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LAUREN MARIETTA CHAMBERS, University of California, Berkeley, Berkeley, CA, United States

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Beyond Big Tech: Advocacy Technologists within Mission-Driven Civil Society Organizations

LAUREN MARIETTA CHAMBERS, University of California, Berkeley, USA

A new class of technology professionals is shaping policy, informing legal arguments, and bolstering advocacy efforts from inside nonprofit and civil society organizations. This career path might be claimed by a number of different new sociotechnical domains: public interest technology (PIT), civic technology, data for good, technology for social justice, and others. Yet it is still unclear exactly what professional roles are emerging, what sorts of people are filling them, and what such individuals' work looks like and achieves. This work presents an interview study that seeks to characterize a specific sub-population of technological practitioners who are contributing materially to mission-driven projects from within the civil society or nonprofit sector: *advocacy technologists*. I present four patterns of praxis (i.e., professional practices and paradigms) common to advocacy technologists: their disposition as critics who *interrogate* technological paradigms and who *introspect* on their own ethical footprint, and their professional position *translating* between technical and non-technical worlds and *trailblazing* into new career paths. These four patterns demonstrate that advocacy technologists are choosing to occupy a precarious new niche within advocacy work ecosystems that has great potential to impact policy and design outcomes. Indeed, these practitioners enlist computational strategies to advance advocacy goals, situate deep sociotechnical expertise within policymaking contexts, and further civil society as an active site of tech design in its own right. This study contributes to the growing body of literature in human-computer interaction (HCI) and computer-supported cooperative work (CSCW) that explores computing technologies' role in processes and places of sociopolitical change. Ultimately, this work proposes that mission-driven civil society organizations and their technologists are not only underexplored sites for HCI and CSCW research, but also potentially rich collaborators for sociotechnical researchers who seek to deepen their impact on policy and social change.

CCS Concepts: • **Social and professional topics** → **Computing occupations**; **Project and people management**; *Computing and business*; **Computing / technology policy**; • **Human-centered computing** → **Empirical studies in HCI**; • **Applied computing** → **Computers in other domains**.

Additional Key Words and Phrases: public interest technology, civil society, advocacy, public policy

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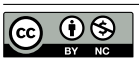
1 Introduction

In March 2020, a coalition including public defenders and civil rights advocates sued the Commonwealth of Massachusetts in *Committee for Public Counsel Services v. Chief Justice of the Trial Court (CPCS v. Trial Court)*, a lawsuit seeking the reduction of prison and jail populations during the COVID-19 pandemic. Public health officials and other experts at the time warned that, especially in the absence of a vaccine, overcrowded carceral facilities "where physical distancing and vigilant hygiene are impossible" [67:3] posed a threat to the health of not only to prisoners, but

Author's Contact Information: Lauren Marietta Chambers, lauren@ischool.berkeley.edu, University of California, Berkeley, School of Information, Berkeley, CA, USA.



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also to correctional staff and the broader public. The state Supreme Judicial Court agreed action was warranted, granting a presumption of release to individuals held without bail. Interestingly, however, the court also required that the sheriffs and state Department of Corrections provide daily reports containing counts of populations, COVID tests, COVID cases, and prisoner releases, "so that the court will be better positioned to respond to further changes in this rapidly-evolving situation" [54:7]. As such, the parties in the case were to be informed of the dynamic conditions inside Massachusetts carceral facilities via receipt of over a dozen bloated spreadsheets each day: an overwhelming amount of data that was inaccessible to those outside the case, and uninterpretable even by many of those involved.

Luckily, the American Civil Liberties Union of Massachusetts, a petitioner in the case, had launched its 'Data for Justice' project in 2015, and was prepared for just this sort of challenge. ACLU staff designed and maintained a public dashboard displaying all data reported by the counties and the state.[1] This dashboard was updated daily between April and July 2020, and updated weekly through June 2021, providing real-time information that was used by journalists,[2] public defenders, researchers [69, 85], and prisoners' families to better understand the state of the pandemic inside these carceral facilities. Alongside tireless work by prisoners' rights advocates, the dashboard and the public analysis it enabled were crucial for holding the state accountable for first testing and later vaccination of prisoners, and resulted in a second petition to the court during a COVID surge in December 2020 [68].

* * *

CPCS v. Trial Court is just one of many such examples in which data and technological skill sets are being increasingly employed to shape policy, inform legal arguments, and bolster advocacy efforts. A new professional class of technologists, or technical practitioners, is being integrated into the structures of sociopolitical advocacy. Beyond deploying technology within organizational infrastructure (as with email, instant messaging, or business intelligence), these roles bring data and technology into the advocate's strategic apparatus, as a constitutive part of their outward-facing work. Yet it is still unclear what new professional roles are emerging and what sorts of people are filling them, much less the characteristics and implications of their work. This new career path is a burgeoning field which has been called many different names: public interest technology (PIT), civic technology, data for good, technology for social justice, and more. This work endeavors to establish an understanding of a specific subpopulation of technological practitioners who are contributing substantially to mission-driven projects: *advocacy technologists.*

Here I present a qualitative interview study of 23 technologists who are situated within civil society, seeking to enrich our understanding of these practitioners by asking: **Who are advocacy technologists; how and why do they end up in their roles?** And, furthermore, **what does investigation of advocacy technologists reveal about the future of, and relationship between, advocacy work and technology work?**

The paper begins by introducing the relevant history and context of advocacy technology in Section 2, and discussing relevant trends in prior sociotechnical scholarship in Section 3. Methods and data are described in Section 4. I present results in Section 5 which describe four patterns of praxis common to advocacy technologists: their disposition as critics who *interrogate* dominant

[1]"Tracking COVID-19 in Massachusetts Prisons and Jails," ACLU of Massachusetts: https://data.aclum.org/sjc-12926-tracker/
[2]See, for example: "DOC yet to provide 'missing' data about prisoners and staff with coronavirus dating back to April 3, Public Defender Agency of Mass. claims," MassLive, April 23, 2020; "Despite Harsh Lockdowns, Nearly Half Of Women In Massachusetts Prisons Caught The Coronavirus," Solitary Watch, June 23, 2020; "Medical Experts Raise Questions About COVID-19 Data From Mass. Jails And Prisons," WBUR, August 13, 2020

technological paradigms and who *introspect* upon their own ethical footprint, and their professional position *translating* between technical and non-technical worlds and *trailblazing into* new career paths. Taken together, as I will argue in Section 6, these four patterns demonstrate how **advocacy technologists are choosing to occupy a precarious new niche within advocacy work ecosystems that has great potential to impact policy and design outcomes.** These patterns point to a strongly held dissatisfaction with the normative technology career path, the relevance of interdisciplinary expertise for successful advocacy work in the age of AI, the dual importance of tech in modern policy-making and of civil society in modern tech-making, and of a demand for more robust support structures for technology professionals who envision alternative sociotechnical futures. Finally, in Section 7, I offer promising new research sites, potential collaborations, and questions towards effective sociotechnical policy- and change-making within HCI and CSCW research.

This project offers three contributions to the human-computer interaction (HCI) and computer-supported cooperative work (CSCW) communities. First, I share new empirical insights into a specific under-explored cadre of sociotechnical professionals working within civil society. Second, I expand on existing research in HCI and CSCW exploring how technology and technologists interface with and shape processes of protest, advocacy, policymaking, and sociopolitical change. Third, I offer takeaways for policy-engaged sociotechnical research, with specific attention to the potential promise of deeper engagement with the people and processes of mission-driven civil society groups such as think tanks, advocacy organizations, and others.

2 Background

2.1 Definitions: Advocacy & Civil Society

This paper explores technology work that is based within advocacy-oriented groups and organizations. Here I understand **advocacy** to mean, broadly, the work of advocating for a cause or a community [17] - whether that work includes lobbying, litigation, government programming, electoral politics, public education, product design, or relevant research. As such, I define **advocacy organizations** as groups whose primary mission is to advocate for a sociopolitical cause. This paper chooses to focus on formalized organizations which offer full-time employment, as opposed to more informal or grassroots communities or groups. Advocacy organizations are often, though not always, based in the non-profit or civil society sector. As defined in social policy circles, **civil society** is the vehicle by which "citizens can exercise individual initiative in the private pursuit of public purposes" - often via private organizations, nonprofits, and NGOs [104:60]. Political sociologist Erik Olin Wright considers civil society as the principal source of social power – as opposed to state or economic power – which creates powerful associations and "mobilize[s] people for cooperative, voluntary collective actions" [136:121]; as such, the sector is crucial for efforts working towards social empowerment.

2.2 A New Age of Advocacy Technology

Over the past three decades, civil society, government, and academia alike have shown a shift in response to the growing importance of technology in advocacy and governance contexts. See Figure 1 for a demonstrative timeline of significant historical events across sectors. Certain civil society organizations have long integrated technologists into their strategic work, such as the Electronic Frontier Foundation and the Center for Democracy and Technology.[3] The establishment

[3]See "Staff", Electronic Frontier Foundation, archive from May 23, 2004; "Prominent Lawyer/Technologist Joins CDT to Lead New Project Promoting the Public Interest in Emerging Internet Technology", Center for Democracy and Technology, April 3, 2001

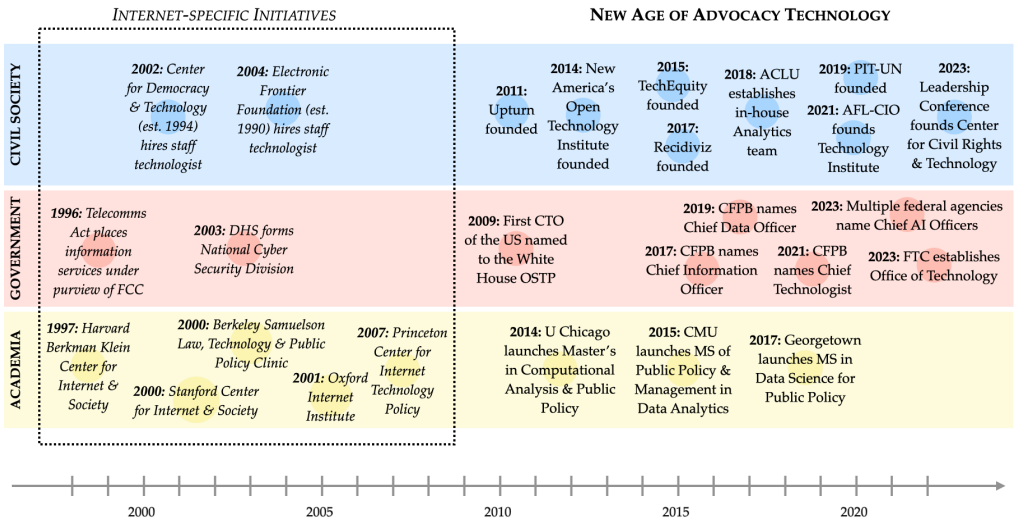

Fig. 1. Timeline of Advocacy Technology, 1996-Present
A timeline demarcating various important events in the history of advocacy technology across American civil society, government, and academia. Note the distinction (both topically and temporally) between the internet-specific initiatives of the 1990s and 2000s and the application of technology across more sociopolitical domains in the 2010s and 2020s. This timeline is not meant to be comprehensive, but rather demonstrative of growing momentum towards advocacy technology.

of these early nonprofits was paralleled by new academic institutions focusing on studies of the internet at leading universities, as well as major reorganizations of federal agencies such as the Department of Homeland Security (DHS) and Federal Communications Commission (FCC). Notably, however, these organizations, institutes, and agencies were uniquely focused on rights, liberties, and security in the context of the nascent internet.

Over the past two decades, a much broader scope of advocacy and governance organizations has shifted from relying on external experts [21, 47] to integrating tech expertise and skill sets onto their own teams. This change has been reflected across multiple sectors. Within civil society, we've seen the establishment of nonprofits which specialize in technology and policy in non-internet domains such as finance, criminal law, and housing, while well-established advocacy organizations such as the ACLU and the AFL-CIO have formalized teams focusing on the analysis and use of technological tools.[4] At the same time, more US government offices including the Office of Science and Technology Policy (OSTP), Consumer Finance Protection Bureau (CFPB), and the Federal Trade Commission (FTC) have begun to spin up executive positions and dedicated offices reflecting the rising influence of technology and AI [5] while universities like the University of Chicago, Carnegie

[4]See "New America Announces New Leadership and Program on Technology", New America, March 14, 2014; "First look: Civil rights group starts center to monitor AI for hate speech", Axios, September 7, 2023
[5]See "Weekly Address: President Obama Discusses Efforts to Reform Spending, Government Waste; Names Chief Performance Officer and Chief Technology Officer", Obama White House, April 18, 2009; "FTC Launches New Office of Technology to Bolster Agency's Work", Federal Trade Commission, February 17, 2023; "Chief AI Officers and Responsible AI Officials Across Federal Agencies", FedScoop, February 22, 2024

Mellon, and Georgetown have begun new professional training programs at the intersection of technology and policy.[6]

2.3 Origins

This new era of advocacy technology can be traced back to multiple origins, including: the embrace of governance-by-design by government and policy actors, ongoing critiques of the tech sector and the "techlash" since 2016, and growing investment in public interest technology.

2.3.1 Governance-by-Design. We see academia, government, and civil society embracing technology as a means to preserve rights (Figure 1); this new trend directly stems from the turn to "governance-by-design," which revolutionized how technological considerations are brought into political conversations. This turn has been based in two acknowledgments: that design choices can encode specific values while precluding others [110], and that rights, liberties, and sociopolitical opportunities can be regulated not only via the law but also by technical design [80]. In 1980, science and technology studies scholar Langdon Winner [131] canonically narrativized Robert Moses' low-clearance bridges in Long Island, which were impassable by public buses, as an intentional design choice to keep low-income, Black, and brown residents away from public beaches. Broader awareness of the political implications of technical design choices were accelerated by controversies such as the proposed Clipper Chip in 1993 and Communications Assistance for Law Enforcement Act in 1994, which would each provide the federal government with a 'backdoor' to wiretap telecommunications data [93]. Three decades later, related discussions are playing out in ongoing debates around design choices inherent to privacy [133], smart cities [127], law enforcement technologies [24], algorithmic decision systems [48] and more. The appearance of in-house technologists across government and civil society is the latest response to a growing awareness of the importance of technological and design expertise in policy, governance, and advocacy work [93].

2.3.2 The Techlash. As the information age has progressed, optimism and excitement about the innovative promise of new communication technologies has, in many contexts, given way to doubt, betrayal, and skepticism. What scholars and pundits call the *techlash* emerged after the 2016 US presidential election, when "derision of technology industry actors exploded" [116:1]. A pivotal moment was the Cambridge Analytica scandal, in which a thistledown revealed that the British consulting firm had been collecting personal information over Facebook without consent, accumulating data from over 50 million individuals and their Facebook friends, and using that data to serve targeted ads supporting the 2016 presidential campaigns of Ted Cruz and Donald Trump [137]. In the years since, public awareness of tech's harms has only grown: from platform data collection and surveillance [141], to racial and demographic bias in algorithmic technologies [16, 26, 97], to tech's involvement in military projects [46, 108]. In 2023, former FTC chairman Tom Wheeler argued that modern tech companies and digital platforms have ushered in a new Gilded Age, complete with extreme income inequality, market monopolization, and the destruction of small businesses [125]. Advocacy technology has arisen as a response to this techlash, alongside vigilante "hacktivism" [56] and efforts to bring labor organizing and collective political action to the tech sector [19, 96].

2.3.3 Public Interest Technology. The space of work constituting 'technology for good' is deeply heterogeneous. In their 2018 "#More Than Code" study, Costanza-Chock et al. [37] interviewed

[6]See "Five Years of MSCAPP: Possibilities and Problem Solving", University of Chicago Harris School of Public Policy, March 31, 2020; "McCourt, Georgetown Graduate Analytics Launch Master in Data Science for Public Policy Program", Georgetown University McCourt School of Public Policy, September 5, 2017

over 100 individuals working in the domain of 'technology for social justice.' They discovered no consensus regarding which terms such practitioners adopted for themselves, though some popular labels included "digital literacy," "movement technology," "civic technology," "open internet," "tech policy" among others. Many of these terms refer to initiatives, projects, and histories that are relevant to advocacy technology. Civic technology, for instance, has primarily concerned itself with the integration of technology into government operations and governance processes [12, 20, 99, 105]. It has been characterized in civil society by groups such as Code for America [107], and in government by the establishment of agencies and programs such as 18F, the US Digital Service, and the US Digital Corps [34, 87, 109].

Of most direct relevance and greatest influence in the context of civil society and advocacy organizations, however, are the recent efforts towards public interest technology (PIT). Though it grows from the long history narrated in prior sections, PIT as a specific term was first institutionalized in 2015 with support from philanthropic organizations, including the Ford and MacArthur Foundations.[7] Its phrasing intentionally denotes its provenance in public interest law; a subfield that arose among American legal practitioners in the 1960s [5–7]. As a field concerned with the application of technology in service of the public interest, PIT is an intentionally broad umbrella that has come to encompass not only some civic technologists and social data scientists but also, to some degree, work in human-computer interaction, open data, and responsible and ethical technology.

At the national scale, policy think tank New America founded the Public Interest Technology University Network (PIT-UN) in 2019,[8] which has since become a major leader in the space. PIT-UN provides infrastructure for universities that are implementing new PIT-related curricula, extracurricular opportunities, and professional development; and has grown to 58 member universities in 2023.[9] As more and more college students graduate in search of ways to work in data or tech 'for good,' there is evidence of rapidly growing interest in PIT: the publication of a special issue of IEEE Technology and Society Magazine devoted to PIT [1], the founding of a professional association for PIT in 2021,[10] workshops about PIT within mainstream computing conferences [114], and even a $100 million commitment orchestrated by the Biden Administration in 2024 [126].

2.4 From PIT to Advocacy Technology

Almost all empirical work studying 'public interest technology,' however, has been based in reports solicited by neoliberal nonprofits and foundations with a narrow managerial scope. Most such studies are primarily concerned with fortifying a "public interest technology talent pipeline" [50, 51] and have focused specifically on the university context [40, 45, 84]. Questions remain regarding which publics PIT includes, whose interests it addresses, and what sorts of technology it encompasses [123, 124, 129]. More specifically, little work has been devoted to the growing role of PIT within processes and institutions of policy and sociopolitical change, despite its importance for modern movements towards justice.

3 Related Work

3.1 Ethics and Politics of Technology, in Practice

This project is fundamentally concerned with how a new professional tech role operates *in practice*. Since their inception, the research communities of CSCW and HCI have been principally concerned

[7] See "Five Foundations Award $18 Million to Strengthen Public Interest Tech", Candid Philanthropy News Digest, February 17, 2016

[8] See "Top Universities Join to Push 'Public Interest Technology'", Natasha Singer, *New York Times*, March 11, 2019.

[9] See "What is PIT-UN?", Public Interest Tech University Network, May 2023

[10] See "Technologists for the Public Good".

with understanding the specific characteristics, practice, and materiality of technology as it is used on the ground. As summarized by Ciolfi et al. in their retrospective of the field in 2013, "systems that are not designed in a practice-centered way usually fail" [33:11]. Foundational CSCW concepts such as awareness and coordination [33, 75], situated action [117], or boundary objects [115] are fundamentally concerned with the practical, rather than theoretical, dynamics of work – providing important lenses for analyzing real-world tech professionals.

Of course, the technical aspects of advocacy technologists' work are but part of the equation. This work builds upon the last decade of scholarly interest in ethics, values, responsibility, fairness, etc. in technology, as well as studies at the intersections of technology and policy. Scholars like Birhane [18] and Robinson et al. [103] have pushed the field to embrace critical questions of ethics and responsibility in technology as infrastructural, relational, contextual and subjective as opposed to individualistic, rational, binarized, and objective. Shilton and collaborators have provided crucial tools, operationalizing the complex sociotechnical notions of values [111] and ethics [22] into actionable and accessible frameworks. At the same time, many HCI scholars have concluded that greater attention to the interaction of technology and policy is overdue [2, 64, 78] – and that meaningful work must avoid ambiguating or marginalizing policy elements [53]. Large cross-institutional collaborations have offered incisive analyses of the synergies and tensions between HCI work and policy work - from epistemological orientations to methodologies to work timelines to publication norms [139].

So what does it mean, on the ground, to do work that is both affirmatively sociotechnical and explicitly political? At the intersection of these two trends, CSCW and its sister disciplines have produced importance scholarship characterizing what it looks like in practice to work on ethics, values, and politics in technology. In many cases, the answer is far from straightforward. In interview studies with technology practitioners, Chivukula, Gray, and colleagues have outlined the complexity of ethics in design - including the interactions and mediations between individual practices, organizational practices, and external applications of ethics; and the complicated ways such interactions shape practitioners' identities [30, 59]. Andrus et al. [11] describes how AI practitioners' ability to consider societal, ethical, and behavioral harms of their work remain limited by a lack of reflexivity and by homogeneous problem framing. Indeed, it is crucial that individual practitioners know how to - in Lindberg et al. [83]'s words - notice, reflect, and react to or - in Boyd and Shilton [22]'s words - recognize, particularize, and judge ethical matters.

3.2 Technology, Advocacy, and Nonprofits

Using tech in direct support of sociopolitical aims, as these advocacy technologists do, is far from a new phenomenon. Sociotechnical scholars have documented how, since the advent of the internet and social media, technologies have been enthusiastically adopted as an explicitly political form of social computing: offering key tools for movement-building, coordinating political action, fundraising, and more [88, 91]. Digital activism tools [56] have been leveraged in contexts ranging from human rights advocacy in Mexico [9], to anti-harassment campaigns in US cities [44], to movements of low-wage workers on global digital platforms [63]. Careful research has also pumped the brakes, pulling back the cover on incrementalist, ambiguous, or extractive initiatives touting data or AI 'for good' [14, 60, 81], and emphasizing the importance of centering affected communities in tech design [36, 127]. Scholarship like Bennett's 2008 investigation of 'privacy advocacy' describes the diversity of roles that tech advocates might occupy in sociopolitical movements - as activists, researchers, journalists, artists, and more - and the wide range of political strategies they might adopt - manipulating information, symbols, accountability, and leverage [17].

Yet how is technology reshaping work within advocacy-oriented *organizations*? Early research in the mid-2000s documents the diverse technology challenges, needs, and boons experienced by

nonprofits [57, 79, 89]. Yet nonprofit organizations' relationships with technology have always been complicated, and the civil society sector has on the whole been slow to adopt and integrate new technologies due to the increased resources and the higher degree of technical literacy and expertise such tech often requires [20, 58]. Nonprofits often struggle with access, usability, and constraints of available data, sometimes turning to external volunteers in order to convert open data into coherent and persuasive stories [47]. Such obstacles can lead to creative solutions: Voida et al. [122] narrates how nonprofit volunteer coordinators with insufficient technical training construct and use "homebrew databases," made out of some combination of personal office software, paper, and database software, in order to meet the particular diversity and fluidity of nonprofit contexts. Yet Bopp et al. [21] describes how data-driven initiatives can be actively disempowering: eroding organizational autonomy and leading to 'data drift' (in which organizational resources are misdirected to data work) and 'data fragmentation' (in which data systems become increasingly incompatible and uncomplimentary). Power certainly plays an important role: HCI research has explored how organizations may be wary of the cost of embracing data as a legitimizing force within the extractive data economy [100], or might embrace specific data practices within 'counter-institutions' working against the non-profit industrial complex [119].

As described in §2.2, we have entered a new age of broader advocacy technology. In the US context, advocacy organizations within civil society play an outsize role in how policy and legal change unfolds - they often bring lawsuits, write and edit proposed laws, submit comments to regulatory agencies, and lobby representatives for or against new legislation. Some breaking research has demonstrated that data is significantly transforming the work of these mission-driven nonprofits. Namely, Rider [101] explores tech workers' growing involvement with 'civic technology nonprofits' as a means of rehabilitating their own disillusionment, alienation, and disenchantment in their private-sector careers. Additionally, Darian et al. document how advocacy data work within US nonprofits implicates new stakeholders such as gatekeepers and local publics, and how it fulfills novel functions including data-as-activator, data-as-legitimizer, data-as-amplifier, and data-as-incubator [38]. Yet while Darian et al. examine and characterize advocacy data work, this study examines advocacy data work*ers* who make such work happen – the ways in which **technology professionals are transforming key advocacy processes** as they shape policy and governance. This paper also goes beyond Rider's disillusioned private-sector tech workers, characterizing a professional shift that is **not only rehabilitative but newly generative**. Especially in the context of growing political uncertainty and oppression domestically and abroad, it has never been more important to bring the lens of CSCW, and its goal of closing the gap between technology's promise and its reality [3], to these advocacy professionals.

4 Methods

This study seeks to consult expert tech professionals in order to illuminate the key parts that they play in mission-driven nonprofit organizations. As such, the method described in this section employs semi-structured interviews with advocacy technologists, analyzed iteratively for themes, to provide a more rigorous and nuanced understanding of their roles in context and their impact.

4.1 Data Collection

To select for advocacy technologists, I sought individuals who (1) had experience working for an advocacy group, in almost all cases a mission-driven civil society organization, and (2) who had technological skills or expertise that they used in service of that advocacy. Individuals who worked within advocacy organizations in roles that did not meaningfully involve technology, and individuals who worked as technologists in settings that did not meaningfully constitute sociopolitical advocacy, were excluded. Participants whose professional experience was limited to

the government, academic, or corporate sectors were excluded. Due to IRB constraints, participants were also limited to individuals based within the US. In order to "sample for range" [112] across a diversity of advocacy contexts, I aimed to recruit individuals doing both policy- and services-based work [38, 52], and while I spoke with some individuals in tech- or digital-oriented spaces I prioritized those working in domains which have historically not been data- or tech-oriented. Understanding the unique importance of minoritized perspectives for interpreting social and sociotechnical processes [61], I made an active effort to review potential participants' biographies whenever possible, in order to ensure representation of women, non-binary individuals, and individuals of color in the sample.

Participants were recruited both directly and via snowball sampling. Snowball sampling started by contacting participants who share various affiliations with the author, including three participants who were preexisting acquaintances or colleagues. Direct recruitment involved contacting technical individuals listed as staff at high-profile nonprofit organizations (e.g., ACLU, EFF, American Red Cross) and distributing a screener survey via a LinkedIn post and relevant mailing lists. Ultimately, 54 participants were invited for interviews, and 23 were conducted. The participant pool includes a diverse range of individuals, having worked on problems ranging from internet access to wrongful imprisonment to abortion access to anti-gay death penalty policies, in contexts ranging from the US to Lebanon to Argentina. See Table 1 for a summary of participant characteristics.

Table 1. Participant characteristics

Category	Description	N
Gender [9]	Man	13
	Woman	8
	Non-binary	2
Current sector [10]	Civil society	19
	Corporate	2
	Academia	1
	Government	1
Advocacy role	Intern	1
	Consultant / Contractor	2
	Staff	11
	Director	9
Domain	Climate	1
	Basic needs	2
	Children & youth	2
	Criminal law	1
	Reproductive rights	2
	Tech & digital rights	6
	Electoral politics	3
	Civil & human rights	3
	Social safety net	3
Scope	State	5
	National	11
	International	4
Career path (§4.1.1)	Homegrown critical technologists	8
	Sociotechnical converts	6
	Sociotechnical natives	9
Total		**23**

In total, I conducted 23 video interviews over two phases. The first phase consisted of a brief pilot and interviews with 15 individuals in March 2024. These lasted 45-60 minutes and consisted of descriptive questions about participants' work and experiences in their roles, as well as reflective questions about their opinions, feelings, and personal relationship to their work. Phase I participants were compensated for their time and expertise with a $100 honorarium, funded by *[redacted research institute]*. Phase II took place after conducting preliminary analysis (as detailed in § 4.2) and determining that further interviews were necessary to better understand preliminary themes and

[9] As participants were not directly asked to report their demographic identities, the gender listed is inferred from pronouns. Race is not listed so as to not presume participants' identities from appearance alone.

[10] While some participants were not currently working for a civil society organization at the time of the study, all had work experience in civil society contexts.

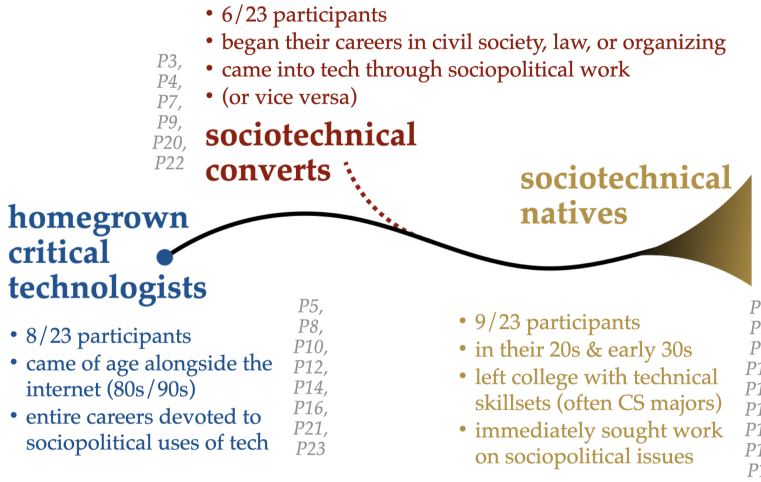

Fig. 2. Three professional pathways of advocacy technologists.

edge cases. I interviewed eight additional participants in September and October 2024, conducting 75-90 minute interviews using a slightly extended protocol and offering a $150 honorarium. All interviews were recorded and transcribed via Zoom.

4.1.1 Career Pathways. Participants came to their work via a great diversity of career paths. Over half went to graduate school of some kind, but spread across law, doctoral, and master's programs; their undergraduate majors, for those who attended college, ranged from CS to statistics to neuroscience to area studies to art history. Approximately half had prior experience working in the private sector; others had formerly worked as teachers, academic researchers, or government employees. Despite this heterogeneity, preliminary coding of participants' professional and technical training and milestones revealed three dominant tracks into their current roles in advocacy technology, aligned loosely with generational differences and degrees of professional experience. The three tracks included *homegrown critical technologists*, *sociotechnical converts*, and *sociotechnical natives*; see Figure 2 for further details.

4.2 Data Analysis

Interviews were then coded and analyzed for themes using MaxQDA. Specifically, my approach combined elements of the *flexible coding* technique described by Deterding and Waters [43] and *reflexive thematic analysis* as described by Braun and Clarke [23] and Byrne [29]. Flexible coding as a methodological process accommodates the specific affordances of qualitative analysis software via the use of initial broad "index codes;" it has been demonstrated by multiple recent HCI studies employing semi-structured interview data [70, 86, 135]. Meanwhile, reflexive thematic analysis consists of six phases which are conducted recursively and nonlinearly: familiarization with the data, initial code generation, theme identification from codes, theme review with respect to the codes and data, theme refinement, and report writing. In both methods, memos are used throughout the process in order to track and work through analytic questions.

During and after the first phase of interviews, I identified index codes in all 15 transcripts as a means of data organization and familiarization, before returning to the data more closely to generate analytic codes, and to identify and evaluate preliminary themes. This preliminary

analysis was synthesized as an early draft of this work, which was workshopped by two distinct disciplinary communities: information scientists and sociolegal scholars. With the second phase of eight interviews, I again first applied index codes before applying analytic codes, including new analytic codes that emerged as a result of new participants and ongoing evaluation of preliminary themes. Finally, I re-reviewed the entire dataset to apply new codes to Phase I data, and again identified, reviewed, and refined themes – which are described below in Section 5, the four patterns of praxis. The work underwent further workshopping with experts in algorithmic fairness and in critical HCD before taking its final form as presented here. For more detail on this methodological process, including specific codes and themes, see Appendix A.

4.3 Researcher Positionality

I am a interdisciplinary researcher with training in both computational skills and social science methods, and with professional experience in both science-oriented and advocacy-oriented workplaces. My own proximity to advocacy technology thus afforded me insights regarding where to look in order to find advocacy technologists, as well as entry points into relevant virtual community spaces in order to recruit interviewees.

5 Results: Patterns of Praxis

I describe four patterns of praxis, or common trends and experiences, demonstrated by study participants across the dataset regardless of domain or seniority. These include two patterns that concern technologists' disposition, *interrogating* and *introspecting*, and two which concern their professional positioning, *translating* and *trailblazing*. These patterns are not mutually exclusive; most participants exhibited more than one of the four and many exhibited all four. Identifying these patterns provides a starting point for more critical interrogations of such practitioners' relationships with and influence on their work, their organizations, and policy. This section considers each of the four patterns in turn.

5.0.1 Work Activities. A thorough discussion of the specific work activities and goals within participants' professional remit is out of scope for this paper, and is the subject of a forthcoming study. However, to provide context, a high-level overview of the study participants' work activities is provided in Figure 3.

5.1 Translating

Participants emphasized the importance of being able to communicate about their work with individuals - their peers and bosses - who have varying degrees of technological literacy. Indeed, over half described their work as explicitly translational in nature, serving as a *"bridge"* (P2) between technological and political expertise. They framed their translational work as, at times, a necessary element of completing their own projects, and at other times, an asset to the organizational competency. Participants also emphasized the importance of knowing their place and not coming in *"guns blazing"* (P11) with misplaced confidence as to their expertise in a given political domain.

5.1.1 "Back and forth" from goal to implementation. As interdisciplinary specialists, participants described their interactions with their coworkers as *"trying to ask questions around what people know and what blocks they have, and then... translating it into the technical solution"* (P15). Working together with their colleagues to achieve an outcome, they described their workflows as *"a back and forth process"* (P18) in which they are *"serving as a translator in between what [someone] is asking for and what we can actually build"* (P6). Sometimes this requires narrowing the scope of work, slimming down over-broad requests for tools, from *"I need it to do everything"* to nailing down *"the specific thing that you can't do right now"* (P17). Other times, the exchanges communicate

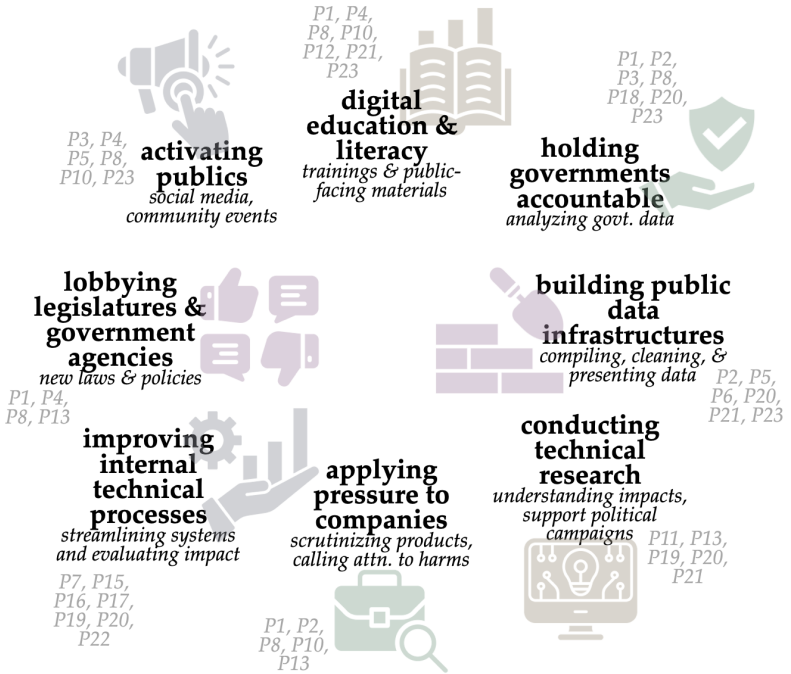

Fig. 3. Common work activities undertaken by participants.

which requests cannot be fulfilled due to privacy concerns or to technical constraints such as computational limits, poor data quality, or a lack of data. This often required *"explaining why one thing is really easy and another thing is really hard, even though they look really similar"* (P15) - or, as another participant put it, why *"making a proof of concept takes, like, a day... and then making a thing that a billion people on the planet are using - that looks like the same thing! - is like building a jetliner"* (P5). One senior open data advocate shared that they often had to *"reiterate the fact that just because the data exists doesn't mean that it's easy to use"* (P23).

Inherent in this translational work is the importance of understanding their coworkers' specific purviews and degrees of technical comprehension, then paring down their own operational problems, bugs, or computational challenges, into lower-resolution reports of key problems and outcomes: *"[my supervisor] doesn't need to know exactly what I'm doing, necessarily, on a day to day basis, or exactly how the tool works from the backend in detail"* (P20). This can be to their own benefit, *"for getting approval"* (P19) on projects, but also takes place out of respect for their coworkers and their time, wishing to communicate with them *"in a way that is manageable or reasonable for the context that they are working in"* (P19) and *"in such a way that it will drive the change they want to be making"* (P17).

5.1.2 Shining light into black boxes. Participants felt that their work is a sort of first line of defense against complexity-washing and determinism that originates within the tech industry. In the words of one senior civil rights advocate:

> *" The tech industry perpetuates the narrative that this stuff is really complicated... they wrap a tech package around it and people start to question themselves, 'Maybe I really don't understand this. Maybe I shouldn't say anything.' ...And so I really try to combat*

> *that..., 'You do understand it! This is 99 percent an issue you absolutely understand! And we will explain to you the minuscule tech part of it.' "* (P8)

By being able to pull back the proverbial curtain on *"complicated technical jargon"* (P6), advocacy technologists help to correct the *"inequity of language"* (P1) that is prevalent around technical expertise. Sometimes this translational work involves a great deal of creativity; P23 described *"teaching people what a row is in a data set by looking at a park bench"* as part of a curriculum for data literacy. Importantly, as one early career analyst expressed, it isn't that their non-technologist coworkers and collaborators don't have the ability or intelligence to understand technical concepts, but rather that *"that [technical] understanding is hard for policy advocates to do, because there's very limited bandwidth when you're already doing all this policy advocacy work that often is very timely... I actually have the time to dig into these things, and the background to understand and then explain to the team."* (P13)

5.2 Interrogating

Across all interviews, participants shared thoughtful questions and criticisms around institutions, technologies, and politics. While it might seem reasonable for individuals using technology for mission-driven work to be staunch believers in technology-oriented solutions, in almost all cases the truth was much more nuanced.

5.2.1 Resisting hype and magical thinking. Many participants expressed their frustration with ways that technology is a subject of hype. Many described often *"myth-busting"* (P23) and contending with *"magical"* (P21, P22, P23) thinking around what tech is and what it can offer with *"happy-clappy"* (P22) collaborators. Such overenthusiasm can have real consequences, luring advocates to sign up for more than they bargained for. One senior advocate (P23) emphasized the importance of analyzing how a new technological service or practice might incur *"technical debt"*, or ongoing labor and funding required to maintain and access seemingly lightweight technological services. Another discussed the downsides of using social media to host and share organizational resources, lamenting: *"We've all been duped by these platforms. Right? They're not out to help us, you know, foment revolution – they're not out to really help us defend human rights... [they're] gathering all this data from people"* (P10).

Against the backdrop of the meteoric rise of generative AI, however, such hype concerns have escalated. One data engineer shared that during *"the latest AI boom, people are like, 'can you just throw AI at it?' And I just constantly am being like, 'that's not really how this works'"* (P15). Similarly, one nonprofit executive bemoaned the empty calories of *"AI fervor"*:

> *"there's almost this challenge or this need to be innovative or interesting... But you know, a lot of times that's not really needed... we just need to do something really simple... For example, I think there's just so much AI fervor right now... everyone's like, 'how do we use AI?'... 'Can't we do this thing where we predict this thing?' And you're like, 'No, we can't do that. We have no data to do that with. And even if we did do that, it'd be stupid, like, it would be useless. *laughs* Why would we want to do that?"'* (P20)

A few participants did report working specifically on novel implementations of algorithms, machine learning, or generative AI within their organizations: investigating potential tools to increase efficiency and reduce resources in the funding-limited nonprofit sector. These participants, too, explicitly called out *"the hype"* (P19) and reported expending considerable time and effort pushing back on proposed projects. One mid-career data scientist described looking out for *"this amorphous research project type of thing, where they're like, 'let's create a dashboard that will help policymakers'"* (P22) but where the policy landscape, decision processes, and intended users are poorly understood and ill-defined.

More than just an annoyance, AI hype was interpreted to be a credible threat by some advocates. One senior advocate expressed concern that tech's ideological power has grown too large: *"with AI right now, there's this feeling of inevitability that you cannot counter while being small, underfunded, or with a lack of resources... you're just going to get steamrolled"* (P10). Another research director observed the ways that enchantment and similar narratives curtail advocates' ability to analyze and critique technologies: *"the reality is, when people think your stuff is magic, they cannot engage"* (P22).

5.2.2 Rejecting techno-solutionism, centering people and problems. While no participants were anti-tech, many of them made exceptionally clear that they did not subscribe to techno-solutionism. On the contrary, many bemoaned that, while mission-driven work often adopts a problem-first or people-first approach, technological culture often assumes a tool-first approach. One mid-career technologist declared that the tech-first approach is *"wrong"* and that those who adopt it are *"probably setting themselves up to fail"* (P2). As one participant opined:

> *"Technology-based ideas should be in the mix, but they should be held lightly... If we go hard with solutions that are, 85 percent of the time, a new mobile app that's Uber-for-whatever, or AI-for-that? Then that's a recipe for flushing some money down the toilet"* (P14).

Many participants expressed something to the effect of: *"the tech can only get us so far; this is fundamentally a people problem"* (P15), and multiple described projects in which technical solutions were deemed insufficient, and organizational strategy shifted to changing law or policy instead.

The specifically human nature of sociopolitical and advocacy work influenced participants' interrogations of the role of technology in problems and projects. In the words of one senior advocate, *"sometimes I would observe that the tech people weren't thinking enough about the human beings, and as a community organizer, that's all I care about"* (P4). One technologist who works in electoral politics observed: *"a lot of human organizing really comes down to just the relationships of the members and leaders and people. And there's just– there's not a lot that tech can really contribute to that"* (P7).

5.3 Introspecting

Advocacy technologists, perhaps definitionally, do not stumble into their line of work. Participants across the study articulated the importance of working in a job that felt personally meaningful, impactful, and aligned with their values.

5.3.1 Dedication to meaningful work. Participants' lines of work were often the result of carefully considered and strongly held political beliefs, awareness, and theories of change. One senior civil rights advocate stated:

> *"companies fundamentally are about profit, not about protecting people and social justice. And I have committed my career to helping people and trying to support social movements... it's not that people don't do some good work inside some of those companies, but that's not what they're around for, right? They're around to make money"* (P8).

Multiple participants specifically cited the 2016 US presidential election, the Cambridge Analytica scandal (see §2.3.2), and the 2022 US Supreme Court decision striking down the national right to abortion in *Dobbs v. Jackson* as motivating moments in their careers, which made them *"itch[] for something that we could do that felt like it would contribute to the political cause"* (P1).

Participants expressed a high standard for moral alignment with the mission of their workplace - *"what would the type of person that I want to be do?"* (P19) - a standard that they sometimes went to great lengths to attain. A mid-career technologist narrated their introspective progression into

self-described cynicism, from first believing that problems existed simply because *"the government doesn't know enough,"* to slowly becoming *"progressively more concerned about the role I was playing"* (P9). For P9, they weighed such ethical concerns as their career evolved and they switched jobs, ultimately landing at a reproductive and civil rights organization. One mid-career participant described, during a period of unemployment no less, undergoing an exercise which involved narrowing down 55 positive career values to ultimately select *"five that you're not going to compromise on"* (P17) and using that to identify their current job working in basic needs. One senior researcher explained how the prospect of working in Big Tech felt both uninteresting and demoralizing:

> *" You can go be a social scientist at Facebook, but the stuff that you're doing is essentially, like, how do we continue to get more people in Southeast Asia to use Facebook? ...there's a sneaking suspicion about exactly why you're there, whether what you are doing is even important to the organization, or if it's just like a tiny little tax write-off... I know folks who work at Facebook or whatever, and they're like 'my job is to go in and fight for child safety, and to lose. That's my job every day.' They're paid out the wazoo! And the particulars of their life might make it make sense for what they need to prioritize. But I have a very hard time thinking, 'this would be rewarding'"* (P21)

While acknowledging that a job is not the end-all-be-all, participants in some cases seemed to be unable to stop themselves from seeking employment which does *"more good than harm"* (P20) and aligns with their values: *"I'm maybe still naïve and optimistic.. maybe the thing that I spend a lot of hours a week doing can be somewhat aligned with what I want my high level vision to be"* (P19).

5.3.2 Evaluating their own impact. Many participants described ongoing introspection concerning their own career choices and organizational stances. Some of this reflexivity was specific to the theories of change adopted by their organization; one participant whose employer works in close collaboration with the criminal legal system expressed some uncertainty about playing an *"inside game... working within these structures that you don't necessarily agree with"* (P18). Similarly, another working in basic needs policy expressed that *"we should be just focused on housing people who need it, as opposed to focused on algorithmic tenant screening"* (P20). Despite working within the nonprofit sector, ambivalence about the efficacy and impact of such work was commonly expressed. As one digital rights advocate stated, very clearly: *"I listen closely to revolutionary thinkers who critique so-called civil society and the nonprofit industrial complex as a means of defanging revolutionary movements and controlling revolutionary movements through bureaucratic structures. I listen very closely to that."* (P12)

More generally, a large number of participants demonstrated an introspective practice: checking in with themselves about the existential implications and impacts of their work and its alignment (or not) with personal morals. Participants asked themselves: *"What are we doing? ... Are we just part of this system?"* (P17) *"What sacrifices do we make by working at a big nonprofit?"* (P13) *"Is this really ever going to help anyone?"* (P20) *"What am I doing as a technologist? I need to go back to school."* (P11) *"Are we actually getting anything done here?... Are we actually meaningfully making a difference?"* (P18). *"What is my work actually adding up to and doing in the world?"* (P21) This chorus of concerns grows out of their strong moral desire to live – and work – intentionally and meaningfully.

5.4 Trailblazing

Finally, these advocacy technologists are part of *"an industry that is just forming"* (P1). Almost all of them either work for organizations that did not exist two decades ago, or work within established organizations in roles that did not exist two decades ago. While the unprecedented nature of their roles can be thrilling at times, it comes with its own host of challenges.

5.4.1 Lack of recruitment pipeline. While a handful of participants expressed that they had been able to find a way into advocacy technology via initiatives like Coding it Forward or Code for America, and some described various positions that had been *"made for"* them (P21), many participants expressed frustration with the difficulty of finding advocacy technologist opportunities. They noted that *"all the data jobs were mostly in banks, insurance, that type of thing"* (P17) and that *"there wasn't a clear path in front of me for what to do if you like math and don't want to do evil... there's not really a great pipeline from the STEM fields to social good organizations at all"* (P18). Even one mid-career participant who completed a graduate program explicitly focused on public policy and data science reflected that it *"didn't really prepare [them] for much"* (P20) as far as the day-to-day realities of working as a technologist outside of the private sector.

Participants understood the factors that contribute to the lack of formal structures for recruiting and retaining advocacy technologists. Almost all named the challenges of finding and maintaining funding in the nonprofit sector; and one mid-career data engineer (P7) articulated other systemic challenges, including how *"it's hard to hire for tech talent when people aren't technical themselves"*, and that *"it takes someone being willing to work in politics"* to overcome the *"talent suck to the private sector"*. Yet this understanding didn't stop them from lamenting the reality that *"we don't know what's next for us, because there are not paths that are pre-charted. You know, people have not done this before"* (P1).

The momentum behind initiatives like PIT-UN seems to have had a limited influence among participants, who across the board expressed ambivalence about the notion of PIT. One observed that *"some people are trying to make public interest tech happen in the like, 'fetch' kind of way"* (P4)[13] - acknowledging the attempts at field-building. While a select few immediately introduced themselves as a "public interest technologist;" others flat-out rejected the description or felt apathetic towards it. However, even those who did embrace the moniker of PIT observed that *"it's a term that people just don't know what it means"* (P1).

5.4.2 "A team of one:" isolated and misunderstood. While the majority of participants described working on teams with a few other technologists, some described the distinct experience of being on teams of *"one or two people"* (P5) within an entire organization. One senior civil rights advocate critiqued this trend, warning that *"you can't just, like, pop [technologists] in. It really works when it's part of a broader plan, they have a team structure, they have real direction in terms of how that work fits into other work... otherwise they can just feel like an appendage"* (P8). Working alone within an organization caused some participants to struggle with *"the isolation of being the only person"* (P9) and led to distinct forms of professional pressure:

> *"when you're an organization doing activism, and you just have one engineer on your team... a big part of your team is just doing stuff like, 'go go, go, go, we gotta respond really fast!' ... I would say, 99 percent of engineers do not do well in that environment... Developers hate dropping everything. But there are moments where you just have to drop everything and context-switch uncomfortably to something totally different in order to build a cool thing. Most nonprofits do not set themselves up in order to do that."* (P5)

Interestingly, this advocate clarified that their understanding of such struggles only developed after they taught themselves how to code mid-career: *"there was an aspect of empathy I just didn't have for what people were going through [before]"* (P5). At this interpersonal level, one senior researcher expressed related dismay at how being an organization's only employee with tech-oriented training

[13] A reference to the 2004 film *Mean Girls*, in which one character tries and fails to coin a new slang term, 'fetch': "Stop trying to make 'fetch' happen! It's not going to happen!"

could lead to stereotyping: *"people will pigeonhole you... 'two helpings of head, zero helpings of heart,' something like that, or they think that you have all the hard skills, none of the soft skills"* (P21).

One-person teams also led to limited opportunities for professional development; one participant worried they were not building up their technical learning compared to *"if I was at a more established company that has intense data science practices"* (P19). Multiple described the necessity of being a *"self-starter"* (P21) and looking outside their organizations in order to find mentorship and collaborative opportunities that they were *"just not gonna find in the workplace"* (P21).

6 Discussion

The above results present four patterns of praxis: characterizing the ways that advocacy technologists *translate* details of technical implementation and jargon and into contexts that advocacy professionals more easily understand; critically *interrogate* dominant narratives around tech hype and solutionism; *introspect* upon the meaning and impact of their work; and *trailblaze* into non-traditional career paths despite a lack of established pipeline and limited organizational support. Taken together, these four patterns of praxis indicate that **advocacy technologists are choosing to occupy a precarious new niche within advocacy work ecosystems that has great potential to impact policy and design outcomes**. This section elaborates on each of the four elements of this central claim in turn, as well as each element's relation to different patterns of praxis, as shown in Table 2. (As the patterns of praxis are also commonly-used terms, for reader clarity I underline key usages in each section.) This discussion explores the significance of the choice to avoid the tech industry, the benefits and challenges of this new boundary-crossing role within advocacy organizations, the impact of technical tools and expertise on policy, the influence of civil society expertise on design, and the precarious professional positioning of advocacy technologists. Finally, I consider explicit implications for CSCW and HCI research in §7.

6.1 A (Different) Choice

Interrogating, Introspecting, Trailblazing

6.1.1 Rejecting the Tech Status Quo. Participants' interrogation of the perils of Big Tech and introspection upon the importance of moral alignment with their professional work ultimately led them to trailblaze unfamiliar career paths. The confluence of these three patterns reveals the significance of their introspective professional choices: they are voting with their feet, deciding to take their high earning potential away from the tech sector despite very real consequences. *Sociotechnical natives* (see §4.1.1), in particular, could easily take their computer science training and

Table 2. Relationship between each element of this paper's central claim and the four patterns of praxis.

Advocacy technologists are...	Translating	Interrogating	Introspecting	Trailblazing
...choosing to occupy...		•	•	•
...a precarious...				•
...new niche within advocacy work ecosystems...	•			•
...that has great potential to impact policy & design outcomes.	•	•		

programming skills along the path of least resistance[14] to work in tech companies or start-ups and earn mid-six-figure salaries. Yet as they introspect upon meeting their own standards to *"do good work in the world"* (P14) and *"make an impact"* (P13) in their jobs, they judge that tech companies aren't clearing that bar. Demonstrating the profundity of the techlash [116, 125], participants across the board articulated nuanced but critical opinions of tech companies like Facebook and Twitter, describing them as *"very fraught and problematic"* (P19), *"toxic"* (P4), or, in one particularly frank case, *"shit"* (P3). In response, they *choose* to take a pay cut, and forego the benefits of an established profession, in exchange for a morally aligned career. Even more remarkably, this refutation is taking place without the structure of formal institutions or professions. Only three of the 23 participants entered advocacy technology work through formal initiatives like Code for America or Coding It Forward; the vast majority brute-forced their way in.

By deciding to take their tech skills to work in civil society, trailblazing away from the more-traveled path, these advocacy technologists are saying no to genocidal technologies in Gaza and Myanmar [10, 46, 108], to electioneering via social media [77, 137], to over-policing Black and brown communities [128], to politicization and polarization [32, 41, 66], to addictive technologies [8], to ghost laborers [102], and to tech billionaires [71, 125]. Regardless of each technologist's individual political beliefs or theories of change, and without necessarily passing judgment on their peers working at companies, these technologists' simple existence in civil society roles works against the notion that the atrocities and societal reorientations ushered in by Big Tech magnates are 'business as usual.' Indeed, like Rider's disillusioned tech workers, these technologists are "upholding, reproducing, and reinvigorating certain moral orders, understandings of desirable workplaces, and visions of the future" [101:5018].

Advocacy technologists in civil society are far from the first to express material discontentment with Big Tech's transgressions. Groups like the Tech Workers Coalition and Collective Action in Tech support tech workers, broadly defined, as they demand not only better working conditions but also higher ethical standards from their employers [19, 96, 120]. UX professionals inside tech companies employ "tactics of soft resistance" to encode values such as harm prevention, user well-being, and accessibility into technical designs [132, 134]. Critical scholars use the privileges and resources of the Ivory Tower to better understand and critique the historical and ongoing role of technology in systemic oppression [16, 25, 48, 63]. In this way, advocacy technologists are but one part of a broader ecosystem that is choosing to hold the tech sector to account [15]. This transformation is evidence of the material effects of critical work exposing Big Tech's ethical quandaries and injustices over the past two decades - work which must continue.

6.1.2 Implications for Tech Ethics Research. This refutation of Big Tech poses new questions for studies of tech ethics praxis. In their model of ethical mediation within tech design, for instance, Gray and Chivukula [59] observe how organizational practices can constrain individual practices and can influence 'applied ethics' in the outside world. But under what circumstances might a company's ethical practices - alongside their constraints and influence - cause a *fracture* between a practitioner and that company? This study motivates the importance of expanding the frame of analysis to include those who have left the tech sector - or never joined in the first place. For instance, one senior advocate explicitly described how their interrogation of tech companies' values and introspection upon their own revealed a fundamental incompatibility: *"I know that I could be making a lot more money if I went to ad tech or big tech... But I grew up in a family of educators, warriors, and farmers who taught me the value of community...And so far I have been privileged to be*

[14]Per the Bureau of Labor and Statistics, in 2022, 79 percent of computer science or information science majors worked in computing or finance careers.

able to use my wit and resources to continue focusing on that" (P23). Such trailblazing participants are operating *outside* of the industries, and thus the ethical models, described by Gray and Chivukula. They are, as Darian et al. [38] diagnoses, expanding the so-called S's of the data economy to include social good alongside 'science, surveillance, and selling.' New and more expansive analytic frameworks are necessary to include, represent, and understand such lateral moves by conscientious tech objectors and deserters.

6.2 Precarity

Trailblazing

6.2.1 Limited Training. Participants describe holding unique cross-disciplinary sociotechnical expertise, skills, and perspectives that are not being mass-produced in the workforce. Despite its centrality in domains like CSCW, interdisciplinarity is still not a default pedagogy or professional path offered to most young technologists. Experiential and interdisciplinary pedagogical initiatives for undergraduate or graduate students such as public interest technology clinics [31], while promising, are still few and far between [11]. As such, those curious about careers in advocacy technology have to blaze their own trail into this work, the hard way (recall the career pathways from Figure 2).

6.2.2 Professional Challenges. As trailblazers, participants hold jobs within nonprofit organizations that have, in many cases, never existed before. This lack of precedence results in difficulties that they must navigate around the job search, work processes, mentorship, and professional development. As participants described in §5.4, the highly variable nature of funding in the nonprofit sector makes it hard for organizations to offer competitive salaries; the job opportunities that do exist are hard for interested individuals to find; and within their jobs, one-person teams can become unsupportive environments which lack opportunities for professional growth. Such concerns about deficiencies in the pipeline echo the findings of Ford Foundation-funded reports studying public interest technologists more broadly [49, 50].

6.2.3 Implications for Professional Development. Professional networks and communities across workplaces and domains – within which advocacy technologists can find mentorship, guidance, and professional development opportunities – have the potential to lessen these challenges. Initiatives such as Technologists for the Public Good (TPG), a professional association established in 2021 to build out a network of public interest technologists;[15] and the #BlackTechFutures Research Initiative, which was established in 2020 and seeks to support and convene "a global Black Public Interest Technology Network,"[16] are making exciting progress towards such resources. Nevertheless as evidenced by §5.4, unmet demand remains for meaningful community and professionalization networks for advocacy technologists and public interest technologists across domains [74]. More effective and accessible support structures for these specific kinds of professional workers are still needed.

6.3 A New Niche

Translating, Trailblazing

6.3.1 A Keystone Species. Scholars and experts of technology and policy have long identified the importance of interdisciplinary experts and boundary-crossers, who hold dual expertise in the technical and the political [3, 4, 11, 37, 87]. Yet, since such individuals must blaze their own professional trails,

[15] See "Technologists for the Public Good".
[16] See "#BlackTechFutures Research Initiative".

they are understandably hard to come by, and some who attempt to fill this specialized niche are ill-equipped - consider the trend of false 'IT expertise' that Kirkham [73] identifies within the legal system in the UK. But as effective translators who serve as a bridge between tech specifications and advocacy needs, this study's participants are truly interdisciplinary experts. They act as what Kimble et al. and others call *knowledge brokers*: individuals who manipulate boundary objects and who "translate[] knowledge created in one group into the language of another so that the new group can integrate it into its cognitive portfolio" [72:438]. Participants' translational skill sets also resemble what Spaa et al. term *recipient design*: "bridg[ing] the gap between the different world-views and ways of thinking around issues of policy-making in order to get your message across successfully" [113:9]. Such niche expertise enables them both to address the shortcomings around technological literacy, access, and empowerment that nonprofits have historically faced [21, 47, 58], and to enable, operationalize, and translate the new opportunities for advocacy data that Darian et al. characterize [38].

This new niche is a crucial one for the sociotechnical ecosystem: in many ways these participants' expertise and organizational role resemble living incarnations of the 'future directions' sections of countless sociotechnical research papers past. They offer the "in-house technical capacity" that scholars like Mulligan and Bamberger [93, 94] have been calling for to bolster civil society and rectify the "the uneven technological expertise among stakeholders" [93:775]. They have the adequate expertise to "help individuals and organizations work around imperfect and incomplete data," as Bopp et al. [21:3617] called for. They have quite literally made it their day job to notice/recognize, reflect/particularize, and react to/judge ethical issues in tech, as Lindberg et al. [82] and Boyd and Shilton [22] describe the key elements of ethical praxis. And they are the critical technical practitioners that AI-researcher-turned-social-scientist Philip Agre called for, who have "one foot planted in the craft work of design and the other foot planted in the reflexive work of critique" [4]. In these and other examples, researchers have already recognized the importance of these expert translators and the niche they occupy within the sociotechnical ecosystem.

6.3.2 Implications for Cooperative Work. Within this niche, advocacy technologists have the potential to enable new and unfamiliar forms of cooperative work. In interviews, participants described how their work meant their organizations encountered new and diverse individuals (e.g., software engineers or data scientists), activities (e.g., user research, UX design or product management), strategies (e.g., producing data journalism or engaging with technical standards), and perspectives (e.g., computational logic or design thinking) into advocacy processes. However, as such niches are introduced into advocacy workflows, making them more complex, they may require new forms of articulation work [106]. In particular, the differences in timescales and structure between technical work and political work - resulting in, as P5 described, *"moments where [nonprofit engineers] just have to drop everything and context-switch"* as part of reactive activism - introduces new challenges. Jackson et al. [65] describe such arrangements as *infrastructural rhythms* and Yang et al. [139] as *temporal patterns*; differences in such rhythms within work contexts require intentional alignment in order to achieve successful work arrangements. As such, while participants' translational roles may bolster organizations' advocacy work, the trailblazing nature of such roles also may create new and poorly-understood difficulties for workplace cooperation.

6.4 Impact on Policy & Design

Translating, Interrogating

It is a growing priority for CSCW and other sociotechnical research communities to meaningfully impact policy, in addition to impacting technical design and practice [53, 64, 78, 139]. However, effective policy engagement is not trivial; it requires relationship management, political and policy

expertise, situational awareness, negotiation skills, and more [113]. This skill set for effective policymaking is not one that academics or tech workers are trained in – but it *is* one that professional advocates have. Indeed, especially in the US and UK contexts, more often than not it is civil society organizations that are involved in the actual writing, lobbying, and politicking required to turn ideas into law [113]. The advocacy technologists described here, as skilled translators and critical interrogators working *within and as part of* advocacy organizations, are extremely well-fit to bring tech expertise to bear upon real-world advocacy, policymaking, and design.

6.4.1 Implications for Advocacy Outcomes. Advocacy technologists wield their computational expertise as a tool to support advocacy and policymaking goals. Computational literacy [121] and computational thinking [130] are viewed by some to be, in the words of one participant, a *"new kind of reading and writing"* (P5) that advocates cannot afford to miss out on. A few participants described how their organizations have become increasingly dependent on technologies like databases and management software, both to *"understand their impact"* (P19) and to make their work *"more and more automated"* (P7). Another participant reflected on how automation and technological tools are increasingly critical to help *"policies on the books... actually be implemented"* (P18). In response to these shifts, participants demonstrated their ability to translate advocacy goals into uniquely computational strategies of scale and logic: circulating political messaging over social media and sourcing support from vast social networks (P3, P4, P5, P7, P8, P10, P12, P15, P17, P20); gleaning political insights from tabular datasets, thousands of pages of text, or bloated databases (P1, P2, P15, P17, P18); or designing and distributing new public web-based educational resources (P6, P9, P17, P19, P20). These sorts of projects help to keep civil society in the game as tech becomes more and more dominant and widespread across the policymaking landscape [71].

6.4.2 Implications for Advocacy Expertise. By not only bringing but translating their sociotechnical expertise and critical interrogations for political organizations, participants help ensure that their organizations are part of the conversation around the myriad and complex ways that the information age is transforming policy issues that such mission-driven organizations have long cared about. Indeed, as shown in Table 1, participants work in domains including criminal law (P18), electoral politics (P7, P15, P21), reproductive healthcare (P9, P19), basic needs (P17, P20), and civil and human rights (P1, P4, P8, P10, P22). Each of these domains faces challenges as a result of new technologies such as algorithmic decision making systems [48, 98], surveillance technologies [24, 141**?**], addictive communication technologies [8], and mis- and disinformation over social media networks [66, 76]. Thanks to their translational and interrogative skill sets, in particular their fluency in computational logic and structures, advocacy technologists are uniquely suited to interpret algorithmic black boxes and their resultant harms [27, 118] for advocates (see § 5.1.2). Consider the recent successes of advocacy coalitions working alongside technologists to advocate for scrutiny, regulation, and even bans of private data brokering,[17] police facial recognition,[18] or unencrypted instant messaging.[19] Some participants similarly described *bridging* their legal, technical, and political know-how to get statewide legislation passed, or stop harmful legislation from passing (P8, P12, P13, P20, P23). In-house critical tech experts who see through the hype (§5.2.1) can serve as trusted and credentialed voices for policymakers and advocates, helping them correct the record and seek

[17] See, e.g., "Abortion access advocates push for law protecting patient location data", WBUR, June 14, 2023: and "EPIC, Coalition Urge California to Make Data Broker Deletion Mechanism Painless for Consumers", Electronic Privacy Information Center, June 27, 2024

[18] See, e.g., "Coalition Letter on Government Use of Facial Recognition Identify Verification Services", ACLU, February 16, 2022

[19] See, e.g., the Global Encryption Coalition

stronger governance around AI snake oil, the limitations of technical solutions, and the importance of maintaining democratic control over powerful and dangerous technologies [28, 95].

Yet the inclusion of these interrogating translators in advocacy contexts, who not only understand new technologies but also interpret their sociopolitical implications and threats, also makes legible otherwise liminal spaces of technological protest, refutation, and refusal [140]. By bringing sociopolitical experts into conversation with the tech sector, more watchful eyes are tracking the development, deployment, and consequences of new technologies. For instance, participants described how their work sought - and often succeeded - to influence the design of technological systems such as facial recognition algorithms (P1, P8), encrypted messaging protocols (P11), online government benefits applications (P2, P6, P14), and algorithmic tenant screening processes (P20). By translating between domains, advocacy technologists help bring advocates' much-needed critical voices - and their expertise around civil rights, privacy, discriminatory practice, and more - into participatory processes of technology design and governance [42, 90].

6.4.3 Implications for Tech Design in Civil Society. Advocacy technologists' tech expertise and translational capacity can enable advocacy organizations to themselves become more confident designers of technological tools and interventions, implementing their political work into data and software. Such design work is similar to what Asad and Le Dantec [13] call 'prototyping advocacy', and what Yang et al. [138] call 'designing policy and technology simultaneously.' By translating advocates' goals into technical implementations, and vice versa (see §5.1.1), participants describe work that narrows the social-technical gap [3] by creating useful new advocacy technology tools including dashboards (P5, P7, P17, P18, P20, P21), databases (P7, P15, P17, P20, P23), and bespoke software systems (P4, P6, P9). With tech practitioners and designers onboard, mission-driven organizations become a new site of technical design that is adjacent to both communities and change-seeking strategies [36].

7 Implications for Research: New Sites, Collaborations, and Questions

What does it take to make policy change happen? What roles might researchers meaningfully play in such processes? How might academic communities and institutions incentivize such sorts of research work? The critical, multi-expert, trailblazing practitioners described in this paper are evidence of both the complexity (logistical and epistemological) and fragility of sociotechnical advocacy work and policy change. However, existing research too often engages only superficially with policy concepts [53], and HCI projects that *are* oriented around meaningful policy influence are rarely published in peer-reviewed journals; instead, they are found in less formal publications, or even self-published as blogs [139]. This is in part due to mismatched incentives between research and advocacy work: across academic publishing today, theoretical contributions and novelty are valued above practical contributions and impact [35]. What would it take to **redesign academic infrastructures, metrics, and interactions** to be better-aligned with the reality of producing policy processes and outcomes?

Furthermore, critical sociotechnical research has left many stones still unturned **beyond the formal tech sector**. While some sociotechnical scholars have examined work within civil society (see §3.2), the vast majority of critical tech research in HCI and CSCW today focuses on practitioners and processes within tech companies. Popular and innovative interventions such as datasheets for datasets [55], model cards for model reporting [92], or dataset nutritional labels [62] are generally intended for development contexts within tech companies. However, interventions designed for Big Tech do not necessarily transpose to civil society contexts, which have - as documented by prior research [21, 47, 122] and this study's own trailblazing participants (§5.4) - different organizational priorities, fewer technical staff, greater resource constraints, and categorically different ways

of interacting with data and computing. Nevertheless, many important tech design and policy developments do originate with, for instance, translator-technologists operating outside of the tech sector (see §6.4). What might interventions to promote transparency, reduce harm, and engage wider publics look like in an advocacy technologist's context?

While tech sector-focused work is certainly crucial to understand the modern information era, we nonetheless stand to gain distinct and necessary insights from work like that of Kirkham, which dives headfirst into the legal system [73], or that of Darian et al., which dives into advocacy work [38, 39]. This paper enthusiastically echoes prior calls to engage in meaningful **partnership- and relationship-building between HCI researchers and think tanks, advocacy organizations, professional groups, or research communities focused on policy and law issues**. Indeed, "long-term relationships with think tanks and organizations" have the capacity "to make [HCI's] evidence relevant and visible to policymakers" [113:11] and bring policy into the foreground of research [53]. Nascent professional organizations such as PIT-UN, Technologists for Public Good, or the #BlackTechFutures Research Initiative also stand as rich potential sites for future research, collaboration, and mutual support. Finally, HCI scholars might explore building relationships and collaborations with scholars in sociolegal and empirical legal studies,[20] who hold deep and robust expertise in researching process, praxis, and political outcomes.

The specific phenomenon of advocacy technologists offers many avenues for important future research within human-computer interaction and cooperative work, as well. A forthcoming study will more closely examine advocacy technologists' day-to-day work, applying the CSCW methodology of task analysis to an expanded version of the dataset presented here in order to more specifically characterize their translational and interrogative work activities and goals. Yet **further questions specific to advocacy technologists** remain: How are advocacy technologists and their tools reshaping organizational structures and cultures? While this study focused on progressive advocacy organizations due to scope constraints, how might this phenomenon appear in organizations with diverse political orientations? Finally, drawing inspiration from studies like Lin et al. [81], what comparative insights might be gained by looking beyond the American context, to understand advocacy technology and related work in global contexts?

8 Conclusion

Through the four patterns of praxis described in this study, advocacy technologists demonstrate that they are *translating* between perspectives and contexts, *interrogating* hegemonic paradigms, *introspecting* on their career paths in tech, and *trailblazing* a new professional role. These four patterns paint a picture of individuals who are carving out a new, precarious niche within advocacy ecosystems - one with significant potential to influence both policy and design outcomes. As such, advocacy technologists represent a growing desire and demand for alternative professional futures, painting a hopeful picture of a future tech workforce is perhaps *still* compelled by the motto, "don't be evil."[21] Consider how one digital rights advocate responded when asked for their thoughts on public interest technology:

> *"I know that public interest technology is* not *going to look like mass surveillance. I know it's* not *going to look like tech-enabled genocide. I know it's* not *going to look like limiting the rights of free expression to systemically or traditionally marginalized peoples. It'll probably look like self-determination, and the right to privacy, and the redistribution of imbalanced power structures... it's not worth sitting still and playing semantic puzzles over what it is. But it's worth being a horizon that you can gesture towards"* (P12).

[20] See the Law and Society Association.

[21] Google's former motto, removed from the preface of their code of conduct in 2018.

This vision reflects a core orientation among advocacy technologists: a commitment to challenging dominant technological paradigms and advancing more equitable, human-centered technofutures. As the trend of advocacy technology continues to evolve, it raises important questions for CSCW and HCI research about how sociotechnical roles are emerging outside of historically technical institutions, and how design and policy work intersect in advocacy contexts. Studying the specific roles and experiences of advocacy technologists offers a window into better understanding and supporting the interdisciplinary amalgams of expertise shaping public interest technology today.

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A APPENDIX: METHODS

Table 3. Example codes and themes for this papers' methods.

		Examples
Phase I *15 interviews*	index codes	participants' career paths and training, job-based roles they occupy, professional challenges and successes they've experienced, and reflections on their position and line of work
	analytic codes	technologists questioning techno-solutionism; scare resources restricting work capacity; technologists acting as translators; non-profit employment enabling greater freedom of expression
	themes	ethical and professional orientation and positionality of participants (as altruist/skeptic/misfit) and the benefits and challenges of tech in advocacy work (material, epistemological, and operational)
Phase II *7 interviews*	index codes	*see Phase I*
	analytic codes	technologists resisting narratives of tech hype; technologists navigating a gap in the technical literacy of their peers; technologists having no training or hiring pipeline; technologists seeking meaningful work
	themes	four patterns of praxis: translating, interrogating, introspecting, trailblazing

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