Revolutionary Technology
The Political Economy of Left-Wing Digital Infrastructure

by

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To Julia for letting me hand this in the day before our wedding. To Glebov for essentially co-authoring this paper. To Amit for supervising. To Peter for grading.

Abstract

Lorem Ipsum

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1. Introduction

The future promised by technology monopolies and their acolytes is not coming to pass. The conception that big tech should not be scrutinized or regulated because it would disrupt their operations and "innovative" products has been rejected by society at large. More and more people are viewing tech as a sector to be regulated like alcohol, tobacco, automotive, etc. This phenomenon has been dubbed the "Techlash" and is still ongoing. Concurrently, growing inequality and political unrest has increased the attractiveness of left-wing ideas and organizations such as labor unions. Openly socialist candidates have been elected to positions of municipal and national government. Information technology systems have permeated the vast majority of relationships, organizations, and institutions we live within. These systems, with their logics of capital and individualization, are unavoidable even to those left-wing organizations which seek to dismantle them. Because of this, a closer look at the use of ICTs by left-wing organizations is needed to determine how to effectively navigate, and at the same time, replace them with a more revolutionary alternative. This research focuses on left-wing US and UK based political organizations and labor unions with the objective of understanding

specifically the impact of technology on their daily operations. Furthermore, as citizens of the most technologically developed countries within the imperial core, they face the most intense and pervasive integration with technology systems exhibiting capitalist logic. In order to determine a path forward for organizations seeking to navigate the contradictions imposed by the technology systems they rely upon, this research seeks to answer the following three questions:

1. Does integration of ICTs have significant impacts and if so, are those impacts aligned with the organization's mission?
2. How do the logics of the ICTs align or not align with organizational goals and relationship building within membership?
3. How does the political and economic structures by which ICTs are developed or distributed affect left-wing organizations relationship to ICTs

First, in order to better understand the existing knowledge and previous research on this topic a literature review will be conducted across three primary topics. First will be contemporary research on how parties, unions, and mutual aid organizations utilize ICTs. Second will be a critical history of the internet and related technologies. Finally, in order to understand potential futures surrounding new forms of technology development, this literature review will conclude with an analysis of the last 40 years of Free and Open Source Software (FOSS) development.

In addition to the literature review this research seeks to conduct an empirical analysis of how left-wing parties, unions, and mutual-aid organizations currently utilize technology and shared struggles among them. This empirical study seeks to provide evidence to answer the above research questions.

Finally, this research seeks to synthesize these findings and historical context to provide recommendations for left-wing organizations to develop new, more revolutionary infrastructure needed to develop a unified front of labor within the imperial core.

2. Literature Review

The invention of Information and Communication Technologies (ICTs) has fundamentally changed how we communicate. Many agree that introducing these technologies can have positive and negative effects concerning the execution of existing democracy in our societies. Political organizing goes beyond simply communicating information into actively building new social and infrastructural constructs to further develop such organizations' political mission and power. ICTs often play a coordinating role in communication and praxis, utilizing digital technologies' capabilities to distribute information efficiently across many stakeholders.

The introduction of ICTs could have a transformative effect on political organizations whose core activities involve educating masses of people, coordinating large groups of people, and effectively making collective decisions. However, the demands of which information is needed where, and perhaps more importantly, what information is not needed is not something that can be uttered away with a technological incantation.

Despite the proliferation of digital communication tools allowing for large

groups of like-minded individuals to coordinate, communicate, and share information quickly and easily, the design of these tools has also given priority to communications that generate engagement above all else. While social media platforms do show a tendency that encourages users to engage in formal arguments on complex subjects when compared to traditional 1-1 communication Hu, Talamadupula, and Kambhampati 2021, social media platforms have shown that high engagement posts often rely on moral outrage and in turn, lead to people to often conduct sophistry rather than meaningful discourse Carpenter et al. 2021.

For political organizations, this utilization of moral outrage can seem deceptively useful due to its ability to create collective knowledge and spontaneous reaction to certain situations Spring, Cameron, and Cikara 2018. However, research suggests that aligning this spontaneous outrage with organizational goals and perhaps, more importantly, long-term organization proves to be difficult Brady and Crockett 2019.

Furthermore, as moderation on these platforms increases to discourage the sharing of misinformation and violent organization, so too does the elimination of voice from marginalized communities. Research has shown that the elimination of potentially radical conversations on social media platforms has stymied disinformation often linked to right-wing groups, however, it has also disproportionately removed posts related to transgender or queer issues, social justice, and anti-racism despite following site policies Haimson et al. 2021.

2.1 Contemporary research on Parties, Unions, & Mutual Aid

CONNECTOR

2.1.1 Parties & explicit political organizations

Since the 1970s, the apparatus of the party has deteriorated Siaroff 2009; Abramson and Aldrich 1982; Biezen and Poguntke 2014. Political organizing has largely become decentralized, from forming a centralized across all issues society faces within a single organization into a mishmash of NGOs, decentralized advocacy groups, and on and offline communities. With this, party membership has fallen as the market for charities, clubs, and brands for citizens to mix and match to suit their preferences have grown.

With this decentralization, new parties formed seeking to utilize the decentralized and online nature of much social organizing happening. These parties seek to capitalize on the opportunity to utilize this new social formation to facilitate control of the state. These new parties were often called Cyber, Platform, or Digital Parties.

Oross and Tap explain connective parties, which in many ways are similar to Digital Parties due to their use of digital systems as the foundational organizing element. Their research focuses on how Hungarian political parties use digital tools for various procedures, such as receiving feedback from constituencies on various policies and conducting elections for certain positions Oross and Tap 2021.

Gerbaudo states that digital parties are unlike traditional parties, where instead of emulating the structures of the state, they emulate the structures of the technology platforms they operate within. These parties operate on the modality of "Participationism" rather than any actual democratic operation, those who "contribute" the most drive party doctrine.

In their techno-libertarian ideology, many of these Digital Parties utilize technology platforms to dissolve common aspects of parties, such as the cadre. These platforms often connect party mechanisms to local communities, as well as organizational structures such as various branches, councils, and groups.

Replacing organizational structures with existing consumer communication systems does what you would expect. It optimizes communication for maximum engagement. This leads to what the author describes as "Hyperleaders," whose voice is maximized through alignment with engagement metrics. These digital parties claim a lack of hierarchy, increased democratic control, and less bureaucracy due to the optimizations afforded by the platform they operate upon.

Instead, these platforms promote champions whose voice is favored over all else. The democratic process is only further obfuscated through proprietary technologies. There is always an opportunity to utilize one's voice, but the effect on the political process is almost always unknown. Meanwhile, organizational structures whose purpose was to ensure the operation of the democratic process have now been removed Gerbaudo 2019.

Across many studies, digital parties are presented in contrast to older and more traditional parties. However, Pedersen and Sagile show that ICT positively

impacts top and middle-level "elites" (vanguard members) to help optimize administrative processes, such as communicating between branches and streamlining pre-developed processes and procedures.

Similarly, unlike digital parties, many uses of ICTs with the objective of mass engagement find little success. Information hubs such as party websites find little engagement. Similarly, with electronic debates, turnout is typically low Pedersen and Saglie 2005.

Lioy et al. show that platforms across these online parties are not uniform. The organizational structure within the party can impact the structure of online platforms used to develop party communications and information flow. There is a perceived understanding that the inclusion of digital technologies can potentially bring greater democratic control to members who are traditionally less involved in parties. However, in most cases observed here, this is not the case Lioy, Del Valle, and Gottlieb 2019.

CONNECTOR

Protests and insurgent political campaigns

Zittel states that individual candidates often campaign in a way that does not align with the party organization or program. Particularly in how they use the internet, they do so in an independent form in order to best build their brand and following. This difference in campaign styles is described as "professionalized" vs. "individualized" campaign styles, where professionalized is focused on developing a party line and awareness. In contrast, individualized campaigns are more focused

on developing personal brands for individual candidates.

Professional campaigns are described as "top-down," where technologies such as websites are used to push party-designed information and policies "downward" toward constituents. Individualized campaigns are described as "bottom-up," where campaign information is distributed across multiple platforms being spread by acolytes, often with their own perspectives and views mixed in. This spreading is much more interactive and discussion-focused. However, the decentralized method of campaigning often meant significant disconnects between staffers and volunteers who are critical in information distribution.

The method of interaction between stakeholders in these individualized campaigns is the loose interconnections of various digital communication platforms unified by similar branding and account naming. Zittel finds that “individualized campaigns” are more effective at focusing attention on a singular candidate and can potentially be more effective at achieving success in competitive elections. However, the potential long-term degradation in political development isn’t accounted for, as parties are hollowed out in favor of mercenary candidates who temporarily share colors with others as it suits them Zittel 2009.

Penny develops the role of the "citizen marketer," which serves as a decentralized conduit for promoting political candidates and issues. These issues being promoted are often aligned with and generated by elite institutions yet are either loosely or entirely disconnected from organizational forms facilitating the change they call for. However, in the case of Sanders’ 2016 campaign, these individualized campaigns, empowered by a focus on utilizing digital technology to build a

campaign around a sole individual rather than a party, can prove to be a method for party outsiders to build campaigns that party elites do not support. It is worth noting that while these campaigns, such as Sanders' 2016 campaign or Corbyn's campaign, have been disruptive, neither were successful Penney 2017.

Connecting sentence explaining shift from party elections to protests leadership

Tufekci explains that digital tools lent themselves to "Adhocracy" in many protest movements, which allowed tasks to be taken care of without formal organizational structures (instead being propped up by digital infrastructure). However, this infrastructure was largely used as a crutch for leaders to not immediately need to consider formal organization. This focus on organizing around digital technology rather than developing and integrating digital solutions according to the organization's needs led to a fragility within these movements.

Tufekci claims that this focus on technology makes these organizations "leaderless" and "non-hierarchical." Nevertheless, she fails to consider that this form of cyber-organization creates a new hierarchy in itself, one where, at the top sits the technology, its goals, and purposes designed into the experience of all those utilizing it. In this new hierarchy, users driving engagement are implicitly empowered as the leaders of others Tufekci 2017.

In this new form of organization, movements do not need to worry about their leaders being removed or assassinated. Instead, they must worry about maintaining control and direction of their movement as infiltrators easily embed themselves and seek to disrupt control .

The availability of these digital tools allowing masses to reorganize themselves

quickly, provides an illusory facade of democratic organization. These platforms and tools allow participants to experience the dream of utilizing their voice in their community. At the same time, the technology quietly modifies the volume of all participating, silencing most while cranking up the volume on those most likely to generate engagement.

2.1.2 Labor Unions

Unions face a similar issue to political parties with declining membership as political action is increasingly directed towards "movements" generally facilitated by loose groupings of NGOs, community groups, and decentralized online communities. Fiorito et al. show how unions primarily use digital communications platforms to distribute information in a top-down manner, utilizing websites and other information distribution networks to coordinate actions and provide educational material to union members.

At least during the period of the early 2000s in which this research was conducted, only large unions had the ability to invest in IT integration. There is a perception of increased effectiveness with IT system integration. However, it is unclear if this is due to the highly propagandized vision of the internet at the time or showcasing real benefits exhibited by these organizations due to IT integration. Most importantly, Fiorito et al. describe the core challenges of unions in the 21st century succinctly - "a major challenge for unions is to envision nonstandard uses of IT-uses that connect organized labor with current and potential members, and uses that create and enhance a positive image of unions in the minds of the public."

Fiorito et al. 2000

Chaison goes further than Fiorito in their analysis, examining the dilemma of union membership declining as a process that is at least partly enabled by the adoption of IT systems. The introduction of company "intranets" and digital systems to enable more forms of mediation and engage in what Chaison describes as "voice substitution." These mechanisms, such as quality circles, production teams, and joint-strategy committees, serve as management-controlled mechanisms allowing workers to independently express voice rather than through a third-party collective organization such as a labor union.

While some of these mechanisms may seem dated, it is worth considering whether newer alternatives such as Yammer, Slack, and moderated Zoom Q&A sessions may serve as a more modern alternative with a similar objective. Unions simply adopting these same technologies may serve as what Chaison describes as a "Faustian bargain" where unions lose their soul as organizations serving as a social movement in favor of becoming another choice in the marketplace for workplace mediation services Chaison 2002.

Ward and Lusoli take aim at the British Trade Union sector, which faced similar issues of declining membership in the early 2000s. Like many of the studies of Digital Parties, the authors presume that IT integration naturally brings a transformative power that uniformly increases the efficiency of organizational operations along with the democratic involvement of its membership. This assumption places unions as competing forces in a variety of services to be provided to workers and inherently places the worker-union relationship as one that is transactional.

Ward and Lusoli find that British Trade Unions face a double-edged sword through the integration of common ICTs into their processes. On the one hand, they may provide greater effectiveness in communication and organizational flexibility to react to the changing nature of the firm. On the other, they further increase the worker's relationship with the union as one that is transactional and further individualizes the role of the worker Ward and Lusoli 2003.

Still, with the adoption of digital communications platforms, most of which would not be under the control of unions, new challenges occur when considering the security and privacy of operational communications. As the labor movement is revived in the US, firms are becoming increasingly aggressive in their surveillance operations in order to prevent workers from organizing Max Parrott 2023.

2.1.3 Mutual Aid & Survival Programs

The IT needs of mutual aid and survival groups differ from other, more traditional political organizations in that they focus primarily on providing services to constituencies rather than mass communication. Nemer's research on how communities in Brazilian favelas utilize IT to perform daily survival and mutual aid tasks shows a much more practical application of technology and how many of these communities face shortcomings concerning IT design. Nemer focuses his ethnography on analyzing communities built around telecenters, small outposts of computer technology, and internet access in communities that frequently have little access to either. Attendees come to use computers and the internet to complete school projects, build resumes utilizing cracked copies of Microsoft Word, and

download and share music with each other.

Still, these community centers struggle with tasks like reporting data, given the contexts they operate within. Data collection systems assume all residents have government-mandated addresses, something that does not exist in Brazilian favelas. Assumptions made by software designers in wealthy districts of Rio de Janeiro implicitly eliminate the most vulnerable populations being counted by these centers and therefore increase pressure to de-prioritize them Nemer 2022.

Mutual aid organizing saw a surge in need as the COVID-19 pandemic began to affect communities around the world. In particular, those already suffering from precarity saw increased suffering with dramatic increases in food insecurity Bitler, Hoynes, and Schanzenbach 2020. Many relief initiatives spun up, such as the Mutual Aid Medford & Somerville group (MAMAS), as described by Wilson et al. With the new public health mandates to prevent the spread of the disease, many organizing activities moved online to minimize person-to-person contact.

The initiative's digital infrastructure began as a Google Sheet used to facilitate the tracking of needs and capabilities. Rather than developing a digital medium to replace spoken face-to-face communication, this spreadsheet served as a tool to direct volunteer services effectively to those in need. Further integration of project management technologies such as Trello was used to help manage information as the organization scaled. Furthermore, as the organization grew, so did the need for managing personal information, community building & onboarding programs, and more complex task management.

The study performed by Wilson et al. showed a potential for "online" orga-

nizing to hinder the ability to build a community and therefore justify long-term involvement due to the transactional nature of online interactions Wilson, Roskill, and Mahr 2022.

2.2 Critical History of the Internet

Prior to the advent of mass digital communication, organizing against the interests of state and business required centralized and coordinated publishing of information across networks of human relations (newspapers, pamphlets, word of mouth). This created highly organized and hierarchical tight-knit communities that could effectively conduct operations to achieve their political goals. However, the centralized and hierarchical structure created vulnerabilities for those participating. The state in particular could utilize legal and political channels to target and punish those advocating for goals against the interest of the state. For instance, in the 1930s, as members of the Teamsters union began successfully advocating under a Trotskyist banner, many leaders of the Minneapolis Teamsters local were prosecuted under the Alien Registration Act which prohibited printing, writing, or circulating material advocating for doctrines that could threaten the government of the US B. Schultz and R. Schultz 2001. This doctrine of utilizing legal and political channels to punish others has been recently termed “Lawfare”.

Well-run organizations could effectively conduct complex pre-planned operations. However, due to a lack of accessible mass-communication technologies, adversarial organizations could easily dismantle operations through the use of Law-

fare. For instance, as early as 1874, the city of New York utilized the strategic and timely revoking of a rally permit to unleash riot police and calvary on a gathering of socialists, anti-monopolists, and trade unionists in Thompkins Square. This legal loophole allowed the use of near-lethal force that ultimately destroyed the coalition behind New York's unemployment movement at the time Robert Justin Goldstein 2001. Lawfare still continues against communities deemed against the interests of the American state. In 2016, police and National Guard utilized an excuse of illegal roadblocks to assault a camp of native protestors using armed infantry and armored personnel carriers designed to be used in war zones to beat, teargas, and disperse protesters from their native land "Riot police move in on North Dakota pipeline protesters" 2016.

Now, with the advent of mass digital communication technology, political organizations have reorganized under more decentralized means. These organizations often rely on looser non-hierarchical networks in order to limit liability and vulnerability to individual members becoming compromised.

Furthermore, decentralized organizations are inherently less connected, with many members only being known through their online personas. While this lack of strong interpersonal relationships can assist in getting thousands to turn up a protest, it also means that there is inherently less behavioral moderation through social norms and collective experience.

While digital communication platforms could theoretically design information flows and features to help counteract these issues, their private ownership by massive corporations means that left-wing organizations in particular are faced

with a decision to adopt tooling that inherently undermines their ability to function or lose out on being able to mobilize as effectively as more reactionary political organizations.

> *Since the start of the personal computer and Internet revolution in the 1990s , we've been told again and again that we are in the grips of a liberating technology , a tool that decentralizes power , topples entrenched bureaucracies , and brings more democracy and equality to the world . Personal computers and information networks were supposed to be the new frontier of freedom — a techno - utopia where authoritarian and repressive structures lost their power , and where the creation of a better world was still possible . And all that we , global netizens , had to do for this new and better world to flower and bloom was to get out of the way and let Internet companies innovate and the market work its magic . This narrative has been planted deep into our culture's collective subconscious and holds a powerful sway over the way we view the Internet today. - Surveillance Valley*

This quote from Yasha Levine's book Surveillance Valley exhibits many of the same assumptions baked into the studies performed by the many researchers cited in the above section. Surveillance Valley details a very different history of the foundational infrastructure our ICTs rely upon today. Instead of the familiar story of the internet being a passion project invented by hippie computer scientists and engineers at ARPA, Levine describes an organization formed at the height of

the cold war as the US prepares its invasion of Vietnam. ARPA begins developing programs to facilitate a new form of counterinsurgency warfare. In this new form of warfare, information would be the greatest weapon. As Levine says:

> *"high - tech counterinsurgency was about more than just developing modern killing methods . It was also about surveilling , studying , and understanding the people and cultures where the insurrection was taking place . It was all part of [William Godel's] vision for the future of warfare: to use American advanced science to defeat the superior discipline , motivation, and support of local insurgents. The idea was to understand what made them resist and fight, and what it would take to change their minds. The ultimate aim was to find a way to predict local insurgencies and stop them before they had time to mature." Levine 2018*

During this same period, Simulmatics Corporation began their work weaponizing social science and computing machinery to begin the great human calculation. Initially conceived to fix a disbalance between Democrat and Republican use of advertising companies for political campaigns, Simulmatics eventually made the bulk of its money through Department of Defense contracts during the Vietnam war, provoking both internal and wider social backlash. This work centered around interviewing farmers and residents of "strategic hamlets". Lepore describes Simulmatics' scientists as the "What-If Men" who believed that by simulating human behavior, their technology could ultimately predict human behavior and therefore

allow its creators to direct the whims of society.

> *"Simulmatics' scientists were known as the What-If Men. They believed that by simulating human behavior, their People Machine could help the human race avert each and every disaster. It could defeat communism. It could counter insurgencies. It could win elections. It could sell mouthwash. It could accelerate news, like so much amphetamine. It could calm agitated wives. It could win the war in Vietnam by targeting hearts and minds. It could predict race riots, and even plagues. It could end chaos. The scientists of Simulmatics believed they had invented "the A-bomb of the social sciences." They did not predict that it would take decades to detonate, like a long-buried grenade"* Lepore 2020

In order to drive these predictive systems, the human individual and their relationships must be codified into data. Relationships that are formed through shared experiences, ideology, and conception of reality must be crammed into a mold of aligned transactions. Individuals are a complex summation of not just near-infinite material experiences but also dialectical relations to various aspects of society and their environment. All of this is then simplified into a neat set of demographic data points to power the models and machines that drive most digital communication today. These data points are often proxies for other unnamed attributes and can serve as a form of obfuscation regarding what they are truly meant to represent Chun and Barnett 2021.

These initial developments of computational social science were rooted in using data to model society and predict how various interventions and changes may impact it. Like many technological innovations, they were often forged in the bloody wars waged on the Global South. The methods and technologies used within these wars were soon exported into new industries and sectors. In response to the increasing unrest surrounding civil rights in the US, these same methods and technologies were used to develop a Riot Prediction Machine. This new machine could then predict and suppress uprisings in Harlem, Rochester, and LA as riots swept the country in the 60s.

As more and more institutions implemented these systems of surveilling and predicting social actions, from political campaigns to digital advertising, so too did our methods of communicating to feed these new systems the data from which they draw their power. These systems could then be integrated into various aspects of society and institutions, further diminishing individuals into a series of data points that form a key allowing them access to institutions, relationships, and welfare Deleuze 1992; Henriques-Gomes 2019.

> *"By 1965, a century after the end of the Civil War, a century of lynchings and bombings and beatings, a century of sit-ins and marches and mourning and preaching, civil rights had been won, voting rights had been guaranteed. But the closer African Americans had come to being able to vote, the more furiously political consultants had labored to divide and segment the electorate by ideology and by race. Simulmatics had designed the People Machine in 1959 to predict the*

> *"Negro vote." After 1965, when African Americans finally, fully, entered the electorate, the parties, newly sorted, began to move to the poles of the political spectrum. A computer network whose first messages were sent in 1969 would widen and deepen those divisions; a half century later, those divisions would become almost impossible to bridge. Voter by voter, issue by issue, the American divide had been simulated, and then it had been automated. Simulmatics."* - *Lepore 2020*

2.3 The Open Source "Revolution" and What Could Have Been

Both Lepore and Levine show a history of the development of ICT systems that are rooted in the logic of the military-industrial complex and therefore encode those logics in many ways. These logics embodied the doctrine of information warfare where the modeling of social sciences can be utilized to predict the outcomes of various interventions and therefore create an asymmetrical warfare environment where those countering insurgency can preempt any unauthorized or unwanted activity.

As these same technologies transitioned from military application into civil and commercial uses, those logics of military use maintained themselves and were augmented by the new logics of these new sectors. With online advertising, ICTs showcased the prioritization of engagement. These newly developed systems created uneven social networks of high-engagement influencers and deprioritized

followers. The logic of social control developed in the military origin of ICTs maintained itself but became more complex to incorporate their new application in online advertising and social media. Designers of ICTs would work to solve meaningful social problems such as connecting friends and family over long distances, but even when using meaningful design methods to create solutions to those problems, they struggle to overcome the contradiction of the inherent business strategy of the firm they work for Rey 2012.

Kentaro Toyama describes this inherent barrier to creating meaningful social change through the development of technology as "The Law of Amplification." This theory posits that new technologies will ultimately embody the logic of the institution from which they were created and the societies in which they are deployed. His book Geek Heresy uses case studies from developing technology systems within the humanitarian aid sector to showcase the failure of leveraging technology systems to create systemic change in Aid work. Toyama showcases through these case studies how the deployment of ICTs had uneven effects, where more well-resourced communities experienced more significant benefits when leveraging this technology, even when it was explicitly designed for low-resource communities Toyama 2015

Toyama's well-meaning technology showcased the logic of the aid sector to provision a meager drip of resources to communities so they can barely survive while maintaining a total dependence on the Global North nations which fund such programs. Regardless of the well-meaning intentions and hard work of the technologists involved in developing such solutions, those solutions could not

escape the relentless mandate to create a superficial and ultimately meaningless impact on vulnerable communities and quickly remove itself aside from the logo-ridden artifacts of their presence. These problems of technology systems exhibiting design choices that ultimately contradict the actual needs of the users and instead service the antagonistic logics of their institutions are referred to as "Dark Patterns" Gray et al. 2018.

Due to the mass proliferation of ICTs across many sectors, there is a natural heterogeneity in the logics embodied by ICTs. While nearly all ICTs somehow embody the original logics described by Levine and Lepore, many new institutions with a radically different ideology to those original creators, such as ARPA and Simulmatics, gained the capability to develop technological infrastructure as computing power became increasingly accessible.

With the advent of personal computing and the introduction of the internet, so too did the explosion of software development. Large, highly cohesive firms would seek to monopolize all aspects of personal computing. From developing the underlying software infrastructure of the internet (such as web servers, browsers, and email systems) to the applications and operating systems we utilize to control these new machines, firms such as Microsoft would develop massive ecosystems of proprietary software to corner the expanding software market. At the same time, small communities of individual technologists would begin to develop their own software systems, providing greater flexibility and control over their machines and information systems. This software would become known as Free and Open Source Software (FOSS) and eventually form the foundation of our software infrastructure

today Nolan 2022.

These proprietary software development methodologies would differ massively from their FOSS counterparts. Proprietary software development would feature highly coordinated teams situated within an extremely hierarchical organization. Conversely, FOSS communities would take the shape of a network of loosely connected software teams that would accept new contributions on an ad hoc basis. Raymond would compare these two development methodologies as The Cathedral representing the top-down and highly coordinated proprietary development method and The Bazaar as the decentralized network of small communities Raymond 1999.

The development of significant amounts of software infrastructure at neither the direction of the firm nor the state would be seen as a novel one. Furthermore, these communities formed a shared methodology for producing and distributing software and, perhaps more importantly, a shared ideology. This shared ideology re-articulates the liberal individualist ideology in the face of neoliberalism, cementing itself in the Western consciousness. This critique is steeped primarily in the challenging of intellectual property law. Instead of encapsulating every piece of digital information into packages to be bought and sold, FOSS creators would develop a vast commons of information in the form of code. Coleman 2013

This ideology and anti-neoliberal sentiment did not last forever. As the logistical benefits of cost-sharing became obvious as FOSS solutions began to out-compete their proprietary counterparts, factions began to emerge within the FOSS community, which would shirk the ideological vision of developing a massive shared commons in favor of a more pragmatic value proposition to firms. They need not

compete with each other at all levels of the software stack but rather only on their specific product offerings. Furthermore, they can begin to usurp the labor of the volunteer communities they recently wished to destroy. With this realization, the floodgates of capital and labor opened into the FOSS ecosystem. FOSS acolytes faced an immense incentive to work with, and often for, their former enemy. With this massive investment, the unique logics of FOSS and its overwhelming reconfigurability and deep connection to the labor from which it was developed became subsumed by the logics of the firm as a larger portion of FOSS contributors were explicitly directed by the firm that employed them. Nolan 2022

The case study of the evolution of FOSS ideology and its global community shows the vulnerability of its liberal ideals and disconnection from more formal political organization. It also shows the possibility of producing digital technology, which can, in some ways at least, tear out the logics formed in the bloody imperialism that birthed ICTs and replace them with new ones aligned with a different political ideology.

2.4 Literature Review Commentary

As political organizing increasingly relies upon ICTs to mediate the organization of their social base, they implicitly mutate their base's social fabric to develop into one dictated by transactions and surface-level divisions. Increasingly a base that might have been united on comradery, ideology, and a shared vision for their society's future will become a transient and loosely connected mesh that will dissolve and

reform in order to facilitate mass transactions by party members.

This lack of social cohesion combined with a transactional culture has led to the development of highly opportunistic individuals (hyper leaders) who will operate within the party but primarily develop their own goals, brand, and following. Organizations, now hollowed out and reconstructed into the form of service providers can be easily outmaneuvered by opposing institutions out-competing them while further degrading any ideological unity that might survive.

This Faustian Bargain mentioned by Chaison, where a political organization will "lose its soul" when adopting ICTs, is due to the transition of the relationship between the individual and the organization from one of social cohesion to one of transactional opportunism. This soul is the most important unifying force within these political organizations. Without it, ideology is often relegated to simple branding, further deteriorating mass membership's ability to confidently engage with and develop a relationship with these organizations.

Furthermore, through the adoption of these technologies and methods, the organization itself loses autonomy. Once all relationships and actions of the membership are transactional, organizational planning transitions from ideological development to predictive interventions. The logic of whatever data exists within the organization must be followed, or else it will simply tear itself apart and hinder the transactions it exists to facilitate.

This method of organizing goes against the principles of most left-wing ideologies. Historically the left has been about pushing society's boundaries. Left-wing organizations have historically questioned existing societal orders, be it social

divisions and norms or economic exploitation.[f]

As more of society becomes intertwined with ICTs, so too does it become limited in how it can agitate for societal change. Organizations with progressive principles, such as labor unions, left-wing political parties, and mutual-aid communities, must either subsume the logics of these technologies as they adopt them or refuse them and become alienated from the masses of society that already embody them. While the initial rudimentary application of computational social science by Simulmatics in the Vietnam War resulted in a massive failure, the continual tuning, improvement, and proliferation of such systems resulted in a tangled net of ICTs that seems almost inescapable. Left-wing organizations must overcome the control ICTs exhibit over the societies they exist within. Therefore they must carefully develop and integrate such systems to manage such contradictions to realign social relations so that social agitation, and ultimately revolution, becomes possible.

3. Methods

This research is based on an interview study of the uses of technology within left-wing organizations such as political parties, unions, and community aid groups. Despite the more structured nature of the online interviews conducted in this research, much of the methodology is inspired by that of David Nemer in his book Technology of the Oppressed. As in Nemer's book, the ethics of this research are driven by that of Critical Ethnography. This research seeks to understand the behavior of those interviewed, the context of their organization, and the infrastructures that mediate their actions. Beyond conventional ethnography, this research seeks to utilize the tone and responsibility detailed by Critical Ethnography Madison 2012. Critical ethnography posits that an independent outside observer cannot be objective, even when that observer is embedded within a community. Therefore, they must take an explicit political stance in their research.

With the development and interpretation of technology systems, this research rejects the notion that technology systems are apolitical or somehow "neutral." Therefore, this research explicitly states that technology systems that align with left-wing political values must be developed. This stance serves as the foundation

of this study's methods and core research questions. This stance is informed by the evidence reviewed in the literature review.

The structure of interview questions took a neutral to negative (actively seeking pain points) tone with regard to technology use in order to prevent the assumption that greater technology use leads to improved results. The goal wasn't to necessarily convince interviewees that technology is harmful to their organization but rather get real insights regarding its true impact. These resulted in findings related to Research Question 1.

The interviews conducted were semi-formal in nature to allow for not understanding technology use but also the exploration of the social systems affected by ICTs within the organization. For example, the semi-formal nature of the interview gave participants the leeway needed to tell stories about interpersonal drama caused by facebook and fraught relationships with vendors. This resulted in findings related to Research Question 2.

There has been increased critical voices detailing the negative impact technology systems have been having on our social and economic structures (CITATION NEEDED). Explicitly investigating issues with utilizing and deploying technology systems, as well as areas where technology systems are avoided led to findings related to Research Question 3.

This interview study structured questions within five topics:

- Background of Interviewee
- Common technologies used and towards what organizational objectives
- Pain points raised when working with IT systems

- Operations that explicitly neglect the use of IT systems
- Ideation of new IT systems to assist in achieving organizational objectives

The structure of the interview questions implied a specific nature of data this research seeks to collect. The background of interviewees would determine the context and Motivations of their role and organization. Common technologies and organizational objectives would determine Activities and Tools. Pain points raised when working with IT systems would determine Problems Experienced. Operations that explicitly neglect IT systems would detail Worries & Risks. Finally, ideation of new IT systems would convey Ideas & Opportunities. Interview quotes were tagged according to these following categories:

- Activities
- Motivations
- Tools
- Problems Experienced
- Worries & Risks
- Ideas & Opportunities

The structure of interview questions are meant to lead the interview subject to not only critically self-examine their relationship to technology but also slowly progress towards envisioning a new relationship to a potential technology that holds their political values within its own logic. There is very little empirical analysis of technology within political organizations that does not utilize the assumption that ICTs inherently increase democratic power and reduce bureaucracy. Therefore, this study seeks to restate the question of how technology affects these organizations

through a more critical lens.

3.1 Sampling

Due to the specific nature of the communities analyzed in this research, sampling was non-random. Members of specific organizations were personally identified, and other contacts may have been recommended through these members. Additionally, forums, discords, and other online communities where left-wing organizers gather were used to solicit participants outside the author's network. Due to the adversarial nature of the environment in which potential subjects operate, initial relationship-building was required for some subjects to build trust. Some subjects could not participate due to incarceration, and others due to having passed away.

This research involves a single hour long interview with seven candidates representing seven organizations. These organizations operate in elections/party organizing, union organizing, and mutual aid. Some participants belonged to several organizations and some organizations had multiple participants representing them, which can be shown by the table below.

Participant Identifier	Organization Identifier	Organization Focus
P1	O1 & O2	Party & Union Organizing
P2	O3	Party
P3	O4	Union Organizing
P4	O1 & O5	Party & Union Organizing

P5	O1	Party
P6	O6	Union Organizing
P7	O7	Mutual Aid & Party

This research seeks to prioritize organizational and individual security of those participating. However, to provide context into how each organization operates, a brief description of each organization is below.

Organizational Identifier	Description and Focus
O1	A nation-wide political organization primarily focused on elections and base-l
O2	A union organizing blue-collar workers at a national employer.
O3	A nation-wide political organization seeking to distinguish itself from rival or
O4	A regional chapter of a national union, focused on organizing blue collar work
O5	A white-collar union organizing workers at a single employer.
O6	A minority union (not yet able to engage in collective bargaining) organizing
O7	A local political campaign heavily focused on mutual aid organizing.

3.2 Data Collection & Analysis

Due to the large geographical area in which the subjects of this study reside, all interviews were conducted remotely via telephone or Zoom. Once recordings were saved, much of the analysis utilized the UX research software Dovetail which supports the automatic transcribing, tagging, and interactive analysis of interviews.

Once all interviews were tagged and analyzed, insights were developed concerning each research question, and the results were formulated with this data.

4. Results

The activities and motivations across varying types of organizations often had significant overlap between interviewees. Where political parties may have had more focus on elections, unions on workplace organizing, and mutual-aid groups on community relief, many organizations generally cover the whole spectrum of political activity. The activities mentioned by participants are described below:

Figure 4.1: Organizational activities ordered by times mentioned

In order to facilitate these activities, organizers relied upon a set of ICTs listed

below. These ICTs are described by their functionality rather than a specific product as many use cases are serviced by several competing product lines.

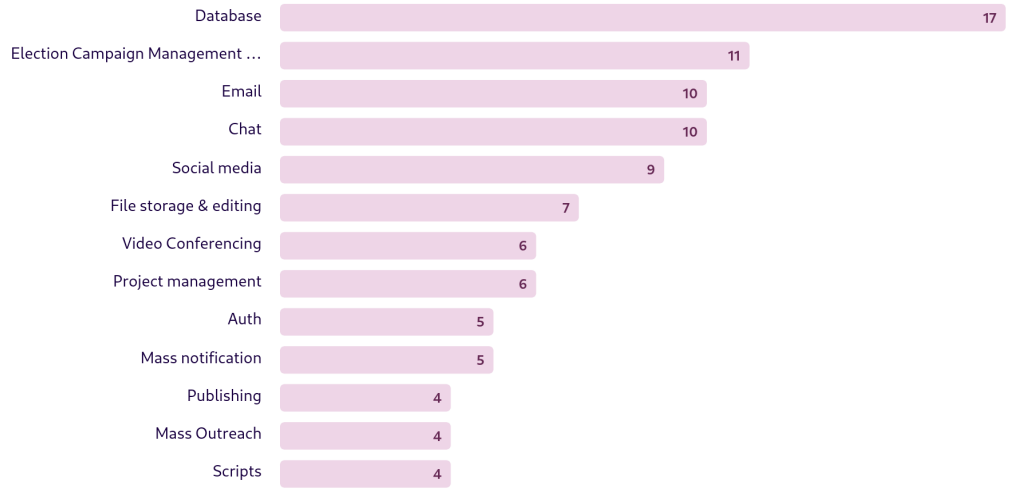

Figure 4.2: Categories of technology ordered by times mentioned

When discussing the role the above technologies played in facilitating organizational activities, the following list of common problems was generated where ICTs hampered organizational capacity.

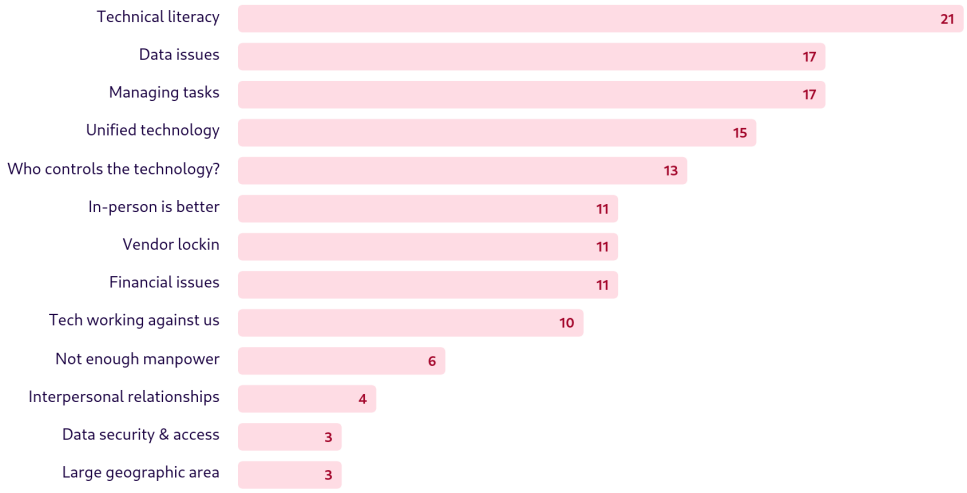

Figure 4.3: Issues faced with technology ordered by times mentioned

The insights have been documented according to each research question.

4.1 RQ1 - Does integration of ICTs have significant impacts and if so, are those impacts aligned with the organization's mission?

How does the use of ICTs impact organizational procedures and capabilities?

When developing answers regarding RQ1, two primary insights were discovered.

1. ICTs provide a boost in organizational cohesion through the use of data
2. ICTs can assist in ad-hoc volunteer project management

4.1.1 ICTs provide a boost in organizational cohesion through the use of data

Data infrastructure is an integral component of every organization covered in this research. Whether it was for labor organizing, electoral campaigns, or mutual aid organizing, the use of data in order to effectively facilitate the management of organizational planning is consistent.

Standardizing process through data

> *[I have been working with] field teams from other endorsed candidates and helping them get some of their DA infrastructure set up, sharing tools, finding data volunteers who could assist on their campaigns. - P5 regarding O1*

> *[We] are going to be essentially working on projects to kind of build the level that we can coordinate across branches [of our organization]. . . . We are taking steps towards creating more of a city-wide electoral working group that can hopefully better share resources and better prep for a broader, more city-wide strategy going into 2024. And then basically also just work to develop tools to better prepare our next election cycle . . . Essentially what happens every time is new people step into leadership positions within our campaigns and we need to get them up to speed as quickly as possible and try to find ways to really leverage the sort of collective learnings we've developed over*

our, the last three, four election cyclists. - P5 regarding O1

Several subjects reported that data infrastructure is utilized to maintain standardized processes across many parts of a larger organization. This way, as the process evolves, it can easily be deployed across infrastructure so that process is reflected in all parts of the organization

Keeping track of adversaries

We have an outsourcing issue with the company [we have unionized]. So even though we are already a unionized environment, the company has been flipping retail stores from corporate owned union stores to so-called authorized retailer non-union stores. So a store will close on a Friday and then reopen with the exact same branding . . . on Monday . . . as an authorized retailer, which as far as we can tell is just a creation of the corporation. So for instance, the chief steward . . . called me this week to say, "Hey, we're seeing a whole bunch of job ads for this one outsource and we're trying to figure out what that means."... So we try and follow their hiring stuff - P3 regarding O4

Basically we're, we're making a [web] scraper for salts (union organizers who work at a company with the intent to unionize). . . . And so if there's a [location] that we're looking to salt I'm making a thing that will text the organizers who [are looking to apply] - P1 regarding O2

Alternatively, when operating in an adversarial environment, such as a labor union, data is often used to keep organizers up to date with regard to the operations of the firms they are operating within. Data, in this case, is a critical asset in ensuring they are not out-maneuvered by the firm and therefore placed in positions in which they lose much of their power.

Tracking Members

> *Yeah, just knowing where the membership is. We're a big unit. We've got about close to 5,000 people in our bargaining unit and so just keeping track of all that in terms like relational structure mapping [is really important to us] - P4 regarding O5*

> *So, the [technologies] that I use most often are our member databases in something called Airtable, which is like, I don't know, a very fancy spreadsheet system or something. I don't know, I try not to touch it cause it's kind of confusing. But anyways, that's how we manage our members and just like a bunch of other random stuff, you know, like who's, who's reached out to someone for a one-on-one or you know, things like that. - P6 regarding O6*

> *So we use Google Forms as a volunteer intake form. ... A lot of people just come through me asking them and then we use Facebook Messenger, which isn't as secure as we or some involved would like it to be. But unfortunately, Facebook is just the thing that the majority of*

> *people are on. And so you will get some folks who are like, "Oh, like I don't wanna be on Facebook, I don't wanna be on Messenger, it's not secure." And it's like, well there's 150 people who are already there and we're not gonna get them all to download Signal. And Signal isn't really as interactive as Facebook Messenger. I feel like Facebook Messenger for a group chat for some reason works better and I'd have to think about it to say why, but, so we use that. - P7 regarding O7*

As organizations grow, tracking and managing members becomes increasingly vital in order to derive insights regarding recruitment strategy. The size of its base drives the viability of any left-wing organization. Therefore the growth and effective use of that membership base is a defining factor of their operational structure. Data infrastructure plays an integral role across all of these organizations in this role.

4.1.2 ICTs can assist in ad-hoc volunteer project management

The volunteer-oriented nature of these organizations requires different structuring of tasks. Traditional management constructs focused on having smaller teams of highly dedicated individuals do not work in the context of mass organizing.

> *It's tough to keep people involved when you don't have something that they're actively working on at the moment. [We are] always constantly finding ways to like, how do we reach out to people? How do we get them focused on... the projects that are currently happening, but also*

> *finding new projects for other people to do to keep them connected to the broad picture that isn't just busy work but is actually potentially building towards something? That's a real challenge. - P5 regarding O1*

The management of tasks must have a hierarchy developed between committed vanguard members and progressively less committed members of the mass community. Similar to the types of project management that happen in open source software communities, low-impact yet accessible tasks must be available as a method of both recruitment and viably utilizing a mass volunteer base.

> *I don't wanna go to fucking meetings, you know, I mean, like, I want you to give me a coding task and I want to complete it. - P1 regarding all things*

At the same time, specialized skill sets must be managed. Whereas in more cohesive organizations such as the firm, tasks may be organized by organizational units that are uniform in size and makeup, members within many of these left-wing organizations may frequently transfer across tasks, and organizational structure may frequently shift.

> *My emails are just, you know, like I have 3000 emails in my inbox. Most I've looked at and just need to be cleared. But it's, yeah, it's, there's probably some emails that I've missed in there too. - P3 regarding O4*

Managing existing work often depends on the capacity of vanguard members. This management can quickly become overwhelming, particularly when other

responsibilities of the vanguard compete with those of managing tasks for the larger mass of members. The manager in the firm is a unit that not only helps with the organization of tasks but acts as an enforcer of hierarchy. In flatter types of organizations, such as software, aspects of management can be delegated to community members through public ticket trackers, voting and comments for prioritization, and so-on.

4.2 RQ2 - How do the logics of the ICTs align or not align with organizational goals and relationship building within membership?

When developing answers regarding RQ2, three primary insights were discovered.

1. Data is needed to compete with adversarial organizations
2. ICTs being used often have “Dark Patterns” which hinder the effective completion of certain tasks
3. ICTs easily flood communication channels and alienate members

4.2.1 Data is needed to compete

Collecting and analyzing data is a core component of organizational strategy within most left-wing organizations investigated in this research. In many cases, subjects expressed concern over adversarial organizations also using data to outmaneuver opponents and drive outcomes that benefit them the most.

Building the ship while we sail it

> *We'll get lists of voters from the Board of Elections, which every candidate does and, and we'll just like, make them into spreadsheets and sometimes we're just tracking . . . manually like making notes. . . that's where the data collection tends to happen because [our campaign software] isn't user friendly . . . If we're lucky we will have kept like a voter ID number the same throughout the process [of voter data collection], like from the BOE to a walk list, to a Google spreadsheet and, and you know, you know, hopefully for the sake of the person, you know, finally getting everything back into [our campaign software] ... but campaign schedules just kind of take over and I'm sure there's lists that just end up on a paper list and someone's going just go to the houses that haven't been hit, - P7 regarding O7*

Insurgent left-wing organizations need data to compete with similar organizations, or they will be "left behind." Data allows for more efficient coordination of what are often limited resources. In this case, our subject had limited volunteer and information resources to coordinate their elections, which are highly competitive. Candidates not traditionally supported by major parties are often left on their own when developing data infrastructure that can provide necessary insights on how to best mobilize their local community to win an election. Developing this infrastructure often happens alongside the traditional campaigning tasks and developing a base of knowledge and skill for core organizers.

Un-interoperatable

> *Yeah, I mean I basically, I also try to avoid using [our campaign software] whenever possible. It's trying to think about the best way to put one again, like getting data out of [our campaign software] is a hassle. And two, just the, the backend is not friendly. . . . Sending information, using APIs, from [our campaign software] into Airtable was something that's important to us but [our campaign software's] API is garbage. So it has been frustrating to deal with. - P5 regarding O1*

Control of data and data infrastructure is not necessarily even within the hands of a larger party organization but frequently is also mediated by a private firm that often monopolizes access to data through obtuse interfaces and complex formatting standards. This difficulty means that organizations seeking to extend beyond the explicit function of the data infrastructure must develop their own complicated infrastructures to Extract, Transform, and Load data into new systems that better suit their needs.

4.2.2 Design Dark Patterns

On the surface, many of these technology systems might seem to be of great use to the objectives of left-wing organizations. For instance, there are already multiple apps for "canvassing," a process where intentionally initiating direct contact with constituents during a political campaign. Participants shared many different appli-

cations for chatting with organizers and coordinating such activities. However, in reality, there are plenty of subtleties in how these applications are designed that hinder campaigns of certain types that entrenched political organizations do not traditionally favor.

> *Well, so, so this year one of the issue campaigns we're running basically involves like they want to knock every door. [Our campaign software] is designed around talking to voters . . . There's really no good way [use our campaign software] for a campaign where we know we're going to be talking to people who aren't on the voter list. . . . I mean, you know, it'll work, it's just how big a deal is it the trade off of not really having an accurate count of like, which doors we've knocked before or not. Like that's, that's something we'll find out as we go. - P5 regarding O1*

For instance, there are plenty of options for canvassing, but canvassing technologies are designed for political campaigns seeking to mobilize active voters toward their cause. This technology extends the logic of neoliberal political campaigns that seek to cater to voters that "turn up" and optimize campaigns to maximize turn-up once every two to six years. This logic is incompatible with more educational campaigns focused on building a political base. Particularly given the historical US suppression of left-wing political organizing, this mode of organizing is central to young parties. Even when they can use this technology for canvassing, they are working against it to include those who have been "ignored" by its logic.

> *So something that I've had to learn as an organizer is that if you want someone to do something, . . . just texting them or just emailing usually doesn't work. Like those organizing conversations when they're mediated by text just don't go well and they don't stick well. . . . I very firmly [do not] believe in just opening the floodgates [of chat software]. A lot gets fucking lost in Slack. A lot. It just goes by so fast. Especially if you had 5,000 people in there and you don't get the substantive conversations. People who are power users just get a lot more from it [in an anti-democratic way]. If we're organizing, we're doing it face-to-face or we're doing phone calls or Zoom calls where we can interact with people because [with] the text medium you lose a lot and we've explicitly decided to make sure we're not using Slack as an organizing tool. - P4 regarding all things*

When considering common communication platforms, many subjects described them as "general purpose," but this is not the case. Designing solutions to problems begins with identifying a population and a problem they face. The design of that application will integrate the assumptions of its target users. Applications such as Slack are built for technology teams and companies with a high level of control and commitment from the workers inclined to use this application. Not only are the users coerced into regular usage and training on this technology, but the methods of communication are also designed specifically for close-knit teams that are mandated with certain tasks.

This method of communication may be helpful for internal coordination among

vanguard members of left-wing organizations but not necessarily for organizing the broader mass of people operating as volunteers. This type of education requires more intimate settings not just to translate relevant tactical information but instead to build the credibility of those organizing. This information is educational and emotional as it is often requiring action and volunteering across masses of people. Those being organized do not just listen to the communication and react but also survey their fellow members to evaluate the organization's credibility. They communicate back their capabilities and current status.

Many organizers prefer in-person communication for tasks central to organizing since the high amount of highly tailored information can be easily lost or misinterpreted when conveyed using digital systems. However, in-person communication is limited by the organizers' capability to meet in person, have the time to have conversations, and have the perseverance to keep going after making the same case repeatedly.

4.2.3 ICTs easily flood communication channels and alienate members

ICTs facilitate the transfer of masses of information. The continual integration of ICTs into a variety of operations can often flood users with overwhelming amounts of information from masses of sources. This flood of information can often make the building of relationships and digging below surface level interpretations difficult.

Discovering opportunities

Due to the nature of mass digital communication, information is often tailored to compete and provide "impactful" takeaways. However, when developing new connections and discovering new opportunities for collaboration, digital platforms and their increased traffic and mediation often hinder these types of communication.

> *[We have used] Zoom or whatever for international conferences and things and they are useful, but you need that kind of personal contact and discussions and you know? It's like at any conference, what goes on behind the scenes in the restaurant or whatever, it's often more useful than what's happening on the conference floor . . . But I mean there's certainly a role offer for using technology for international contacts and things and we do do that, but yeah, it's not the same. - P2 regarding O3*

> *During Covid we were doing union orientations via Zoom. And that was partly because the call center was working from home at the time . . . We decided that it would be better to, even though we have the Zoom technology for us to go back to doing orientations in person. . . . We felt like you for, it's different if you're having a Zoom meeting with people you generally know, . . . But when you're meeting somebody for the first time, zoom is not necessarily the best way to, sort of, connect with [or] get a read on somebody. [Previously in person] we were able to use union orientations to not only do orientation for the new*

> *member in that store, but often to have conversations with the people that have been there a while who were in the store. Or maybe to even just touch base with the manager about an issue or, you know, to update the union bulletin board in the store. There's all kinds of reasons why it made sense to have the union have a physical presence in the store. And so we've made a commitment to doing orientations in person. - P3 regarding O4*

The metrics and methods of observing interactions between members provided by many ICT platforms often simplify what happens between members. Due to this, many participants require regular check-ins by visiting physical spaces or at least having personal conversations in private spaces.

Getting personal

> *Facebook Messenger loves drama. [For instance,] I can't discreetly remove someone from a hundred person group chat or add someone for that matter. Facebook's always like, "Emily removed Jesse" from the group and then you have to be like, oh well, like Jesse was inappropriate [and had to be removed]. It's just like, that is so dramatic and completely unnecessary and I think Facebook just loves drama. - P7 regarding O7*

Many subjects explained how ICTs flood their personal communication channels and can often cause a sense of alienation between members and their political

organizations. Due to this, many create an explicit barrier between processes requiring mass communication to keep members informed and processes requiring discussion, deliberation, and connection between members participating.

4.3 RQ3 - How does the political and economic structures by which ICTs are developed or distributed affect left-wing organizations relationship to ICTs

When developing answers regarding RQ3, three primary insights were discovered.

1. Volatile pricing plans on Software as a Service
2. Technology must be stable
3. Organizing must take into account existing relationships to ICTs

4.3.1 Volatile pricing plans on Software as a Service (SaaS)

The ephemeral nature of much of today's digital infrastructure plays perhaps the most significant role in organizational precarity due to their reliance on ICTs to efficiently conduct many of their organizational processes.

Renting from the Digital Landlords

> *I think [we have] been nervous about our relationship to [our campaign software] for a number of years. There were at some point some concerns that we just might not be given access even if we paid for it. I think those fears have been largely unfounded, but a project was born out of the idea. It's like, what if we, what if we can create software that makes us not dependent on [our campaign software]? And so it started to get built out. . . . But just keeping it maintained, continuing to build it out [was not feasible]. Like . . . let's say a campaign is in the middle of cutting turf and a bug happens. Do we have support to actually get it fixed in a [reasonable amount of time?] - P5 regarding O1*

> *With [our campaign software], one thing that worries me about it is they could pull the rug right from under us whenever they feel like it. They have no obligation to continue supporting it. If we really became enough of a threat to them. . . . That's something that bugs me. - P1 regarding O1*

> *I'm sure you've gotten so much complaining about Slack already, but using the free tier Slack, in theory they could change your pricing model, shut it off, do whatever. That's always a worry. - P4 regarding all things*

With many digital infrastructures, party members' relationship with them does

not provide ownership of that infrastructure. Instead, users are allowed access on a rental basis only so long as the often-changing requirements of the digital landlord are met. As reliance upon this technology increases, organizations become trapped in a digital web created by this software service. More and more, processes and relationships within subjects' organization are mediated by the logics of the technology they use. As this platform lock-in increases, the capability to migrate away to a new technology system will require greater investment.

Sharing accounts to keep costs down

> *I think we're no different than most organizations in trying to find ways to minimize our costs. Like Airtable for instance, you know, they charge per user per month that can access something which can spiral very, very quickly. So we will sometimes use shared logins for certain types of functions to minimize the number of users associated. - P5 regarding O1*

> *Right now we have about 150 people on one team. It would be incredibly expensive for everyone to have their own login [to Airtable]. So right now how it works is we log in, there is the owner's account which has a lot of the higher level scary, you can delete the database stuff. Then, there is a second account that a lot of people have the password - P4 regarding O5*

Similarly to many situations involving landlords artificially limiting access to

resources through their ownership, renters are forced to bunk up in order to have even the most modest access to the resource being rented. In this case, it was common for organizations to attempt to share accounts in order to skirt per-user pricing strategies afforded by many of these software platforms.

4.3.2 Technology must be Stable

Many organizations, particularly those with more specific technology expertise, face a tension between adopting what is often problematic technology systems they cannot control and developing new but fragile systems that lack support due to the ephemeral nature of laborers to the organization developing them.

> *In general, [what I want is], like, less new technology and more mature technology, you know? [Furthermore, what is important is] how it gets politically controlled and what exactly is the relationship between someone who gets appointed as a, you know, a technology expert and the actual political layer - P1 regarding O1*

> *At the national level . . . they're able to provide shared data resources for [smaller] organizations. I think that's interesting. I'm interested to see what role those groups play in, in allowing smaller nonprofits who can barely afford a data person to be able to actually get access to better data resources and experience and guidance. - P5 regarding O1*

Ideally, there is an intense desire by those more technically inclined to have technology systems that their organization governs. Furthermore, these technology

systems should not be early prototypes. Instead, they must have a similar level of support as many enterprise systems do with reliable support, well-tested interfaces and systems, and interoperability with other relevant systems. These ideal systems should also be available across all branches regardless of their access to members with technical capabilities.

4.3.3 Organizing must take into account existing relationships to ICTs

> *I think the reason we use [SMS] is just because, you know, cell phones are nearly ubiquitous amongst working class people. So it's sort of an assumed way of connecting. And it also means that we have an assumption that things we're sending are being read too, which gives some accountability too. - P3 regarding O4*

The process of having stable technology systems often means having the process of getting the masses to adopt them having already been completed. The process of technology adoption, even when new solutions may be more suitable in some ways, ranges from extremely difficult or impossible in the minds of many organizers.

5. Discussion

Left-wing political organizations have a uniquely dualistic relationship with ICTs. Their revolutionary tendency often conflicts with the evidence that modern digital infrastructure tends to maintain the status quo of political, social, and economic structures.

There is an ingrained assumption among interview subjects and significant evidence pointing to ICTs' positive impact on increasing organizational cohesion and the ability to react to changing environmental circumstances. Among nearly every subject interviewed, ICT played a critical role in the operation of their organization, and doing away with it could significantly hamstring organizational capacity. ICTs provided a critical view into the increasingly complex world and allowed organizers to react quickly to meet changes more effectively.

However, this increase in efficiency provided by ICTs comes with an increasing fragility due to the uneasy and precarious relationship left-wing political organizations have with the organizations producing and maintaining the infrastructure they rely on. Many of these technologies tend to hinder effective and equitable discourse among members. What they do instead is prioritize the most engaging

voice and encourage opportunism among members. As ICTs further permeate modern communication, the volume of communication any given individual receives via a digital medium has increased massively. Because of this, the advertised gains of ICTs are often sabotaged as users cannot triage and evaluate individual communications effectively.

Many of those researching digital political organizations covered in the literature review of this paper assume that the introduction of ICTs can create a decentralized web of politics, effectively turbocharging organizations savvy enough to use them. This research finds that this assumption is flawed and that the decentralized nature of online communications and the opportunism afforded to hyperleaders effectively encourage political organizations' further fracturing and individualization. As organizations become more fractured, their ability to effectively develop, maintain, and utilize digital infrastructure becomes increasingly untenable due to the necessary components of stable funding, labor, and centralized technical knowledge.

> *"The best minds of my generation are thinking about how to make people click ads," one of Facebook's first employees howled in 2011. "That sucks."6 And it did suck. But it had sucked before. The best minds of another generation had tried to simulate the human mind to sell shampoo and dog food and to win the hearts and minds of rice farmers in Vietnam. - If Then*

In fact, this mirrors a broader social trend imposed by neoliberalism. The prior model of long-term stable employment was switched out for a more nimble and

"convenient" form of piece work, also known as gig-work. Certain circles celebrated this transition, positing that workers would become life-long learners and be continuously upgrading their skill-set to navigate the marketplace. While this may hold true for individual examples, research shows that for the majority of communities affected by this transition, most were simply left behind.

5.1 Recommendations

The undoing of the political unity of the left, the death of the party, the decline of unions, and the development of a mass united front among labor cannot be resolved overnight. There are few easy solutions to resolving these contradictions faced by those on the left. However, the role existing digital infrastructure has played in developing and maintaining these conditions is well evidenced in this research. Developing new infrastructure to unify and empower routine organizational capacities shared among left-wing organizations is possible and desirable. To do this, left-wing organizations must collaborate, if not along political lines, then under the guise of pragmatic cost sharing, to develop necessary software solutions that reject the existing logics encoded in our existing ICTs and replace them with those necessary for building a left-wing movement.

This research has identified a number of logics commonly encoded into the privately developed digital infrastructure upon which many left-wing organizations rely. The existing logics of ICTs include:

1. Prioritize the creation of "hyper leaders" to maximize engagement within

the platform

   (a) This can be seen in the phenomena of viral content, community influencers, content trends

2. Maximize early product adoption/growth followed by vendor lock-in strategies to trap users within digital ecosystems

   (a) The vendor encourages customers to shift critical resources and processes into their proprietary ecosystem and actively prevents those resources and processes from being easily exported to new systems.

3. Continually bombard users with information, notifications, & incentives to maximize their activity within the digital ecosystem at all costs.

   (a) Social media applications design functionality with the explicit goal to maximize user activity within the digital ecosystem (metrics like DAU/Daily Active User are commonplace in technology companies as a success metric)

The nature of left-wing organizing requires that rather than individualizing members and encouraging opportunism, we must build collective mass organizations that democratically arrive at a plan and act on it together. Our new digital infrastructure must encode logics which promote this collective ideology. Some of these new logics may include:

1. Prioritize communication based on best practices of left-wing organizational structure to maintain informational cohesion and mutual voice between members (this is to prevent the flood in slack/3000 emails)

   (a) This is in relation to many existing ICT communication networks being

flat networks which are mediated by either engagement feeds or real time massive group text chats

2. Redirect online recruitment & informational interactions to in person & personal relationship building between members & cells
   (a) Digital communication that leads to real world interaction rather than simply continuing digital communication. Rather than DAUs, success metrics would focus on the conversion of online communication interactions into real world accomplishments & impacts.
3. Lower barriers between users and creators of ICTs to address design shortcomings
   (a) Sometimes developer assumptions short circuit processes & prevent effective use of an ICT with few reasonable ways to address them. Nemer showcases this with the lack of standardized government addresses in Brazilian favelas Nemer 2022. Open source technologies have seen great success in addressing this issue through open issue trackers & communities by driving decision making down to the most direct level of contributor.
4. Prioritizing high interoperability between services and systems
   (a) Open source ecosystems do not actively prevent interoperability in the way that we see with "walled garden" ecosystems such as Apple. Instead it is a lack of shared organizational planning capacity. Unifying development of a left-wing technical ecosystem under the umbrella of a shared technological objective could assist in overcoming this.

This method of collaboration has shown to be possible with the alliance among monopolistic firms in the development of shared open source infrastructure to maximize cost sharing. Furthermore, additional governance methods have been developed by organizations such as the Linux Foundation, which has served as a convening body for firms to exert their unified dominance over the open source labor ecosystem. While these are methods utilized by capital to usurp and maintain dominance over technological infrastructure and the labor that produces it, these methods can be adapted to suit the goals of left-wing organizations.

Through the development of unified digital infrastructure, left-wing organizations will be able to share the costs of maintaining infrastructure and, at the same time, better exert control over the form that infrastructure takes. This infrastructure can serve as a method of providing tooling to a number of different factions and branches within left-wing organizations and encoding best practices into left-wing procedures. As access to the infrastructure becomes more feasible, smaller branches will become more able to quickly adopt and adapt best practices into their own organizing tactics. By sharing infrastructure, best practices, and organizational procedures, left-wing organizations will have more opportunities to coordinate and organize along a unified front.

5.2 Limitations

This research reflects only a small portion of all left-wing organizations operating within the US and UK. Furthermore, the engagements with individuals only

consisted of a single hour-long interview via Zoom or telephone. Due to this limitation in data collection, the generalizability of these findings may not apply to all left-wing political organizations across the US and UK. Suggestions of shared infrastructure among fractured left-wing organizations do not account for potential disagreement in digital priorities and must be explored in further research.

6. Conclusion

This research pursued three interlinked research questions relating to the use of ICTs by left-wing political organizations. The first research question concerning the positive and negative impacts of ICTs on common activities found that ICTs were beneficial in tracking members, process completion, and adversarial action. The second research question concerning the impact ICTs played on forming and maintaining relationships and organizational procedures found that procedures must be re-designed around ICT logics and that there is additional strain when ICTs do not easily interoperate. Furthermore, ICTs encode the assumptions of the developers which often represent organizations with political objectives antithetical to left-wing organizations. On the level of the individual member-organizer, ICTs already flood our communication channels, thus preventing effective relationship building between members and facilitating effective democratic decision making. Finally, the third research question concerning the political and economic relationship between ICT creators and left-wing organizations found that ICT creators often use vendor lock-in strategies and predatory pricing models which develops a sense of precarity within the organization. These hostile tactics have been noticed

by other groups such as doctors (CITATION NEEDED), but the nature of left-wing organizing means the sense of precarity and uncertainty is amplified by the close ties between tech companies and national security/law enforcement organizations. This research took an interview focused approach seeking to uncover hidden stories about the role technology plays in left-wing organizing seeking to discover the answer to the disintegration of left-wing organizing that has happened over the last 50 years. However, these answers revealed a much more nuanced relationship between left-wing organizers and technology. Where-as this research initially expected to discover precarious relationships to law-enforcement and other adversarial agencies sabotaging organizing activities, in reality organizers struggle much more with resourcing the acquisition, integration, and development of effective ICTs that actually assist in organizing activities rather than creating interpersonal drama and opportunism within the group. This research succeeded in shedding light on common issues regarding digital infrastructure shared between unions, parties, and mutual aid groups. Nearly all groups interviewed did not have the technical capacity to design, replace, and integrate alternative technology solutions but together, the possibility of creating and maintaining alternatives may be possible. As stated previously, academic research concerning technology use in political organizing presupposes any problem encountered can be resolved by additional and more "efficient" technology. This view ignores the conflict of interest between technology providers and the numerous user communities. Going forward, academics should not take technology companies at their word and focus more on social benefit.

The oft quoted tech paradigm of "Move fast and break things" has lost most of its support amongst the broader population. Technology has absolutely revolutionized how we connect, communicate, and relate to each other but not in a way that allows for stronger democracies and less domination between individuals. Instead these technologies encode the logics of capitalism, incentivizing opportunism and notions of individualized success. These logics go against every fiber of left-wing theory and values which emphasizes communal good and mass unity. Left-wing organizations, if they seek to develop a truly mass organization facilitated by ICTs, they must develop new ICTs which encode logics of democratic centralism, in-person impact, and inclusion of marginalized groups.

Facilitating the coordinated development of mass portions of our digital infrastructure is no easy task. For the last 30 years, Free and Open Source software slowly developed the mass potential to revolutionize our relationship with digital infrastructure. However, this revolution did not come. Instead, firms found the opportunity to usurp open source labor and redirect that effort into building key infrastructure for today's digital platforms at a discount, only further disintegrating any notions of user autonomy with the benefit of cost sharing and free volunteer labor by misguided open source acolytes. The ideology of FOSS was grounded in principles of anarchistic mutual-aid but due to this it struggled with developing unified cohesion between advocates. Over a couple of short decades, endless fractures and opportunists prevented any sort of unified resistance against the total cooption by monopolistic technology firms. Left-wing organizations must not allow this to happen again. Instead we must utilize the same organizational capacities and

democratic mechanisms that have underpinned our activities since our formation. Only by developing a unified and cohesive set of shared infrastructures across disparate political organizations can we effectively maintain systems that allow us to compete with often violent reactionary adversaries.

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A. Title of Appendix A

Lorem Ipsum