Tech Worker Organizing for Power and Accountability

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ABSTRACT

In recent years, there has been a growing interest in the field of "AI Ethics" and related areas. This field is purposefully broad, allowing for the intersection of numerous subfields and disciplines. However, a lot of work in this area thus far has centered computational methods, leading to a narrow lens where technical tools are framed as solutions for broader sociotechnical problems. In this work, we discuss a less-explored mode of what it can mean to "do" AI Ethics: tech worker collective action. Through collective action, the employees of powerful tech companies can act as a countervailing force against strong corporate impulses to grow or make a profit to the detriment of other values. In this work, we ground these efforts in existing scholarship of social movements and labor organizing. We characterize 150 documented collective actions, and explore several case studies of successful campaigns. Looking forward, we also identify under-explored types of actions, and provide conceptual frameworks and inspiration for how to utilize worker organizing as an effective lever for change.

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1 INTRODUCTION

Since Fairness, Accountability, and Transparency (FAccT) launched as a conference in 2018, the community has experienced rapid growth. The 208 FAccT papers published between 2018-2021 feature impactful work, including scholarship that anchored the conversation for facial surveillance bans across the US [11], improved a deployed ML model that was making racially-biased predictions for millions of patients [50], and challenged powerful corporate interests [7]. Other work has built useful toolkits to audit systems for censorship [73], exclusionary design [2], community authorship diversity [15], context-sensitive documentation [45], and more.

In FAccT and beyond, thoughtful research has offered tangible visions for how tech companies could be applying responsible computing practices, such as a procedure for internal algorithmic audits [56], co-designing checklists for AI fairness with practitioners [43], and a series of questions for self-assessment of whether AI products are respecting human rights [65].

However, most of these approaches require voluntary commitment from relevant corporations. Although corporate buy-in can make ethical computing easier, it is often the case that profit-maximizing organizations resist these efforts precisely where they are most needed.

For instance, Facebook's revenue model comes from selling ad placements to display to its users, which incentivizes the organization to try to maximize user engagement. Although Facebook CEO Mark Zuckerburg has claimed that the Facebook algorithm does not optimize for "what [users] click on or will make us the most revenue," but rather "what people actually find meaningful and valuable" [38], this characterization is disputed. For example, the company resisted calls to fact-check political misinformation for years [36]. There has not been a dearth of what more responsible social media metrics *could* look like; in 2018, Cortico developed four indicators of conversational health: shared attention, shared reality, variety of opinion, and receptivity [59]. And in a seemingly positive move, according to anonymous employees, Facebook actually did employ a "kill switch" for its algorithm from November 3-8, 2020 to prevent a US Presidential candidate from falsely declaring victory. This setting demoted the rankings of news sources Facebook deemed untrustworthy. The so-called "nicer newsfeed" resulted in a decrease both in misinformation, but also in user engagement/sessions. By the end of the month, however, the algorithm was essentially reset to its previous setting — according to one employee, because "the bottom line is that we couldn't hurt our bottom line. Mark still wanted people using Facebook as much as possible, as often as possible" [22].

When a tech company does not live up to its purported values, employees can serve as a meaningful check on the company's actions. Labor is well suited to be a countervailing force, because employees are relevant authorities with their technical expertise and knowledge of company goings-on. As issues arise, employee activism and collective power can be utilized to prevent technology companies from negatively impacting society.

In this paper, we draw from theories and frameworks of labor organizing and mobilization to analyze tech worker collective actions documented in the Collective Action in Tech (CAIT) archive [33]. Our contributions as as follows:

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- We overview three illustrative examples of successful tech worker campaigns (Section 3);
- We characterize the landscape of actions in the CAIT archive, using theories from political science (Section 4);
- We examine how workers build power, using methods from labor organizing (Section 5); and
- We identify trends, including what makes organizing in the tech sector different from other sectors (Section 6).

Rather than developing new theory, the purpose of this work is descriptive; we use existing theories from political science and sociology to understand the emerging nature of tech worker collective action.

2 BACKGROUND AND RELATED WORK

2.1 Accountable Algorithms

Audits and case studies critically examine systems to determine if they are functioning as intended. In foundational work for the algorithmic fairness community, Buloamwini and Gebru demonstrate bias in commercial facial recognition software towards women, towards people with dark skin, and towards the intersections of those groups [11]. Chouldechova et al. audit an algorithm-assisted child maltreatment hotline screening system and identify many of the challenges in implementing such an investigation in practice [16]. Yang et al. demonstrate how political censorship of Wikipedia can affect pre-trained models used for general domain NLP algorithms [73]. Bender and Gebru et al. critically examine the environmental and financial costs first of large language models and offer some recommendations for curating and documenting datasets more carefully [7]. In an audit of a non-computational system, Cheong et al. examine the citation networks of many computer science-related fields and demonstrate that members are under-citing researchers from marginalized backgrounds (e.g., women) and recommend that the Association for Computing Machinery (ACM) has a duty of care to address this problem [15].

Excitingly, FAccT has increasingly been embracing theories of change beyond problem identification, computational methods, and philosophical discussions. Gebru et al. and Mitchell et al. introduce Datasheets for Datasets [24] and Model Cards for Model Reporting [46], respectively, for standardizing the transparency of algorithmic system development. Going one step further, Raji et al. develop a framework for algorithmic auditing to be applied throughout the internal organization development life-cycle and discuss the challenges of maintaining an independent and objective viewpoint during the execution of an audit [56]. Vincent et al. explore ways for users to influence tech companies through *data leverage*, where the users of a system "threaten[] to engage in or directly engag[e] in data-related actions that harm that organization's technologies or help its competitors' technologies" [70]. An interdisciplinary group that includes members in Computer Science departments, Sociology departments, and the ACLU of Washington built the Algorithmic Equity Toolkit, a set of reflective tools to increase public participation in technology advocacy for AI policy action [39].

In "Activism in the AI Community," Belfield observes the role that tech workers have played in shaping the societal and ethical implications of AI [6]. However, Belfield only engages with a handful of examples: Googlers resisting Project Maven, Googlers resisting Project Dragonfly, Googlers opposing workplace sexual harassment, and tech workers from many firms opposing corporate partnerships with Immigration and Customs Enforcement (ICE) and Customs and Border Protection (CBP). These examples, while high-profile, represent a narrow subset of tech worker organizing. Further, it largely considers industry-wide factors such as low union density and the widespread use by tech companies of non-disclosure agreements (NDAs). It does not yet form a convincing theory of why some campaigns succeed and others fail. In order to understand that further, we look to the literature on social movements and labor organizing.

2.2 Social Movements and Labor Organizing

Social change is the product of structural determinants (e.g., population change) and processes and mechanisms (e.g., political conflict and accommodation) [29]. Many philosophers, economists, historians, and political scientists have characterized different theories of change. Stephan and Chenoweth found that when resisting an oppressive government, nonviolent social movements are twice as likely to succeed than violent campaigns, and similarly that nonviolent movements are more likely to peacefully transition to a stable democracy. Through quantitative and qualitative analysis, they conclude this is because nonviolent methods allow for larger and more diverse movements, which engender increased resiliency, flexibility of tactics, and loyalty shifts from cross-pressured powerful actors [64].

To further understand types of nonviolent action, we draw from the work of Sharp [62], whose methods influenced pro-democracy campaigns in Serbia, Georgia, and Belarus. His work rejects the belief that people are fundamentally dependent upon the good will of their governments, and instead argues that governments are fundamentally dependent on "the people's good will, decisions and support" [62]. In his 1973 book 'The Politics of Nonviolent Action," he explores the theory behind nonviolent resistance, describing how its success does not rely solely on persuading the opponent, but often by persuading the other stakeholders on whom the opponent depends. He enumerates[1] 198 kinds of nonviolent actions (e.g. letters of opposition, singing, etc) to demonstrate the power of a movement and pressuring the opponent.

No single enumeration of tactics will ever be comprehensive; other resources also identify organizing and tactics. For instance, the national rank-and-file union of United Electrical, Radio and Machine Workers of America (UE) hosts a public strike guide which gives high-level advice for how to plan for a successful worker's strike,[2] including by forming the right committees, setting up food distribution and travel for workers, ensuring utilities and rent/mortgage assistance, obtaining legal expertise, and more.

Unions have a rich history of "bargaining for the common good" [4], which is an approach of using contract fights to organize local stakeholders to fight for demands which would benefit people beyond the bargaining unit. For instance, after hosting community

[1] https://www.aeinstein.org/nonviolentaction/198-methods-of-nonviolent-action
[2] https://www.ueunion.org/strikes

listening sessions, the 2018 LA teachers union strike included demands for green space for children and an immigrant defense fund for parents [26].

Other work has more explicitly connected labor organizing to social movements. In particular, McAlevey — who studied US labor movements after decades of successful trade union organizing — posits that the two do not have a clear distinction [44]. She argues that democracy in the workplace is one of the most effective tools available to ordinary people for social progress, citing labor movements in the US in the 1930s-1940s and the Civil Rights Movement in the 1950s-1960s. Her analysis identifies the strategies, methods, and discipline behind successful and unsuccessful campaigns. We explore her work further in Section 5.

3 TECH WORKER CAMPAIGNS: THREE ILLUSTRATIVE EXAMPLES

In 2017, Ossola pointed out that for industries like medicine, the government vets and tracks tools susceptible to abuse, in contrast with the tech industry, where that responsibility falls to individual companies [51]. However, after a series of scandals, it does not seem like companies are living up to their stated values of privacy [71], security [42], fairness [18], or safety [63]. In the past 5 years, tech workers have taken on a more active role than in previous years in discussing the social impact of their companies' products.

Although research and publications are some of the most visible and recognized ways engineers can work toward ethical computing, workers can also push back against their companies directly. Often times, meaningful channels for change do not already exist, and employees must organize and pressure their employer in new ways. In this paper, we refer to the goal of one such effort as a "campaign" which is composed of a series of individual "actions."

The most comprehensive documentation of such actions, to our knowledge, can be found at the Collective Action in Tech (CAIT) archive [33]. This project was created by former tech workers, union organizers, and a sociologist "to create a space for us to reflect on the tech worker movement's past, and invent its future." The creators searched NexisUni news archives for articles about the computing and IT industry where employment terms (employee, worker, contract, labor) occurred within 25 tokens of collective action terms (protest, petition, strike, open letter, walk out, union, boycott, letter, lawsuit, discuss, negotiat). To date, the effort primarily uses English-speaking news publications. As of 2021, approximately 5% of entries have been added through crowdsourcing [48]. This archive is not guaranteed to be comprehensive and it largely consists of external vantages of how tech worker campaigns played out. Nonetheless, we notice some chronological trends as certain political issues increased in salience.

The archive employs an expansive definition of tech worker. Its creators explore a subset of entries from "AI workers," which they define as people "employed or contracted by an institution that produces or uses AI systems" [48]. The full archive defines "tech worker" similarly broadly (and we adopt their definition in this paper), including actions from data engineers at tech companies, temps and contractors at tech company data centers employed by third-party subcontractors, gig workers, and even academics. However, the entries in the archive do skew towards representing the experience of white collar workers. For every one entry with the "blue collar" tag in the archive, there are 1.7 entries with the "white collar" tag. Further, of the 500 documented examples in the archive, 8.6% of "blue collar"-tagged entries also have an "ethics" tag whereas 49.8% of "white collar"-tagged entries also have an "ethics tag." As a result, while there are some instances of warehouse and gig workers, some of which we highlight below, those areas remain under-represented in our study.

In this section, we highlight three successful tech worker campaigns: opposing a Muslim registry industry-wide, opposing a Department of Defense contract at Google, and opposing facial surveillance as a service.

3.0.1 Muslim Registry (2017). While on the campaign trail in November 2015, then-candidate Donald Trump was asked if he would implement a database system tracking Muslims in the United States. He responded "I would certainly implement that. ... There should be a lot of systems, beyond databases. We should have a lot of systems" [32]. After he won the 2016 election, his transition team suggested the administration may pursue "extreme vetting" of some immigrants and bring back a Bush-era surveillance program (National Security Entry-Exit Registration System) which had been criticized for targeting immigrants from Muslim-majority countries (of the 25 counties on the list, 24 were Muslim-majority, plus North Korea) [58] .

Many became increasingly worried that the Trump administration would follow through on its campaign promises to build a Muslim registry. In a (rare at the time) direct challenge to their employer, a group of over 50 IBM engineers authored a public letter calling for the firm to allow employees to "refuse participation in any U.S. contracts that violate constitutional and civil liberties" [8].

Tech workers launched NeverAgain.tech, which pledged to resist attempts to build databases to target individuals based on religion or national origin. 2,843 tech workers signed the pledge, including employees from Amazon, Apple, Google, and Microsoft.[3] Before the pledge, Twitter had been the only large tech firm that publicly opposed a Muslim registry, but after the Never Again campaign, there were also similar commitments from Facebook, Apple, Google, Twitter, IBM, Microsoft, Uber, Lyft Medium, and Salesforce [57]. After the tech community drew a clear, bright line refusing to build a Muslim registry, the Trump administration did not pursue that specific policy.

3.0.2 Project Maven (2018). In April 2017, the Department of Defense (DoD) established the Algorithmic Warfare Cross-Function Team to accelerate DoD's integration of big data and machine learning. As part of this effort, Google signed a contract with DoD for Project Maven, a $9 million project to build computer vision for drones, which was seen by many as a trial run for the much larger $10 billion JEDI contract [19].

When Google employees learned of Project Maven, many were concerned about whether Google was getting into "the business of war." Employees wrote a petition [61], signed by 4,000 Googlers, calling for the company to "cancel the Project Maven contract and publicly state Google and contractors will never build tech for war." After much discussion on Google's internal messaging boards

[3] http://neveragain.tech

and public pressure from media attention, the company executives hosted a discussion for Googlers to view in April 2018 between themselves and some of the petition authors. The town hall did not ease the concerns of employees, and frustrations began to mount.

In order to compete for secure government contracts, Google needed to implement "air gap" technology so that there would be physical separation between machines with government data and other machines. The influential group of software engineers tasked with building that tech for Google surprised their bosses by refusing to work on it [9]. They became known as the "Group of Nine" amongst their colleagues at Google, and their refusal increased pressure on the firm, which did not want to alienate or circumvent those influential engineers. However, without this tool, Google would be at a major competitive disadvantage in bidding for defense contracts against Amazon and Microsoft.

In June 2018, Google announced that it would be dropping the Maven project (i.e., declining to renew its contract the following year). A week later, Google announced the new Google AI Principles [55]. These principles include some abstract values, but also a few conceptual areas for which Google claims it will not pursue or deploy AI, such as "[w]eapons or other technologies whose principal purpose or implementation is to cause or directly facilitate injury to people."

3.0.3 Face Surveillance. Amid mass protests across the US in support of Black Lives Matter and criminal justice reform, many companies (Amazon, Microsoft, and IBM) suspended the sales of facial surveillance services [67]. But how did this happen? It took years of scholarship and activism [30] to get these companies to the point where that choice was the "safe" option, at least for the time, including:

- **October 2016**: Academic researchers (Garvie, Bedoya, and Frankle) published "The Perpetual Lineup" which warned that law enforcement agencies are using unregulated facial recognition technology to be able to surveil over 100 million Americans [23].
- **February 2018**: Academic researchers (Buolamwini and Gebru) published "Gender Shades," which found that computer vision models performed worse on dark skinned and female subjects [11].
- **May 2018**: The ACLU and a coalition of 48 civil rights organizations called on Amazon to stop allowing governments to use their Rekognition software in 2018 because the company's materials describe "person tracking" as an "easy and accurate" way to investigate and monitor people, such as undocumented immigrants or Black activists [13].
- **June 2018**: Citing the ACLU report, 500 Amazon employees signed an open letter[4] calling Amazon to "stop selling facial recognition service to law enforcement" and to "stop providing infrastructure to Palantir and any other Amazon partners who enable ICE."
- **July 2019**: A group of Amazon employees sent an email to internal employee mailing lists, demanding that Palantir be removed from Amazon's cloud for violating its terms of service and for Amazon to take a stand against ICE by making a statement [14].
- **June 2020**: After tens of millions of protesters took to the streets over the murder of George Floyd by police, IBM announced it would discontinue selling facial recognition software. The following day, Amazon announced a one-year moratorium on police use of Rekognition.
- **May 2021**: Amazon announced that it would indefinitely prohibit police departments from using Rekognition.

Unlike individual firm campaigns that take place at one single company, this industry-wide effort was able to stigmatize the unregulated use of this new technology enough that it changed the market. Scholars and activists had organized for years to discuss the implications of facial recognition technology. When Black Lives Matter protests in the summer of 2021 demonstrated energy for change, companies reached for solutions that were fleshed out and based upon research. Of course, without legislation, this is still a live issue wherein vendors could decide to reverse course and begin production again if they no longer fear the potential backlash.

4 TECH WORKER ACTIONS: A WIDER ANALYSIS

In this section, we provide a more systematic analysis of tech worker collective actions. We categorize a set of 150 actions from the CAIT archive [33] into Sharp's framework of nonviolent actions. Our goal is to understand the broader space of tech worker collective actions in recent years, both to examine actions that have been widely utilized as well as demonstrate the much broader space of possible actions to explore.

Sharp's framework categorizes the methods of nonviolent action into a few broad categories, including: nonviolent protest and persuasion, social noncooperation, economic boycotts, the strike, political noncooperation, and nonviolent intervention. Table 1 contains a subset of particularly relevant nonviolent methods that he enumerates [5].

To categorize collective actions according to Sharp's framework, we first filtered the CAIT archive by those actions tagged with "ethics" before or during 2021, in order arrive at a set of 139 entries more relevant to our focus.[6] Each action was tagged by at least one author, and cases where there was uncertainty or disagreement were solved through joint discussion and further research into the particular event. If a particular entry in the archive seemed to describe multiple actions (e.g., an event involving both a letter of opposition and a protest strike), we considered that as two separate actions for the analysis. This resulted in 150 actions in the final coded archive. Fig. 1 depicts the summarization of each action and its categorization.

Overall, we found that Sharp's framework was broad and detailed enough to categorize the range of tech worker collective actions described in the CAIT archive. However, there were also cases archive we found new techniques being utilized, for which there was not an existing category that fit perfectly. In many cases, these indicated innovative avenues for collective action that are opened due to modern technology and/or the nature of the tech industry (e.g., social media campaigns, pressure from company shareholders,

[4] https://www.scribd.com/document/382334740/Dear-Jeff

[5] The full list of the 198 methods in Sharp's framework can be found at https://www.aeinstein.org/nonviolentaction/198-methods-of-nonviolent-action/

[6] The full table with each action and our codes can be found at https://bit.ly/3kSEddC

Table 1: Subset of nonviolent methods enumerated by Sharp.

Overarching Methods	*Action Groups*	*Example Actions*
Nonviolent Protest and Persuasian	*Formal statements*	Letters of opposition, public speeches
	Honoring the dead	Mock funerals, political mourning
	Public Assemblies	Teach-ins, assemblies of protest
Social Noncooperation	*Withdrawal from the social system*	Stay-at-home, collective disappearance
Economic Noncooperation: *Economic Boycotts*	*Actions by consumers*	Consumers' boycott, non-consumption of boycotted goods
	Action by middlemen	Suppliers' and handlers' boycott
Economic Noncooperation: *The Strike*	*Strikes by Special Groups*	Craft strike, professional strike
	Restricted Strikes	Slowdown strikes, working-to-rule strikes
Political Noncooperation	*Citizens' noncooperation with government*	Refusal of assistance to enforcement agents, removal of own signs and placemarks
Nonviolent Intervention	*Physical intervention*	Sit-in, nonviolent occupation
	Social intervention	Overloading of facilities, alternative communication system)

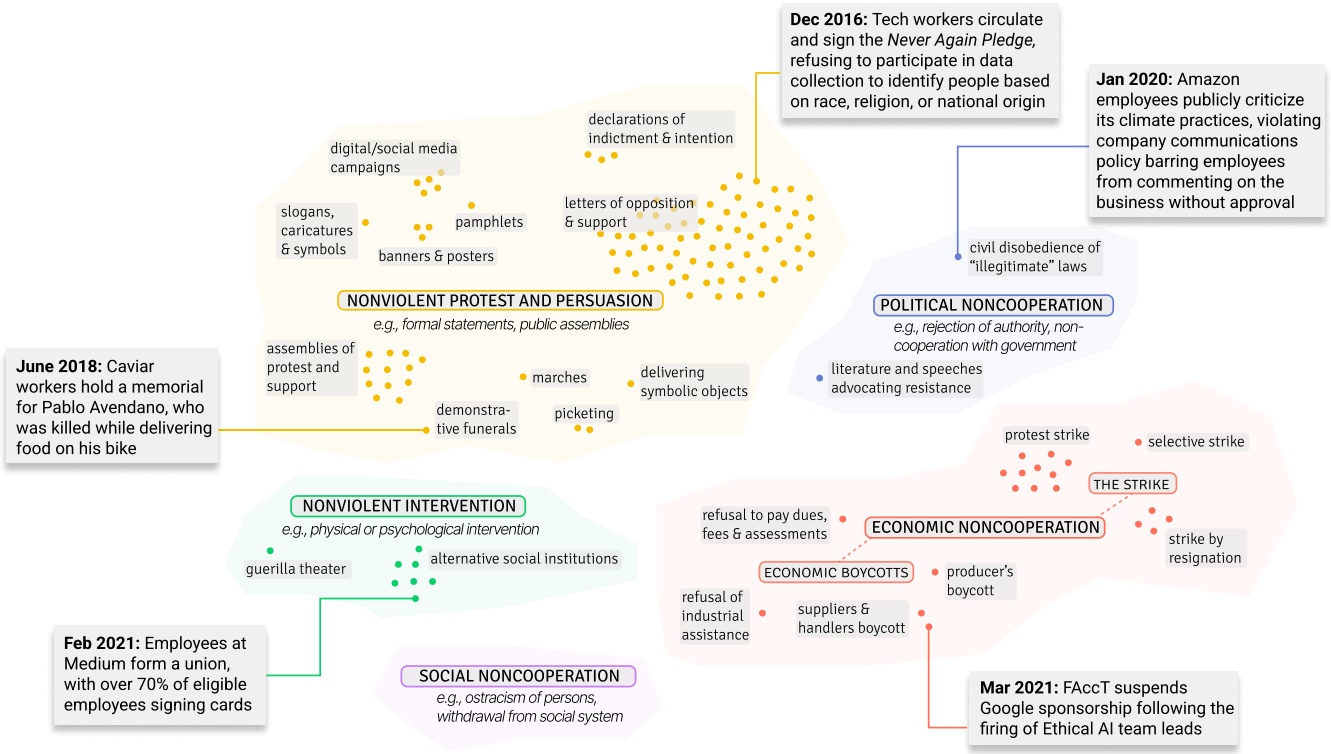

Figure 1: Depiction of the collective actions tagged as "ethics" in the CAIT archive. Each action was categorized into Sharp's framework. The axes of this figure do not signify quantitative meaning.

virtual walk-outs via "closing laptops"). There were also a few other types of actions in the archive not covered by the framework—in particular, because Sharp focuses primarily on labor power, actions such as lawsuits that utilize other forms of power (i.e., legal power) are not covered.

Examining the distribution of actions, we found that letters of support/opposition and group petitions make up the majority (n=73). Actions such as assemblies of protest or support (n=13), protest strikes (n=11), and alternative social institutions (e.g., unions, n=9) are much less common, but have still been moderately explored in different contexts. Most of the other the 198 actions have not been explored, or have just one or a handful of instances (e.g., suppliers and handlers boycott, guerilla theater, civil disobedience of "illegitimate" laws).

While not all of the actions in the CAIT archive were effective, there are many examples of successful demonstrations of collective power. Here, we highlight some specific instances of strong actions (many of which were situated in broader movements or campaigns), demonstrating the type of action(s) utilized and how they fall within Sharp's framework (numbers in parenthesis indicate the number of the corresponding action in Sharp's framework).

Never Again Pledge: In December 2016, a group of tech workers circulated an online pledge refusing to participate in developing technology or collecting data that could aid in identifying people by race, religion, or national origin. The pledge was specifically created in response to the Trump presidential campaign's comments around creating a "Muslim registry." 2,843 tech workers signed the pledge, which created a significant amount of media coverage, public attention, and spurred statements of refusal from a range of tech companies. In Sharp's framework, this action fall under *letters of opposition or support* (#2) and *group or mass petitions* (#6). It also utilizes *slogans, caricatures, and symbols* (#7) — i.e., the strong rhetoric of "Never Again."

Industry Refusal to Build Muslim Registry: In part spurred by the Never Again Pledge, there was an effective industry-wide effort to resist building surveillance tech against religious minorities. This action is consistent with Sharp's *refusal of industrial assistance* (#84) as well as *boycott of government depts., agencies, and other bodies* (#126).

Caviar Memorial: In June 2018, after a gig worker died during a delivery for Caviar, fellow gig workers organized a memorial and raised money for the funeral [53]. They demanded Caviar pay for the funeral expenses, classify riders as employees (not independent contractors), give a starting salary of $20/hour, and respect workers' rights to organize a union. Following this, in July 2018, Caviar began offering accident insurance to all driver actively picking up or delivering an order. This action was the only example we came across that utilized *demonstrative funerals* (#45).

FAccT 2021 Dropping Google as Sponsor: Between December 2020 and Febrary 2021, Dr. Timnit Gebru and Dr. Maragaret Mitchell—the co-leads of Google's Ethical AI team—were fired from Google. In response, the FAccT research community suspended Google's sponsorship of the FAccT 2021 conference [34]. There was not an immediate demand associated with the action, but a reasonable interpretation is that it was taken to act as a deterrent for similar behavior from companies in future situations. This action is an example of a *suppliers? and handlers' boycott* (#80).

Amazon Worker-backed Shareholder Resolution: In April 2019, Amazon employees publicly supported a shareholder resolution requesting that Amazon's Board of Directors "prepare a public report as soon as practicable describing how Amazon is planning for disruptions posed by climate change, and how Amazon is reducing its company-wide dependence on fossil fuels" [21]. Although the resolution was voted down by shareholders (70% opposed, 30% supported), Amazon Employees for Climate Justice continued with collective actions, leading to Amazon creating The Climate Pledge to meet the Paris Agreement 10 years early. This shareholder resolution tactic does not appeal directly to labor power, but rather through public pressure targeting the shareholders. This resolution did not immediately require ratification in order to be a successful demonstration; by pressuring the shareholders through *delivering symbolic objects* (#21), workers demonstrated a diversity of tactics for pressuring Amazon.

Exercising Legal Workplace Protections: In addition to labor power, workers sometimes also have legal power on their side. In April 2020, Amazon fired two of its tech workers after they publicly criticized the company's warehouse workplace conditions amid COVID-19 [27]. The employees alleged their terminations were retaliation for their advocacy around both coronavirus working conditions and climate advocacy at Amazon. Although employers often have more resources, and therefore are better able to draw out long legal battles, when employees do exercise their legal rights, it can serve as disincentive for companies considering pushing the line of legal gray areas. Increasing the chances that inappropriate behavior actually would lead to legal battles arms employees with a credible threat and serves as a check on employer power. The employees settled their case with Amazon, receiving an undisclosed amount of money [28]. Because this action utilizes legal power (i.e., a lawsuit), it is not described in Sharp's framework.

5 BUILDING TECH WORKER POWER

A successful action or campaign does not just happen on its own. There is almost always a lot of invisible labor that goes into building the social infrastructure to coordinate large collective actions. In this section, we examine the methods of prominent labor organizer Dr. Jane McAlevey and discuss how those concepts could be applied to tech.

McAlevey analyzes many union campaigns, and her conclusion for how to win a strong contract is straightforward: 1) map out an honest theory of power, 2) create a credible plan to win, and 3) execute that plan with strong methods and discipline [44]. She argues that most modern social movements fail to develop a theory of power, and as a result, unwittingly set themselves up to fail. Critically, she emphasizes that many people involved in social movements conflate two importantly distinct concepts: "organizing" and "mobilizing." A lot of people *think* they are doing organizing when in reality they are only talking to people who already agree with them. Organizing, on the other hand, involves bringing new people into the campaign and growing the base of collective power that one can mobilize later. She analyzes many union campaigns (some successful and some unsuccessful) and demonstrates that the only way to win hard fights is to do genuine organizing in order to build super-majority support of workers. Only with that level

of support can workers have a credible threat (e.g. by striking) in order win a strong outcome. In other words, McAlevey concludes that if a campaign can "creat[e] a crisis for the employer" then they will win, and if they cannot do that, then they will lose.

The first two steps of McAlevey's process for a successful campaign are to map power and set a corresponding credible plan to win. Depending on how difficult the goal is, different tactics will need to be employed: a minority of vocal workers could win the "Justice for Janitors" campaign because concessions were low-cost to the employer, but in order for hospital nurses to win costly nurse-to-patient ratios, a nursing strike may be required [44]. As she summarizes: "High concession costs require high power." The third step of the process is to execute that plan using effective methods and discipline. But what are those methods? In this section, we distill her organizing concepts and discuss how they can be applied to the tech sector.

5.1 McAlevey: Organizing for Power

McAlevey runs trainings for how workers can build power.[7] She contextualizes the points above, working backwards from understanding what it would take to build a movement strong enough to win. Recognizing that workers' power doesn't come from money or status, but instead from large numbers and taking collective actions together, she discusses the methods and disciplines of successful labor organizing campaigns. The fundamental unit of work is the one-on-one "organizing conversation" between two coworkers, where the organizer identifies their colleague's issues and connects them to solutions rooted in collective action.

Throughout her trainings and scholarship, she identifies some critical concepts that successful organizers use. For each one, we demonstrate corresponding examples in the tech sector. Sometimes (e.g., describing a campaign's strategy), we are left to speculate and make reasonable guesses about the intention of the organizers behind the action/campaign.

Issue Identification: Organizers must identify what issues are important to their coworkers during a one-on-one by asking open ended questions. An effective way to identify actionable issues they wish would improve is by asking "If you could change 3 things at work tomorrow, what would they be?" By identifying their priorities, organizers can then discuss how those issues connect to collective solutions by coworkers with similar concerns.

Many high-profile campaigns in tech were in reaction to a big political event, such as the Never Again Pledge in response to the Trump campaign suggesting a Muslim registry [58]. In other campaigns, tech workers came to understand that they had the power and responsibility to solve a problem even if they, themselves, didn't create it. For both Project Maven and Face Surveillance, many employees who ordinarily did not want "rock the boat" felt that they had to be part of the solution, because if not them, then who?

Raising Expectations: People will not fight for more unless they believe that they deserve more and that they could actually have more. One of the most effective ways to convince people that things can be better than they are now is by showing successes elsewhere.

For instance, in March 2021, the Glitch union just signed the first collective bargaining agreement for software engineers [40]. The contract did not set wage floors or salary rules but instead focused on "protecting basic labor rights, challenging discriminatory pay and hiring practices, and even pushing companies to be held accountable for the products they build." Less than a month later, when the workers at Mobilize announced the formation of their union, they pointed to the Glitch workers as an example they took inspiration from: "Like Glitch, I think that we can serve as an example for other employers to see ... that we can work together to figure out what workers want" [41].

Credible Plan to Win: Organizers must do a power analysis to understand the concession costs associated with their goals, and then plan how to generate enough power to achieve that success. McAlevey observes that "an incorrect power analysis might lead people who want to end capitalism to think that small numbers of demonstrators occupying public spaces like parks and squares and tweeting about it will generate enough power to collapse Wall Street" [44].

Creating this credible plan will involve mapping out a set of plausible steps which can ladder up to a successful campaign. For instance, with the Never Again pledge, organizers were able to pressure individual firms one at a time. Each time another firm made a public statement, it served as a domino, making it easier for the next firm to make an announcement too. Eventually, the campaign was able to build a consensus around industry-wide opposition to the proposed Muslim registry.

Structure-based Organizing: Within any workplace, there are already-existing structures and social networks — perhaps by floor, by department, by communities, etc. These structures have existing social dynamics and relationships of trust which one should organize within, as opposed to trying to build an entirely new structure from scratch.

One (but by no means the only) opportunity for identifying coworkers with mutual interests is through Employee Resource Groups (ERG). The modern ERG emerged as part of the civil rights movement when Xerox workers created the National Black Employee Caucus to "push back against racist business practices and systems" [47]. ERGs are quite common in tech companies; Google has 16 ERGs for nearly 25% of the workforce (35,000 of 140,000 as of 2021) [17]. In 2019, workers on Google's LGBT ERG (Gayglers) organized a petition to pressure Google to change its policy on YouTube's moderation decisions affecting the LGBTQ+ community [20].

Organic Leader Identification: Many unsuccessful campaigns are lost because the wrong leaders were selected, causing them to be out of step with the broader membership and make decisions which fail to attract buy-in. Within any given social structure, there are the most trusted members of that group. Naive questions like "who is your leader?" or "who do you respect most?" often lead to incorrect leader identification because words like "leader" are imprecise and people's plain-use understanding of the word might not lead to thinking of the right leaders for the campaign. Just because someone shows up to meetings or gives a good speech, that does not mean a majority of their coworkers trust them. Instead, organizers can identify the organic leader by asking a majority of the members of the group questions like "If your manager asks you

[7] https://podcasts.apple.com/us/podcast/a-master-class-in-organizing/id1081584611?i=1000468514310

to do something, and you're not sure how to do it, who do you ask for help from?"

Structure Tests: In order to measure the health of the campaign (including whether one has identified the organic leaders in the relevant units), organizers should run a series of structure tests to see if their organizing network is as strong as they think it is. First, organizers decide on an action they'd like everyone to take, and then second, they communicate that through their action network. By gauging participation from each subdivision, they can measure their capacity for mobilizing. The goal is to realize where improvement is necessary *before* flexing collective power publicly. Is there a given floor, department, or team where participation in the structure test is much lower than average?

Examples of structure tests include majority petitions, photo posters, sticker days, wearing t-shirts with union emblems, and rallies. For example, the Alphabet Workers Union has a zoom background which workers can use [69]. Additionally, the United Auto Workers (UAW) and Communication Workers of America (CWA) encourage locals to participate in events like "Red Shirt Wednesdays," where members pledge to all wear red on a given day.[8]

Framing the Hard Choice: During an organizer's one-on-one organizing conversation, their colleague might agree that a problem exists, but perhaps they are hesitant to take a stand about it. The important thing is for them to come to the conclusion themself about who has the power to change the situation and whether that person will ever do that without being pressured to do it by their employees. McAlevey recommends leveling with the coworker and demonstrating that the organizer shares their concern, but then asking how else the issue will be resolved unless employees band together and stand up for what is right.

For instance, in May 2020, then-President Trump incited violence against protesters with his "when the looting starts, the shooting starts" dog whistle on social media, which echoed statements of Walter E. Headley and George Wallace [12]. Twitter and Facebook both chose to keep the post up. Facebook in particular took no action at all despite it violating Facebook's previously stated community guidelines, leading to employees' survey-reported confidence in Facebook leadership to plummet from 75% to 47% and pride in the company from 73% to 48% in a matter of weeks [52]. After the January 6 insurrection, Facebook and Twitter employees no longer trusted management to address the problem without being pushed [35]. A potentially effective framing could be: "Every day nothing happens is another day of hurting our users. If we don't band together to do something, how else is this ever going to change?"

Inoculation: Another way campaigns can fail is if the organizers do not adequately prepare to withstand management's tactics to undermine the movement. This is not hypothetical; employers hire outside consultants[9] that specialize in sowing confusion and fear to get employees to second guess taking collective action. During the end of the first one-on-one conversation, McAlevey recommends "giv[ing] the worker a little bit of the 'poison' they will hear from management" in order to reduce the anxiety for when it does happen. This can be accomplished by asking something like "do you think your boss is going to like it if they their employee signed an open letter calling for change? Why?"

Although this might sound like overkill, tech companies have been ramping up professional efforts to undermine tech worker organizing. In 2019, Google hired IRI Consultants, a top union busting firm in the United States whose website advertises their success in avoiding labor organizing and in conducting union vulnerability assessments [60]. According to reporting, Amazon uses a "heat mapping" tool to identify Whole Foods stores at risk of unionizing based on factors including: the number of complaints filed to the NLRB, the poverty rate for the store's zip code, the racial and ethnic diversity of a store, the average employee compensation, and how employees felt about their workplace [54].

Stakeholder Organizing: When the organizer is mapping power as part of the credible plan, they will encounter additional stakeholders on whom the firm depends (e.g., customers, vendors, positive media coverage, school internship pipelines, etc). Successful campaigns are often able to build connections with other stakeholders to coordinate putting pressure on management from multiple directions.

We can see an example of this from a pressure campaign on Microsoft-owned GitHub. In 2019, hundreds of GitHub employees signed an open letter calling on the company to cancel its contract with ICE [25], and over 700 developers that use GitHub also signed an open letter supporting the workers' calls to cancel the contract with ICE [68]. However, GitHub currently boasts tens of millions of developers using its platform, and the amount of power that the campaign amassed was not enough to win the concession cost of dropping the contract with ICE.

Credible Threat: The employer respects power. The credible threat (as demonstrated by a successful structure test or previous strike) is the leverage for the campaign to bargain with the employer. The most clever plan or rhetoric in the world is not a substitute for whether the employer looks across the bargaining table and sees a super-majority of the workers saying "we don't want to go on strike, but we are prepared to if our needs are not met."

In November 2018, more than 20,000 Google employees (over 25% of the workforce) participated in a worldwide walkout to protest how Google handled cases of sexual harassment [72]. They demanded transparency, the presence of an employee representative, and the public filings of each sexual assault case. As a result, the company published an internal report of sexual assault cases, and in February 2019, ended the practice of forced arbitration.

6 DISCUSSION

There is a lot we can learn from both previous instances of tech worker collective action and theories for organizing and social movements.

6.1 Theory of Power

As McAlevey observes, campaigns are won and lost based on whether the leaders had a good strategy (aka "credible plan to win"). It is important to understand who has the power to make the desired change and how much rank-and-file power would be need to be built to push them [44]. The instances from the CAIT archive demonstrate examples of how tech workers have utilized different

[8] https://uaw.org/wp-content/uploads/2016/06/Red-Shirt-Wednesday.pdf
[9] https://www.youtube.com/watch?v=Gk8dUXRpoy8

forms of power: public pressure (e.g., public letters), legal power (e.g., suing companies for violating labor laws), shareholder power (e.g., workers backing a shareholder resolution), labor power (e.g., walkouts), and more.

To that end, we observed from Section 4 that there were many more open letters, internal letters, and petitions than other types of actions. Of course, these are an important part of demonstrating collective power and rallying external stakeholders to one's cause, but their power is less strong when they are not accompanied with a (either explicit or implicit) credible threat. Walkouts and protest strikes (e.g. Googlers' 20,000-person walkout about sexual harassment) are a closer demonstration of commitment from the workers to cause sufficient disruption to win high on concession costs. There are not yet examples of a majority strike in the archive.

There were instances of some early successful actions, especially in 2017-2018, where a vocal minority (1-3%) of the workers created public pressure and were able to win their goals. However, in the years since, companies have also learned from these examples and adapted their responses so that they are more willing to take a cycle of bad press and try to wait the campaign out. This is in line with a similar finding in social science theory, where Dr. Leah Cardamore Stokes observes that new tactics or policies often start with a "Fog of Enactment" where powerful incumbents do not initially understand the impact of a new policy and they miscalculate how to respond [66]. Eventually, however, the incumbent learns how to more accurately assess the policy and is able to counter it more effectively in later efforts.

Ultimately, companies hire workers because labor keeps the company running. Organizing a majority strike is still a gold standard of leverage. Jerry Brown, the retired President of 1199NE, said "[t]he strike muscle is like any other muscle, you have to keep it in good shape or it will atrophy." Under Brown, his union of Connecticut nursing home workers went on strike over 100 times and won a large number of their bargaining goals [44].

6.2 Expectations and Timeline

In order to build the people power to win hard campaigns for more ethical products, tech workers will need to organize. The most traditional model of labor organizing involves getting a large group of workers to participate in collective actions, where the ultimate leverage comes from the threat of a strike. In order to create a such a large campaign, organizers must raise the expectations of people who currently believe either the status quo is good enough or even if it is not that it won't change. Identifying the bright spots of other successful campaigns can be an effective way to show what else is possible, and help tech workers understand the power they might not have realized that they have [31].

One challenge with raising expectations is that workers run the risk of getting their hopes up for what is possible only to run into disillusionment if they are not able to achieve everything they want. By looking to previous efforts, we see that successful campaigns require sustained action: tech workers continued pushing against facial surveillance tools for years in the forms of academic scholarship, internal letters, and open letters. The years of effort have (thus far) paid off because when external forces (i.e., millions of Americans marching for racial justice in 2020) put additional pressure on Amazon, they reached for the solutions that organizers had spent years engineering.

6.3 Tech-specific Considerations

Although we employ Sharp's framework for categorizing the many forms of collective actions, this ontology does not perfectly reflect the state of tech worker organizing. We hope that the large action space of Sharp's methods can serve a generative purpose to help identify action types which have not yet been attempted in tech but could prove useful. Additionally, there are some types of actions which are unique to tech and thus not included in Sharp's general framework. We explore some of those considerations here.

One recurring tactic not captured in the Sharp framework is expert assessment of feasibility. In 1986, dozens of technical experts, including Herbert Simon (recipient of both the Nobel Prize and Turing Award) and John Backus (the inventor of FORTRAN), came out against President Reagan's "Star Wars" defense program, on the grounds that it was technically infeasible to build and test such a complex system for something as high stakes as a bug-caused nuclear strike [10]. In the 1990s, the Clinton administration pushed for Clipper Chip technology to allow for law enforcement to access encrypted data, but tech experts argued[10] that the technology was too technically flawed and insecure [1]. Most recently, for the past 5+ years, machine learning experts have been cautioning against sweeping deployment of ML — including facial surveillance tools — because the algorithms can entrench harmful power differentials [3, 5, 7, 37, 49]. Sharp's framework does not presuppose its practitioners are domain experts, so it does not explore the ways expertise can enable additional forms of public pressure on decision-makers.

To this end, McAlevey recognizes that power is not always evenly distributed across all workers. While typically, a feasible theory of power might require a supermajority (e.g., to pull off a strong strike), she also provides examples of successful campaigns that utilize critical workers [44]. In her dissertation, she analyzes a union drive at a Smithfield Foods pork factory where Livestock was a "key department" because those workers could stop letting hogs off trucks, which both stopped the factory line and caused a massive traffic blockcade on the major interstate highway. A high-impact action didn't need the entire factory organized in order to work, it would just need to start with Livestock [44]. We expect to see many similar situations in the tech sector, where a small number of critical, specialized workers have an outsized effect on systems that are built. The closest example of this from the CAIT archive is the "Group of Nine" influential cloud engineers from the Google Project Maven campaign that refused to build the "air gap" technology. Although this is similar to the Livestock example, it does not fully capture the concept; reporting suggests "[the air gap] feature is not technically very difficult, so Google could easily find other engineers to do the work" [9]. Nonetheless, this serves as a potential blueprint for how an influential or specialized team can recognize and leverage their power in the tech industry. The most powerful groups will likely feel a sense of duty and reluctance to use that power carelessly, which can serve as a check on over-use. Just as "high concession

[10] http://cpsr.org/prevsite/program/clipper/cpsr-electronic-petition.html

costs require high power", low-concession campaigns need not utilize disproportionately high power resources.

Workers at a company usually would rather not "create a crisis" without a good reason, but how could they do that even if they wanted to? Different organizations have different power structures that determine which stakeholder's support is critical to the mission. For instance, gig workers have a traditional labor model wherein they could stop the service if they stopped working. On the other hand, there is not an immediate, acute harm to the organization if software engineers aren't patching bugs or building new features to compete with competitors. That harm becomes a long-term one which is harder to measure. Reporter Peter Kafka observes, "these companies live and die on their ability to recruit and retain top talent. That's a large part of what drives them to make these decisions" [35]. Companies are competing against each other for hiring top talent, and the fear of losing out contributed to the success of some early open letters. However, as that tactic has been used over the last 5 years, organizations have learned that if the only action will be an open letter, then they can wait the concern out without much cost. To effect change, workers will need to correspondingly organize additional kinds of collective actions. This also suggests that one possible, relatively unexplored point of leverage could be exploring ways to interact with company recruiting, such as through unauthorized climate surveys or accountability scorecards that show responsiveness to employee requests.

7 LIMITATIONS AND FUTURE WORK

One limitation of this work is that it is done from the outside looking in. The authors were left to speculate about the potential strategies of organizers within each campaign. Future work should aim to incorporate the insider perspective through ethnographic (or auto-ethnographic) methods.

Additionally, although the CAIT archive is the best resource of its kind, it does have limitations. It is both missing many collective actions and does not have a consistent set of information about the actions listed. For instance, the articles do not always indicate how many workers participated in an action.

Finally, this archive shows tech worker collective *actions*, not campaigns. This means that each entry will, at best, contextualize the action in the previous efforts at the time of writing, but it would not be able to show how a particular action contributed to the success or failure of the overall campaign. Just as campaign *wins* can arrive on a long time horizon, similarly *backsliding* on progress may occur in future years, e.g. if the campaign loses momentum or the company fires the lead organizers. This makes it difficult to evaluate the effectiveness of a given action.

8 CONCLUSION

In this work, we examine the relationship between "AI Ethics" and employee activism. In contrast to much of the other work in the field, we consider theories of change that do not require corporate buy-in. We situate tech worker collective action in theories of social movements and labor organizing, and demonstrate the large impact that such actions have had on tech companies and their products. We also detail concrete methods for effective organizing, and how they might transpire in the tech industry.

In future work, we imagine extending this work to also consider the impact of collective action within academia. For example, the CAIT archive documents an instance of MIT graduate students organizing against oppressive computing.[11] Graduate student organizing is a valuable avenue, both because students are well-suited to push their powerful institutions for ethical change in computing practices, but also because they are able to build the muscles for organizing which can then be brought into tech companies.

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