms of resistance, such as commiserating with other workers, conducting research on

surveillance systems, disabling or obfuscating technologies, slowing down their work pace, and even quitting. While these practices rarely directly transformed their working conditions on their own, they demonstrate workers' desire for greater control over their working conditions. Most interesting, however, were the social infrastructures that emerged around these practices. Online platforms such as Reddit and WhatsApp enabled workers to share information, exchange tactics, and support one another, fostering community and political consciousness despite the isolation of remote and highly surveilled work. Through these interactions, workers came to recognize their experiences not as isolated incidents but as part of shared structural conditions. This shows how individualized acts of resistance can create the foundations for more collective forms of solidarity and how workers prefigure a future centered on worker agency.

In Chapter 4, I discuss how community-based organizations practiced acts of refusal and remediation through translation as a form of care to mitigate the harms of sociotechnical systems on their communities. However, when this translation work was used to bring their communities closer to the dominant culture, this often relied on substantial amounts of invisible labor that did little to challenge or transform their material conditions and perpetuated the cycles of harm on communities. At the same time, CBO workers also demonstrated more radical approaches to translation that involved the reconfiguration of dominant practices that enabled the creation of powerful counter-narratives and new forms of direct dialogue between communities and policymakers. These practices show how translation can be a powerful political tool to transform hegemony and existing power structures, while prefiguring alternative futures grounded in collective care and wellbeing.

Finally, in Chapter 5, I examine how tech workers engaged in more overt forms of resistance through unionization and collective action. While these workers turn to collective action to improve their working conditions and have more input in company decision-making, the very conditions driving their precarity, such as workplace fissuring, gigification, and mass layoffs also made organizing difficult. Yet, despite these constraints, workers were able to break through siloes and build community across roles, sectors, and unions. Seeing the limits of the "shop-by-shop" model, interviewees stressed the need for experimentation and building stronger solidarities across communities, transnationally, and broader social movements, envisioning a future of labor centered on solidarity, long-term sustainability, and democracy within and beyond the workplace.

Together, these cases show how points of solidarity emerged despite differences in material conditions and siloes. Across contexts, workers were able to build relationships, share knowledge, and enact forms of care that enabled them to recognize shared struggles, build political consciousness, and imagine alternative possibilities beyond the constraints of existing systems. This shows how resistance is not simply a reactive response to harmful sociotechnical systems, but also a generative process involving the construction of social infrastructures and intimacies that can bypass the fragmentation and divisions these systems often enforce and depend on. In doing so, workers actively engage in alternative worldmaking from below. I argue that HCI researchers and designers have much to learn from these worker-led approaches to inform how we can more meaningfully support labor.

## 7.3 How HCI Can Support the Future of Labor

In this section, I address my final research question, *how might a shift from the Future of Work to the future of labor enable HCI researchers and designers to more meaningfully support worker-led efforts in shaping more just futures?*

At the time of writing this dissertation, thirty years have passed since Joan Greenbaum's call to the CSCW community to consider issues of labor in their study of work, in the midst of growing outsourcing, automation, and job precarity [153]. Since then, HCI research has produced crucial accounts of workers' experiences with technological change [10, 118, 151, 190], documented their negotiations and resistance to harmful technologies [113, 232, 329], and developed participatory approaches intended to amplify worker voice and democratize the design of workplace technologies [134].

Despite these important contributions, dominant visions of the Future of Work continue to shape the fields of HCI and CSCW, through an emphasis on quantification, measurement, and data-driven frameworks. Even when used in support of worker advocacy efforts, these frameworks risk privileging forms of evidence that can be rendered visible through data, while sidelining more relational and worker-centered forms of knowledge-making and action [215, 355]. This tension was reflected in some of the expert feedback for the Workplace Surveillance Incident Tracker presented in Chapter 6, which participants emphasized that documentation alone would be insufficient unless it was embedded within broader infrastructures of solidarity, care, and collective action. Data may help to make workplace harms visible, but we must also possess the relationships, resources, and organizational capacities necessary to act on that knowledge.

A shift towards the future of labor therefore is a call to center these relational worker-led strategies and infrastructures. Throughout this dissertation, I offer suggestions on how HCI researchers and designers can better support workers by observing how they are already resisting, shaping, and reimagining sociotechnical futures. In Chapter 3, drawing from workers' resistance to surveillance technologies, I argue for a more emancipatory approach to worker-centered design that supports efforts to dismantle, disarm, and destabilize systems of control. In Chapter 4, highlighting the practices CBO workers, I call for supporting more relational approaches to legitimacy work that center communities existing knowledge, capacities, and rooted histories and sociopolitical contexts. In Chapter 5, drawing on the experiences of tech workers engaged in collective action, I call on HCI researchers to align more closely with worker-led movements, while mobilizing their own collective power.

These approaches show how supporting a future of labor involves building deeper intimacies with workers to support their existing infrastructures of resistance, relationality, and collective power. Rather than adopting what Lucy Suchman describes as a form of "detached intimacy," which allows designers and researchers to claim proximity to users while remaining insulated from the consequences of their interventions [368], this orientation calls for a more accountable and situated form of intimacy that moves beyond treating workers as objects of study, and instead recognizes our shared entanglements within the sociotechnical infrastructures we seek to understand and transform.

As discussed in Chapter 5, many HCI researchers are situated within the "middle layers" of technological production, [380], "in-between" positions that allow us to move across multiple worlds, while possessing forms of access, expertise, and legitimacy across academia, industry, and even activist spaces. Many of us also experience precarity as workers ourselves. This position grants us a responsibility and an opportunity that can be mobilized in support of other workers. Just as the CBO workers used translation as a political practice, HCI researchers can leverage their own roles as translators to identify points of connection across communities, support the circulation of worker knowledge across contexts, and cultivate stronger coalitions and solidarities. In this way, labor moves beyond an object of study and becomes a relational, community-sustaining practice and a generative site of speculative world-making where more equitable futures can be collectively envisioned and brought into being.

## 7.4 Future Work and Conclusion

In this dissertation, I make several key contributions to the HCI and CSCW communities. First, I offer a theoretical reorientation away from dominant Future of Work narratives that center technological innovation toward a future of labor that centers worker struggle and solidarity. Through a collection of diverse case studies, I provide empirical insights into how workers experience and respond to harmful sociotechnical systems through everyday acts of resistance and organizing. I also highlight the limitations of sociotechnical interventions that seek to support worker advocacy without attending to the relational infrastructures necessary to sustain them. Finally, this work extends scholarship on worker-centered design by framing labor as a relational, community-sustaining practice, and by calling on HCI researchers to serve as active participants, rather than detached observers, within broader struggles over technological futures.

Still, this dissertation leaves many questions unresolved. Rather than viewing these absences simply as gaps or limitations in the analysis, here, I engage with Lisa Lowe's notion of the *past conditional temporality*, or "*what could have been*," as a way of imagining alternative possible futures that are worth exploring. *What alternative pathways were foreclosed or rendered invisible in my studies? How could these pathways emerge under different conditions? What is the role of HCI researchers in helping to bring these pathways into being?*

One avenue for future work is to further examine the role of sociotechnical infrastructures in fostering solidarity. My research with workers revealed how they forged solidarities across workplaces, sectors, and national borders through digital communities like Reddit or the Tech Workers Coalition Slack. While these platforms have largely served as hubs for commiseration and knowledge sharing, they can also become critical infrastructures for collective action at the transnational scale. For example, the Google Walkouts and the 996.ICU movement illustrate how digital platforms can catalyze collective action across geographies among tech workers. As communities globally contend with shared experiences of labor exploitation, resource extraction, and social inequities, the role of digital tools to organize and build mutual aid networks remains crucial. In my future work, I am interested in understanding how HCI researchers might work with unions and grassroots organizations to build and sustain these digitally-mediated transnational networks of support in response to these shared sociotechnical harms.

A second area of interest is the continued exploration of the concept of *accountability as infrastructure* through the launch and maintenance of the Workplace Surveillance Incident Tracker (WSIT). As I pointed out in Chapter 6, accountability cannot be achieved through making harms visible through data alone, but through ongoing processes of collective stewardship and trust building. The deployment of WSIT offers an opportunity to investigate how accountability infrastructures are built, maintained, and governed over time. Building on my work that examines the tensions of community-university partnerships [372], I am interested in interrogating the role of academic institutions in supporting worker-led advocacy. Academia rarely supports this kind of long-term, material engagement, and their increasing entanglements with corporate technology companies creates additional tension. Continuing this work offers an opportunity to better understand what forms of engagement, accountability, and solidarities are possible within and across institutions that are themselves implicated in the systems we seek to critique.

Finally, the interview studies with workers in this dissertation were conducted between 2021 and 2024, a period that was shaped by the COVID-19 pandemic, the concomitant proliferation of surveillance technologies in the workplace, and heightened unionization activity in the tech sector. Since then, the political and technological landscape has continued to shift, defined by President Trump's second term in office and its resultant immigration crackdowns and repression of academic institutions and democratic governance [155, 347, 412]. In industry, the rise of the tech oligarchy and the more aggressive push for AI and layoffs have rapidly changed the nature of many workplaces [261]. Additionally, the rapid expansion of data centers and AI infrastructure have introduced new tensions within communities and organized labor [359, 416]. Yet these developments have also generated new opportunities for resistance and coalition building. I am interested in understanding the ways workers continue to adapt, build power, and imagine alternatives in response to them.

As this dissertation shows, the future of labor is not static, but continuously co-constructed. Rather than converging on a single coherent vision, it unfolds as a plurality of futures that overlap, diverge, and at times unsettle one another. The case studies presented in this dissertation capture only a small glimpse into some of these emerging formations. The futures that remain unfinished or unrealized should not be treated as absences or impossibilities but potential openings for what might still become. It is through the cultivation of intimacies that further openings can emerge. In doing so, we can create ruptures within dominant imaginaries of work and make space for more equitable, worker-led reconfigurations.



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