Infrastructures of survival: digital justice and black poetics in community Internet provision

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Abstract

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This dissertation explores community wireless networks as they respond to overlapping forms of socio-spatial inequality, using a case study of the Equitable Internet Initiative in Detroit, Michigan. Where commercial Internet service is unavailable or inaccessible to the majority of Detroit's low-income residents, community technologists and organizers are building their own last-mile Internet infrastructure. Using data from interviews, participant observation, and organizational documents, I trace how these actors build neighborhood-scale, community-owned wireless networks and rework both the material and social relations that comprise broadband provision. Rather than analyze practices of community provision as an example of neoliberal responsibilization, I draw on black geographies, digital geographies, and infrastructure studies to analyze the networks as socio-technical survival programs, rooted in traditions of black and brown liberation. I argue that community wireless networks challenge mainstream socio-technical futuring practices and reshape the urban political struggles that take place around and through digital technologies. This dissertation fills empirical gaps in geographic research on digital infrastructures and makes theoretical contributions to contemporary urban geography,

digital geographies, and black geographies. My analytical strategy of reading for difference in the socio-spatial practices of urban residents whose perspectives are illegible to the dominant political economic order enables me to advance urban geographic research on the political potential of community resilience. Theorizing community networking initiatives as infrastructural survival programs allows for a deeper and more nuanced analysis of the socio-technical practices of these efforts and helps move debates about digital inequality beyond binary "digital divides." Finally, I contribute to black geographic scholarship by bringing it into conversation with digital geographies and helping expand its methodological repertoire.

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CHAPTER 1: AN INTRODUCTION TO THE POLITICS AND POETICS OF COMMUNITY WIRELESS NETWORKING

On the evening of Friday, December 14, 2017, some 250 people came together in a warehouse-turned-gathering space on Detroit's East Side. The reason was a DiscoTech, a "discovering technology" fair where Detroiters taught one another about various technologies, including how to access data on the City's open data portal, how WiFi signals travel through air, and the basics of producing a radio show. The mood was jubilant. The main event was a celebration of the Detroit Community Technology Project's (DCTP) Equitable Internet Initiative, an effort to build neighborhood-scale, community-owned WiFi networks to supply high-speed Internet to low-income households in three Detroit neighborhoods. The digital steward apprentices—residents of each neighborhood who'd been trained over the previous year to build the networks—showed off their work so far, displaying maps of their network coverage areas, demonstrating various kinds of routers, and teaching people how to make Ethernet cables.

There was a shadow over the event, however. Earlier in the day, the Federal Communications Commission had announced it was ending federal guidelines that protected net neutrality. Under Title II of the Federal Communications Act, broadband Internet service had been classified as a common carrier (like electricity), meaning that Internet Service Providers (ISPs) had to treat all data on the Internet uniformly and could neither block or slow delivery of data nor enact paid prioritization of data. On December 14, however, FCC Chair Ajit Pai announced that broadband service would be classified as an information service rather than a common carrier, thus ending these non-discrimination protections and allowing ISPs to treat broadband Internet service as a commodity rather than a utility. Pai claims that less regulation will benefit consumers, but opponents anticipate that it will worsen inequity in the Internet provision landscape and stifle free expression, with impacts ranging from consumers having to

pay more to access popular websites to ISPs and their allies being able to deliberately block or slow loading times on websites displaying content they dislike (Center for Media Justice 2017, McSherry et al. 2017, Open Technology Institute 2017).

The decision came as no surprise, and net neutrality is hardly a silver bullet for Internet equity, but nonetheless it felt like a heavy blow, a symbol of federal disregard for the concerns of anyone but powerful corporations. Community technology organizers in Detroit are concerned about the impact of the decision on the ability of both low-income users to access the Internet and of racially and economically marginalized communities to produce and distribute content via the web. Not only is the ability of low-income users to access broadband jeopardized by changes to cost of service, but content producers from marginalized backgrounds are also particularly vulnerable to paid prioritization. While large platforms can absorb its costs, smaller platforms are more vulnerable to having their speeds artificially throttled, which will likely have a disproportionate impact on underrepresented and politically radical voices, who are more likely to be found on small, independent, less gatekept platforms (Center for Media Justice 2017, Diaz-Hurtado 2017). I open with the story of these two events from the same day because they capture a dynamic that is central to my research: on the one hand, the FCC decision demonstrates the unreliability of state in ensuring equity, as well as its power over conditions that shape digital landscapes. On the other hand, the DiscoTech and the Equitable Internet Initiative (EII) contest the totality that power.

In the aftermath of the FCC's decision, the DCTP's narrative around the Equitable Internet Initiative took on a new urgency. After traditional lobbying to pressure the FCC to retain net neutrality rules had failed, a politics of community autonomy in digital infrastructure looked more promising. If ISPs like Comcast and AT&T might start throttling service or enacting paid

prioritization, communities could build their own Internet infrastructure to circumvent the need for consumers to buy service from big ISPs in the first place. This narrative gained resonance even beyond Detroit, as Motherboard, the online tech news magazine, published an article titled "To Save Net Neutrality, We Must Build Our Own Internet," heralding EII as a model for other communities (Koebler 2017).

Digital inequality in Detroit predates the end of net neutrality, and the rhetoric of community provision around its repeal extends a narrative of local autonomy and resilience that stretches back much further. Compared to other countries and regions, the U.S. telecommunications industry is highly consolidated and deregulated (Warf 2007, Crawford 2013). This allows for uneven service provision in which "firms engage in network 'cherry-picking' of the most profitable customers and effectively abandon others, such as rural regions and inner cities" (Warf 2007, 99). Indeed, this is very much the case in Detroit, where service is unaffordable to many and even unavailable in widespread parts of the city. As a result, Detroit has the lowest rate of Internet access of any large city in the United States, with 63 percent of low-income households and 38 percent of all households lacking broadband access (Wheeler and Clyburn 2015, Kang 2016).

Rather than wait for ISPs to deliver better service, Detroiters have been building their own last-mile Internet infrastructure for years. Communities are building neighborhood-scale mesh networks to broadcast commercial Internet subscriptions shared by churches, businesses, or community centers to surrounding homes; distributing bandwidth bought wholesale from a local fiber provider through neighborhood WiFi networks; and researching ways to connect directly to a regional Internet Exchange Point. This development has taken place over a period of significant political economic and social upheaval in Detroit, beginning around 2009, soon after

the global financial crisis and soon before the City declared bankruptcy in 2013. Through these struggles, community tech organizers promote the idea that since they've been ignored or abandoned by government and business, the way forward is to take care of themselves, tapping into a long tradition of Detroiters self-identifying as "solutionaries," able to "make a way out of no way." These are phrases I heard often from community members and activists in strategy meetings, public discussions, and casual conversation. The term "solutionaries" was often attributed to Grace Lee Boggs, longtime Detroit anti-capitalist activist and black liberationist, who in turn attributed it to others in the movement (Boggs 2013).

As a witness to this narrative of resilience in my fieldwork studying the Detroit Community Technology Project, I initially felt skeptical. I am a critical urban geographer, trained to recognize how neoliberal governance conditions cities, communities, and individuals to take on responsibility for service provision that was once the purview of the state (Harvey 1989, Brenner and Theodore 2002, Purcell 2006, Peck et al. 2009, Davidson and Ward 2014). Along this line of critique, "resilience discourse" is a tool of neoliberal responsibilization, as it encourages and valorizes communities being able to withstand financial, environmental and other crises relatively unassisted. The resilient community is seen to present a convenient subsidy to capital: it absorbs the negative externalities of capital accumulation without throwing into question the uneven development that produces crisis in the first place (Joseph 2013, Kaika 2017). Further, Marxist geographic critiques of neoliberal resilience understand resilience as inherently conservative, implying maintenance of the existing system's presumed stability (MacKinnon and Derickson 2013).

When I raised my skepticism with the organizers I worked with, however, they dismissed it immediately. They countered my skepticism with examples of citywide crises that took place

during my fieldwork and soon before it. In March 2017, a weeklong power outage affected hundreds of thousands of Detroiters, resulting in school and business closures and interrupting access to heating in the midst of winter. This came soon after an equipment malfunction at a water treatment facility resulted in a nearly weeklong boil water advisory for a large section of the city, closing 26 schools for days. Widespread tax foreclosures and water shutoffs for non-payment affecting tens of thousands of families produce concerns about displacement and quality of life across the city. As the ongoing lead crisis in nearby Flint continues in its third year and the impacts of restructuring after Detroit's 2013 bankruptcy continue to be felt, fears persist about how municipal financial crises will affect residents. In the face of multiply failing infrastructures, my colleagues in Detroit argued that there was no such thing as resilience that stabilized the existing system, because the system was already broken. My research participants were not naïve about how resilience discourse gets used against them to justify austerity (brown 2017b), but they also rejected an analysis that understood their resilience as *only* a subsidy to neoliberal capitalism or maintenance of the status quo. Resilience to them meant survival; its alternative was not a successful insistence that the state step up, but rather the death of the community (sometimes at the hands of the state), through displacement, institutionalization, or literal death. In other words, they rejected the notion that resilient communities are newly responsibilized and picking up the slack from the roll back of the state, because the state had never adequately provided for them. They are instead always-already responsible, and the stakes are high.

Fundamentally these arguments by my colleagues in the Detroit Community Technology Project question the assumption of conservatism at the heart of the critique. For communities that are the targets of historical and contemporary oppression—indigenous communities facing genocide, black communities facing enslavement and incarceration, queer communities facing

criminalization and epidemic health crisis—survival is not the status quo. For people whom the state has meant to kill or let die (the subjects of Mbembe's (2003) necropolitics), resilience is the opposite of conservatively maintaining the stability of the existing system. It is instead a form of existential resistance, an animating discourse in its own right, reflected on t-shirts and social media posts I saw often during my fieldwork in slogans like, "I am my ancestors' wildest dreams" and "My existence is resistance." Far from being a conservative force, resilience for these communities is a necessary condition for envisioning and enacting alternative futures. In this way, survival is not merely "bare life" (Agamben 1998) but a project of community flourishing in the face of oppression that has a long history in radical organizing from the margins.

These claims lay plain that the political valence of "resilience discourse" depends on our epistemological starting point, from where we are looking. I argue that dominant geographical critique of resilience discourse misses the perspective of those, like my research participants, whose experiences and spatial practices have been, in Katherine McKittrick's (2006) words, "rendered ungeographic." This argument echoes the one levied by J.K. Gibson-Graham, theorists of diverse economies, that traditional Marxist critiques of capitalism reify the object of critique and simultaneously make unknowable its alternatives (Gibson-Graham 2006, 2008). Instead they advocate for a technique of "reading for difference rather than dominance" (2008, 623). More directly, however, I draw on black geographic theorists like McKittrick and Clyde Woods (2007), who take as their starting place the assertion that even though the racialized production of space renders certain lives and experiences "invisible/forgettable," that the invisible/forgettable are nonetheless always producing space, albeit in ways that are only legible from certain vantage points. "To begin a discussion of black geographies, then," they write, "we

need to consider how the unknowable figures in to the production of space" (4). This approach enables a much broader understanding of subaltern spatial practices and knowledges than traditional geographic inquiry does, as it "brings into focus networks and relations of power, resistance, histories, and the everyday, rather than locations that are simply subjugated, perpetually ghettoized, or ungeographic" (McKittrick and Woods 2007, 7).

Starting with an epistemological frame rooted in the perspective of the invisible/forgettable, this dissertation asks what relations of power, resistance, and survival are at work in the grassroots technology organizing that takes place in racialized and impoverished communities. When the state is unreliable in ensuring equity, what non-state-based politics emerge instead? Where, when, and how in these organizing practices does resilience function as a survival program rather than as a form of community responsibilization? And what does analyzing these practices through the lens of black geographies, rather than the Marxist political economic frameworks geographers have tended to prefer, allow us to understand about their political potential? I ask these questions in the context of technology organizing because the myriad imbrications of the Internet with everyday lives make digital infrastructures foundational to individual and collective survival. The resources of material survival—job applications, public assistance benefits, educational access—are overwhelmingly mediated through the Internet. So too are the resources of self- and community-representation, political formation, and counter-hegemonic knowledge claims, meaning the Internet is an important site of both information access and discursive production.

My analysis of these questions draws from ethnographic research conducted while living in Detroit over 18 months from 2016 to 2017. I conducted interviews with community technology organizers, neighborhood digital stewards, and the non-tech community organizers

they worked with; conducted participant observation at community meetings, wireless router installations, strategy and curriculum development meetings, and DiscoTech fairs, including during 4 months of employment with the DCTP as an instructor in a coding class for youth; and collected a textual archive of publications produced by the Allied Media Projects and DCTP, program notes from the Allied Media Conference, and newsletters and other publications produced by the James and Grace Lee Boggs Center and the non-profits that partnered with DCTP in the three EII neighborhoods. This research yielded data on the social and technical processes though which community networks are built, as well as the motivations, political commitments, and broader goals of those who build them. My inductive interpretive analysis of these data works across and between these forms of evidence to draw out the theoretical and political claims made by my colleagues in Detroit. My analysis connects these claims to conceptual propositions from interdisciplinary literatures on digital inequalities, urban commoning, and infrastructure studies.

In chapter two of the dissertation, I develop a theoretical framework for this study. I position my research within existing literatures in urban geography, black geographies, critical digital geographies and infrastructure studies. In the first section, I further develop a critique of existing urban geographic research on resilience discourse and trace histories of mutual aid and survival programs in order to theorize resilience as a necessary condition for envisioning and enacting alternative futures of liberation. I draw on the concept of black poetics, which describes a black radical tradition of imagining and enacting other possible worlds. In a second section, I unpack the limitations of a binary understanding of digital inequality and argue that social inequality and digital inequality are co-constitutive. I use the concept of sociotechnical practice developed by critical digital geographers to theorize how my colleagues in Detroit attempt to

address this mutually constituted inequality. Finally, I turn to interdisciplinary infrastructure studies to conceptualize infrastructure relationally and understand how it comes to matter materially and socially. I examine how infrastructural visibility and tractability are negotiated, drawing especially on post-colonial infrastructure studies from the urban margins.

In chapter three, I establish the empirical context of digital justice movements and infrastructural commoning in Detroit. I describe in detail the organization of the Detroit Community Technology Project and the three neighborhoods involved in the Equitable Internet Initiative. I explain the technical structures of community wireless networks and the pedagogical strategies through which their social infrastructure is built. Detroit itself is an important character in this story. Thus I also consider the geohistorical context of community organizing and urban politics in which DCTP's work takes place. In chapter three, I also outline my research design, describe my methods of data collection and analysis, and reflect on how I navigated my own positionality as a researcher in this project.

The fourth chapter examines the socio-technical practices through which community wireless networks are constructed as survival programs. In particular, I analyze DCTP's process of "vision-based organizing" (brown 2017a). In vision-based organizing, stakeholders come together in facilitated conversation to imagine future conditions that promote their community's liberation, empowerment, and flourishing, then together try to "reverse engineer" that future to develop a strategy for achieving it. Developed by Allied Media Projects as an alternative to the strategic planning frameworks that philanthropic funders pressured them to adopt (Ignaczk et al. 2017, brown 2017a), vision-based organizing is grounded in an Afrofuturist cultural imagination, liberatory theology, and anti-racist political analysis. I analyze these practices in relation to the literature on black poetics and socio-technical practice to understand how DCTP organizers enact

collaborative, anti-racist techno-futuring. I argue that these practices issue a challenge to normative utopian and dystopian understandings of digital technologies that fail to account for how race and poverty are constituted through digital technologies even as digital technologies provide certain ways of reworking the production of inequality (Chun 2009, Eubanks 2011, Nakamura and Chow 2013, Nakamura 2013).

In the fifth chapter, I examine how attempts to address digital inequality at the infrastructural level shape urban political struggles that take place in and through digital technologies. I bring the black geographic analysis of the previous chapters into conversation with post-colonial infrastructure studies (Coutard 2008, Kooy and Bakker 2008) and literature on urban commoning (Gidwani and Baviskar 2011, McFarlane 2016) to consider the urban political dimensions of community Internet. I analyze how EII's networks shape struggles around resource provision and bolster existing networks of community organizing. This framing turns explicit attention on not only how survival programs (in the tradition of Black Panther Party's Programs of Survival) meet basic needs through service provision, but also how they materially and socially shape urban landscapes through infrastructural commoning. I argue that through these communal practices and collective politics, community infrastructure builds durable and mutually supportive social relations and collective political consciousness that amplify the fight for survival in critically important ways.

My analysis across these chapters illustrates that community infrastructure projects can function as survival programs rather than a form of community responsibilization when they are connected to broader projects of politicization. Organizers foster resilience not merely to ensure bare survival, but as a way of building capacity for projects of structural transformation. By analyzing these practices through the lens of black geographies, I am able to apprehend how

DCTP's work to foster resilience functions poetically and politically and thus how it exceeds neoliberal cooptation.

In the conclusion, I consider the significance of this work to digital geographies, urban geographies, and black geographies, and I offer suggestions for future research in this area. My work fills empirical gaps in geographic research on digital infrastructures, and my arguments advance contemporary research in important ways. First, theorizing community networking initiatives as infrastructural survival programs allows for a deeper and more nuanced analysis of the socio-technical practices of these efforts and helps move debates about digital inequality beyond binary "digital divides." Second, while critical digital geographies scholars have called for the incorporation of critical race theory, black geographies, and queer theory into how we conceptualize and theorize digital geographies, there is very little work that has attempted to do so. My dissertation joins a small group of early career scholars who are beginning to address this gap. Third, my analytical strategy of reading for difference and centering the perspectives and socio-spatial practices of urban residents whose perspectives have been "rendered ungeographic" (McKittrick 2006) enables me to advance urban geographic research on the political potential of community resilience. Finally, I contribute to black geographic scholarship by bringing it into conversation with digital geographies and helping expand its methodological repertoire.

CHAPTER 2: CONCEPTUALIZING DIGITAL INFRASTRUCTURES OF SURVIVAL IN THE CITY

The community technology organizing at the heart of this study exists at the nexus of urban geography and technology studies. It provides insight into the urban politics being forged in economically marginalized spaces and into under-examined responses to digital inequality that get beyond top-down attempts to "bridge the digital divide." Recent critical analyses of urban and digital inequality have tended to adopt a political economic framework that focuses on the neoliberal roots of inequality and examines its acceleration under "smart cities" policies and austerity governance. This political economic framework also gives attention to how inequality is constituted through digital surveillance and algorithmic governance. This is important work, but it largely misses the perspectives of those marginalized urban residents whose experiences and spatial practices are illegible to the dominant political economic order. Traditional Marxist critiques of inequality reify the object of critique while making unknowable its alternatives. To give greater depth to existing work on digital inequality, I start from the perspective of those whom McKittrick and Woods (2007) call the "invisible/forgettable," urban communities who are always making space, even if dominant modes of knowledge production can't account for it, in order to theorize digital inequality and its potential solutions.

In the sections that follow, I first unpack further the limitations of existing political economic analysis of survival in urban geography. In particular, I focus on geographic critique of "resilience discourse," and its failure to account for how the concept of resilience resonates differently in communities that experience oppression than in those for whom survival can be taken for granted. I draw here on threads of post-colonial theory and black geographies—including histories of mutual aid and survival programs—to argue that we need to understand

resilience and survival not as the conservative maintenance of existing systems of order but rather as a necessary condition for envisioning and enacting alternative futures.

Next, I examine conceptualizations of digital inequality, critiquing the simplistic concept of the "digital divide" and arguing instead that we must understand social and digital inequality as mutually constituted. In order to understand how marginalized urban residents attempt to address this mutually constituted inequality, I use the analytical concept of sociotechnical practice, borrowed from critical digital geographies.

Finally, I consider interdisciplinary literature from infrastructure studies. In Geography, infrastructure has primarily been considered within the subfields of political ecology and transportation planning. Thus, communications infrastructure has been empirically understudied, with corresponding theoretical gaps. In science and technology studies, media studies, and development studies, however, it has been given much greater attention. I turn to these bodies of literature to gain insight into how infrastructure comes into being both materially and socially. In particular, I give attention to small, incomplete, and malleable infrastructures.

2.1. Resilience and survival on the margins

The concepts of survival and resilience are central to my theorization of the political significance of community wireless networks. In critical urban geography, the concept of resilience has been critiqued of late for its cooptation in service of neoliberalization. I argue, however, that went we start from the epistemological vantage point of multiply marginalized urban communities, we can—and must—understand resilience as a necessary basis for survival and for the future-oriented politics and poetics of community wireless network organizing.

Critical urban geographers critique how neoliberal modes of governance devolve responsibility for service provision to cities, communities, and individuals (Harvey 1989, Peck

and Tickell 2002, Brenner and Theodore 2002, Purcell 2006, Peck et al. 2009, Davidson and Ward 2014). Under this roll-back neoliberalism, taxes, regulations, and state service provision are reduced, while non-state actors subsidize capital accumulation by picking up the slack, requiring them to practice "responsibility without power" (Peck and Tickell 2002, 386). Additionally, this process is justified discursively, such that communities and individuals are conditioned to accept this devolution of responsibility (Hall 1988, Rose 1990, Larner 2000, Bondi 2005). Along this line of critique, resilience functions as one of many such discursive justifications for the responsibilization that roll-back neoliberalism necessitates (see also, for example, discourses of sustainability (Brand 2007, Okereke 2008, Long 2016, Jocoy 2018) or competitiveness (McCann 2004, Fougner 2006, Dannestam 2008, Bristow 2010)). Originally a concept from ecology, resilience discourse has become popular at many arenas of urban governance, including security, environmental policy, public health, financial management, and economic development (Walker and Cooper 2011, MacKinnon and Derickson 2013).

The push for resilience governmentally encourages and discursively valorizes communities being able to withstand crises relatively unassisted, whether the nature of the crisis is financial, environmental, geopolitical or otherwise. The resilient community thus absorbs the negative externalities of capital accumulation without throwing into question the uneven development that produces the conditions of crisis in the first place (Joseph 2013, Kaika 2017). Marxist geographic analyses of neoliberal resilience fundamentally critique resilience as inherently conservative, as it presumes the stability of the existing system and implies that this system ought to be maintained (MacKinnon and Derickson 2013, Cretney 2014).

Starting from the perspective of the invisible/forgettable, however, requires us to question this assumption of conservatism at the heart of critical urban critiques of resilience discourse. For

people whom the state has mean to kill or let die, resilience is the opposite of conservatively maintaining the stability of the existing system, since for these communities survival is not the status quo. Far from being a conservative force, resilience in the face of deep and sustained racialized impoverishment and dispossession, material and epistemological violence, and bodily and social death is a necessary condition for envisioning and enacting alternative futures (Newton 1972, Cacho 2012, Spade 2015).

The political valence of "resilience discourse" therefore depends on our epistemological starting point. I argue that dominant geographical critique of resilience discourse misses the perspective of those whose experiences and spatial practices have been, in Katherine McKittrick's (2006, x) words, "rendered ungeographic." I draw on black geographic theorists who take as their starting place the assertion that even though the racialized production of space renders certain (black) lives and experiences "invisible/forgettable," that the invisible/forgettable is nonetheless always producing space, albeit in ways that are only legible from certain vantage points. This approach enables me to apprehend a much broader set of subaltern spatial practices than traditional geographic inquiry does.

Looking into the socio-spatial practices of the invisible/forgettable, we see the emergence of geographies of mutual aid and survival programs in marginalized communities. Mutual aid is a form of social welfare provisioning rooted in reciprocity, where members of a community share resources to support one another through financial or material crises. Black communities in the United States have long traditions of mutual aid organized through both religious communities and fraternal societies. W. E. B. Du Bois explored church-based mutual aid extensively, and noted that any study of African American economic cooperation must begin with the Church (Du Bois 1907, 54). The Black Church—a term broadly used to denote black

congregations in the United States, particularly those in the seven major historically black denominations, such as the African Methodist Episcopal (A.M.E.) Church—is widely recognized as one of the oldest and most influential institutions significant to the development of black community in the United States (Du Bois 1903, Frazier 1964, Lincoln and Mamiya 1990, Billingsley 1999). Churches can serve as mutual aid communities directly, facilitating resource sharing and labor pooling among members, and historically, they also served as incubators for fraternal mutual aid societies (Lincoln and Mamiya 1990).

Fraternal societies were most common in the United States in the late nineteenth and early twentieth centuries, before the formalization of insurance practices and the development of robust state-based social welfare programs (Beito 2003). Though they were common across racial and ethnic groups, they were particularly important for black communities, who were largely shut out of unions and excluded from government welfare programs that provided social services to white Americans (Beito 1990, 2003; Skocpol and Oser 2004). Like white fraternal societies, black fraternal societies were voluntary organizations whose members assisted one another with large expenses such as funerals or illness, provided emergency housing or unemployment support, and even pooled resources to build hospitals and clinics to serve their membership. Historian David Beito (2003) writes about the mutual aid model:

> [Fraternal societies] allowed Americans to provide social welfare services that could be had in no other way. The aid dispensed through governments and organized charities during the late nineteenth and early twentieth centuries was not only minimal but carried great stigma. In contrast to the hierarchical methods of public and private charity, fraternal aid rested on an ethical principle of reciprocity. Donors and recipients often came from the same, or nearly the same, walks of life; today's recipient could be tomorrow's donor, and vice versa. (3)

Though fraternal societies declined after the Great Depression with the rise of insurance regulation and greater availability of government-provisioned welfare services, many successive

practices persist. Churches remain important sites for mutual aid (Lincoln and Mamiya 1990), along with local traditions such as New Orleans' Social Aid and Pleasure Clubs (Parr 2016), and more widespread but less formally organized practices of black self-help (Butler 2005).

Another significant form of mutual aid to emerge in black communities in the U.S. is the Black Panther Party's (BPP) survival programs of the 1960s and 70s. Rooted in the concept of self-determination as articulated by Kwame Ture and Charles Hamilton (1967), the BPP's survival programs provided human sustenance and offered health, educational, and criminal justice services, in contrast to "reform programs" offered through government or charitable organizations (Abron 1998). The free programs were locally specific and arose from the needs of different urban communities (Tyner 2006, Heynen 2009). They included a well-known breakfast for children program, as well as medical clinics, safety patrols, busing to prisons to visit incarcerated loved ones, clothing and shoes programs, ambulance services, pest control, cooperative housing and landbanking, sickle cell anemia testing, and more (Hilliard 2008). The programs were a controversial part of the BPP strategy, with some members arguing that they took away from the revolutionary objectives of the Party. BPP founders Huey Newton and Bobby Seale defended their value as organizing tools, however. In *To Die for the People*, Newton (1972) wrote:

> All these programs satisfy the deep needs of the community but they are not solutions to our problems. That is why we call them survival programs, meaning survival pending revolution. … The survival programs are not answers or solutions, but they will help us to organize the community around a true analysis and understanding of their situation. (104)

By meeting the basic needs for survival, Newton and Seale maintained, the survival programs served to build capacity for revolutionary action and were thus foundational to the political aims of the BPP.

In highlighting mutual aid and survival programs to respond to critiques of resilience discourse, I do not argue that survival practices do not ever provide a convenient subsidy for capital or that resilience discourse is never used against marginalized communities to justify austerity. Indeed, my data suggests that it often is and that resisting this cooptation is a key part of the organizing strategy my research participants employ. Nor do I argue that the very real processes of neoliberalization have made survival any easier for racialized and impoverished communities; they have not. However, I argue that survival is not *merely* a subsidy to capital or *just* a tool of neoliberalization. For marginalized communities, those for whom the benevolent Keynesian state has always been a myth, the alternative to resilience is not a successful insistence that the state step up, but rather the death of the community (sometimes at the hand of the state), through displacement, institutionalization, or literal death. In other words, my research participants—along with generations of black thinkers and activists in the United States—rejected the notion that resilient communities are newly responsibilized and picking up the slack from the roll back of the state, because they are always-already responsible, and the stakes are high. In communities that experience oppression, survival and resilience therefore function not as barriers to social change but as its necessary antecedents.

In black thinking and black social struggle, survival and liberation exist in a powerful dialectic (Newton 1972, Wilmore 1972, Lincoln and Mamiya 1990, Abron 1998). Some black radical thinkers and fighters have critiqued a focus on survival as apolitical and short-sighted (Eldridge Cleaver, in his criticism of the BPP's survival programs, for instance). Rather than see these two as opposite poles, however, I follow another tradition (articulated in contrast to Cleaver by Newton and Seale) of understanding them as dialectically linked. In my time in Detroit, I saw t-shirts, protest signs, and social media posts from my colleagues and neighbors

with the slogan "I am my ancestors' wildest dreams." This connection between past, present, and dreams for the future illustrates how past survival acts as a basis for present struggle and how present survival acts as a basis for future liberation.

To make sense of how dreams for the future are connected to survival and struggle in the past and present, I turn to the concept of black poetics, which describes a black radical tradition of imagining and enacting other possible worlds. In *Freedom Dreams: the Black Radical Imagination*, Robin Kelley (2002) writes:

> Progressive social movements do not simply produce statistics and narratives of oppression; rather, the best ones do what great poetry always does: transport us to another place, compel us to relive horrors and, more importantly, enable us to imagine a new society. We must remember that the conditions and the very existence of social movements enable participants to imagine something different, to realize that things need not always be this way. It is *that* imagination, that effort to see the future in the present, that I shall call "poetry" or "poetic knowledge." (9)

Kelley sees this ability to imagine a world (and a community, a self) otherwise as fully necessary to successful social struggle. When linked to a poetic imagination, survival becomes the foundation of something much more than Agamben's (1998) "bare life." In the practices of my colleagues in Detroit, survival is a collective, politicized practice, a foundation for liberatory struggle, rather than its opposite. Within black radical thought, there are multiple traditions of poetic imagination. Kelley, for instance, traces freedom dreams in black feminism, black socialism, and black surrealist art. In my own study, theological traditions of black Christianity and cultural practices of Afrofuturism are of particular importance, and I examine these more in chapter four.

The poetic capacity to imagine otherwise characterizes the social movements of many marginalized groups. However, black poetics provides a particularly important conceptual frame for my work for two reasons, one empirical and one epistemological. First, contemporary Detroit

cannot be understood apart from black experience (Sugrue 1996, Boyd 2017). Historical and contemporary movements for black liberation fundamentally influence the community organizing practices I examine. There are, of course, non-black people in this story and in Detroit's story more generally, but in a city that remains over 80 percent black, black cultural expression, black political thought, and black lived experiences are foundational to individual and collective life in the city.

Second, black poetics is a fundamentally spatial poetics, both because of the spatial dislocations and erasures at the root of diasporic experience and because of the territorial imaginings inherent in 20th century movements for black separatism (Tyner 2006, 2007; Nieves 2007; McKittrick and Woods 2007; Bates et al. 2018). White supremacy, articulated through practices such as colonialism and slavery, fundamentally enacts closures on commons, commodifying and controlling both land and bodies. Against this, historical movements for black liberation frequently tie together struggles for self-determination with struggles for land, including in Detroit. In 1966, Detroit black power activists James and Grace Lee Boggs wrote, "The war is not only *in* America's cities, it is *for* these cities" (Boggs and Boggs 1966, quoted in Safransky 2017, 1092). In 1968, the Declaration of Independence of the Republic of New Afrika was signed in Detroit, with the aim of creating politically sovereign territories in majority black areas of the U.S. (Safranksy 2017). Today's activists and organizers in Detroit draw on these traditions to continue enacting spatial, black poetic movements for liberation.

2.2. Digital inequality, sociotechnical practice, and race in technology studies

As technical practice and propagation are central to my study, I also draw from literature on digital geographies and technology studies on the production of digital inequality and attempts to combat it. I examine the limits of the "digital divide" framework, which has come to

dominate public and scholarly discourse on digital inequality, and alternative frameworks—rooted in feminist and critical race studies—to conceptualize digital inequality as sociospatial unevenness in the availability, accessibility, and use of digital infrastructure, hardware, and software that is co-produced with other forms of social inequality. I then outline the concept of socio-technical practice, developed by critical data and technology scholars, to understand how technology is co-constituted with socio-political forces and is a function of practices as well as a set of objects.

In the United States, the concept of the "digital divide" has dominated public discourse about technology inequality since the 1990s (NTIA 1999). While literature on the digital divide has done much to focus attention on digital inequality as well as to quantify and describe the problem, the concept is insufficient in many ways for understanding digital inequality. Shortcomings of the digital divide approach include that it is based on a problematically binary understanding of distributional access (Hargittai 2002, Warschauer 2003, Selwyn 2004), and that because it is largely descriptive of only individual-level demographic differences in technology access and use, it cannot theorize why digital inequality exists nor explain geographic variation in ICT adoption (Gilbert 2010). It assumes that Information and Communications Technologies (ICTs) are homogenous, ignoring the variety of software, hardware, infrastructures, and practices implied by ICTs (Selwyn 2004), and it conflates access to ICTs with use of ICTs (Gilbert and Massucci 2006). It also falsely assumes that technology engagement has necessarily positive outcomes for users (Schech 2002, Selwyn 2004, Graham 2008, Eubanks 2011), and it relies on quantitative methods that pay inadequate attention to social factors that influence access to, use of, and implications of ICTs (Warschauer 2003, Eubanks 2011).

In light of these shortcomings, there have been many attempts to alter or salvage the concept of the digital divide to overcome its limitations (e.g. Servon and Nelson 2001; Hargittai 2002; Mossberger et al. 2003), but these attempts have tended to accept the economistic logic of earlier digital divide research, to assume that technology access necessarily has positive outcomes, and to suggest top-down interventions. Against this, more recent conceptualizations of digital inequality start from a perspective of how those deemed "digital have-nots" by earlier digital divide researchers understand their own relationship to digital technology. They situate digital inequality in a larger framework of intersectional oppressions and broader research on inequality and pay attention to local social contexts. In theorizing how social context affects ICT adoption, Gilbert (2010) and Selwyn (2004), for instance, draw on Bourdieusian concepts of technological and social capital to understand how local contingencies and structures of power such as residential segregation, labor markets, school systems, and service availability—which cannot be captured by mere demographic characteristics like race and gender—shape individuals' ability to develop technological capacities. These alternative approaches to digital inequality include a number of studies that are based on qualitative methods rather than quantitative methods, including ethnography and more participatory, often explicitly feminist methods (Gilbert and Massucci 2006, Gilbert et al. 2008, Eubanks 2011).

These alternative theorizations also resonate with critical race theories of technology. Much mainstream utopian rhetoric about technology posits that the Internet diminishes the impact of race and place on individual experience and life outcomes by leveling playing fields of interaction and obscuring or minimizing the importance of identity. Critical race scholars of digital technologies (Nakamura 2008, Chun 2009, Eubanks 2011, Nakamura and Chow-White 2012) help us to question the validity of these utopian visions and examine how race, class, and

other aspects of identity are constituted through digital technologies, even as digital tech provides certain ways of reworking the production of inequality. In the chapters that follow, I use this framework to understand digital inequality as something that is co-constituted with other forms of social marginalization. Addressing digital inequality can neither instrumentally solve other forms of social inequality, nor can it be achieved without also examining how poverty, racialization, and other forms of social marginalization operate to produce urban inequality.

To understand how communities attempt to address mutually constituted digital and sociospatial inequality I draw on the concept of socio-technical practice developed in digital geographies. Socio-technical practice refers to how technology and society are co-constituted and to how technology is not just a set of artifacts but also the result of practices that give those artifacts meaning and power. Geographers have traced the spatialities of socio-technical practices through various types of technology and scales of technical practice, in research on critical GIS through more contemporary studies of the geoweb.

On the one hand, digital geographies insist that the materiality and embedded logics of digital technologies shape the social processes that depend on them. For instance, because of its reliance on Boolean logic, GIS tends towards deductive and instrumental ways of knowing, which precludes the production of any kind of knowledge that doesn't rely on an absolute standard for truth claims (Sheppard 1995). The instrumental logic encoded in technology also produces solutionism (Morozov 2013), or the tendency to misunderstand complex social problems as bounded technical problems with easily computable solutions—a tendency that often characterizes smart city rhetoric (Kitchin 2014, Shelton et al. 2015). Thus, for instance, we understand welfare distribution as a question of optimization because this is a technically solvable problem, rather than attempting to address the systems of inequality that produce

poverty in the first place (Mattern 2013b). Elsewhere, Wilson (2011b) has suggested that the practices of data production "train the eye," resulting in the formation of a geocoding subject, and Straube (2016) examines how the hierarchical nature of the software stack conditions decision-making processes of software development and deployment. The impact of technological logics on spatial relations is of particular interest to geographers. Harvey (1989) identifies technological change as a major influence on the time-space compression that characterizes regimes of flexible accumulation, while more recent work theorizes how software shapes the production of space and how actors interact with space through processes of transduction (Dodge and Kitchin 2005, Wilson 2011a, Forlano 2009).

On the other hand, digital geographers argue that social relations of power and knowledge also constitute technologies and their grounded impacts. Feminist and critical studies of GIS and the geoweb argue that non-normative epistemologies are often at odds with the deductive logics of mainstream GIS, and yet women, indigenous, and other non-normative GIS practitioners continue to find ways to use GIS and related technologies to visualize alternative ways of knowing (McLafferty 2002, Kwan 2002, Elwood 2006, Wainwright and Bryan 2009). Critical digital geographers have also examined how un-representative distributions of predominately white, male, global Northern contributors to geoweb applications and producers of geolocated data result in biased new spatial media (Crutcher and Zook 2009, Watkins 2012, Stephens 2013, Graham and Zook 2013). Further, social biases are re-inscribed through algorithms and software sorting to mediate spaces of everyday life in ways that heighten uneven geographies of race, class, gender, and sexuality (Thatcher 2013, Jefferson 2017, Gieseking 2017).

Geographic literature has long insisted on a dialectical relationship between society and technology (e.g. Sheppard 1995), rooted in a relational ontology derived variously from Marx (Harvey 1996, Sheppard 2008), Heidegger (Shaw and Meehan 2013), Haraway (Wilson 2009, Braun and Whatmore 2010), and other sources. The understanding of technology as a social process holds that technology both is rooted in social conditions and bears societal consequences. This necessitates and approach that understands technology as intricately bound up with social organization itself, rather than as a set of objects discrete from society (Castells 1996). Attention to socio-technical practice thus allows me to understand how the materiality and technical logics of digital objects matter, but so too do the social knowledge and social practices that constitute technologies and their grounded impacts.

2.3. Infrastructural commoning

My study of digital technology is not limited to technological applications; rather I examine the infrastructures that underlie hardware and software use. To make sense of these infrastructures, I draw on interdisciplinary literature from science and technology studies, media studies, and development studies. In particular, I am interested in what these bodies of literature have to say about how infrastructure is both materially and socially constituted and the various ways it must be maintained. I also consider how the black-boxed nature of infrastructural systems—or the ways they are concealed materially and procedurally—tends to make them invisible to users and how various actors contest that invisibility. Finally, while the most studied infrastructural systems tend to be the largest, I draw on post-colonial development studies to examine how attention to small, incomplete, and malleable infrastructures—such as those that characterize places with high levels of urban informality—allow us to better understand uneven

geographies of infrastructural provision and to examine the political function of infrastructures, beyond their use as efficient purveyors of resources.

Following scholars in interdisciplinary infrastructure studies, I understand infrastructure as fundamentally relational. I mean this in two senses. First, infrastructure results from the relationship of the social and the technological, which are "seamlessly coproduced, and co-evolve, together within contemporary society" (Graham and Marvin 2001, 179). Thus, I understand infrastructure as a set of both networked material artifacts and social institutions, practices, and norms that subtend our use of natural, built, and information landscapes (Star 1999, Carse 2012, Sandvig 2013). For example, "the Internet" is a network of material (computers, server farms, undersea cables, fiber optic and copper wires, and wireless signals, etc.), of social products (protocols, code, laws that govern our use of digital technology, etc.), and of social actors (programmers, computer users, maintenance workers, etc.). In my analysis, I thus give as much attention to these social norms, practices, and actors as I do to material artifacts.

Second, whether or not a given system functions as infrastructure for us is dependent on our relationship to that system. As Star and Ruhleder (1996) write, "Within a given context, the cook considers the water system a piece of working infrastructure integral to making dinner; for the city planner, it becomes a variable in a complex equation. Thus we ask, *when*—not *what*—is an infrastructure" (113). I am particularly interested in the way users' ability to notice and understand infrastructure is negotiated as these politics unfold. Infrastructure—literally meaning "beneath-structure"—is often hidden, buried underground or disguised in the landscape (Parks 2009, Starosielski 2012). For instance, gas lines and water mains are typically buried underneath city streets, and cell phone antennas are often hidden inside church towers or disguised to look like trees. There are times when infrastructure is purposely invested with cultural significance

that makes it more broadly visible, as when colonial states project their control through infrastructural projects or cities promote their infrastructure in order to attract investment (Larkin 2008, Sandvig 2013, Pickren 2016). Consider, for instance, how the transcontinental railroad was memorialized as a symbol of U.S. industrial triumph in the 19th century. However, infrastructure is generally invisible unless it breaks or is actively being maintained in a way that disrupts our use of it. We rarely make very much notice of the road we are driving on, for instance, unless it is under construction or an out streetlight causes a traffic jam. When things are going well, "Good, usable systems disappear almost by definition. The easier they are to use, the harder they are to see" (Bowker and Star 1999, 33).

It is important to note, however, that invisibility manifests in the experience of the infrastructure's user*,* but there are always people for whom infrastructure remains visible, because of their relationship tot the infrastructure or how they are situated in the sets of relationships that constitute it. Namely, infrastructures are highly visible to those who make and maintain infrastructure and those who are structurally marginalized in ways that exclude them from its use. "For a railroad engineer, the rails are not infrastructure but topic. For the person in a wheelchair, the stairs and door jamb in front of a building are not seamless subtenders of use, but barriers," writes Star (1999). "One person's infrastructure is another person's topic, or difficulty" (380). In light of this, infrastructure scholars have often studied the "normally" invisible from the perspective of those for whom infrastructure is topic or difficulty. Scholarship on infrastructural maintenance and repair (Henke 1999, Graham and Thrift 2007, Jackson 2014) thus attempts to learn from what Jackson (2014) calls a "standpoint epistemology of repair" (229). There are also studies of infrastructure in places that have been socio-spatially marginalized, especially from

megacities of the global South, where smooth, complete, state-provisioned infrastructure cannot be taken for granted (McFarlane and Rutherford 2008, Graham 2009).

Post-colonial infrastructure studies shows us that when we focus too much on neoliberal processes of splinter*ing* urbanism, we fail to see how for many people in many places, the urban has always already been splinter*ed* by racialized and colonial geographies. For instance, Kooy and Bakker (2008) demonstrate that the highly fragmented state of water infrastructure in Jakarta, Indonesia, is the result of colonial spatial differentiation in the city, and that it was not caused (or even significantly impacted) by the introduction of neoliberal private sector management in the city's water supply. Attention to the experience of people in these places allows us to recognize the myth of what Graham and Marvin (2001) call "the modern infrastructural ideal," which recalls an (imagined) time when common resources were well-funded and citizens were well cared for by the state. For many urban residents, infrastructure is not now—and never was—provisioned by the state or sufficiently regulated to ensure equitable private provisioning (Coutard 2008, Gidwani and Bhaviskar 2011, Meehan 2013). Infrastructures in these places are not always massive systems that resist change and recede into invisibility but are often instead small, malleable, and maintained by the same people who use them (Furlong 2010, Meehan 2012, Dunbar-Hester 2014).

2.4. Conclusion

In the chapters that follow, I examine the poetic imaginaries that undergird community wireless networking practices and how the networks function in relation to other social and material infrastructures to come to matter in the urban politics of place-making and place-keeping. The scholarship discussed above provides important concepts that enable me to make these arguments. Studies of mutual aid and survival programs demonstrate how, for communities

that experience oppression, resilience is more than a discourse of neoliberalization. Rather, it enables survival that is necessary for future social transformation. When connected to a liberatory poetics, resilience can serve as a politicizing force, animating these struggles for social change.

Critical digital geographies contributes to my study with its understanding of digital inequality and socio-technical practice. Contrary to early understandings of the "digital divide," that conceptualized a lack of technology access and digital skills as a problem that could and should be remedied with top-down, individual-focused interventions, I utilize research on digital social inequality to understand digital inequality as co-constituted with other forms social inequality, such that digital inequality cannot be addressed without also understanding how other forms of social marginalization take place in relation to digital exclusion and exploitation. The concept of socio-technical practice developed in critical digital geographies then allows me to examine how the actors involved in building community wireless networks attempt to rework digital inequality and social inequality in tandem with one another.

I turn to infrastructure studies to conceptualize infrastructure relationally, to examine how infrastructural visibility is negotiated in various ways, and to question assumptions that infrastructural systems are always large, rigid, and state-provisioned or heavily regulated. Examining infrastructure from the perspective of those who have been shut out of formal infrastructure systems and those who operate as both users and maintainers of the system enables me to better understand how infrastructures come to matter politically: how they themselves are contested and changed and how they are enrolled in projects of social transformation.

CHAPTER 3: METHODOLOGICAL AND EMPIRICAL FOUNDATIONS

This research is guided by the following research questions: 1) How is community-owned infrastructure materially and socially assembled—through what organizational, pedagogical, financial, technical, and deliberative processes do neighbors build and maintain community wireless networks*?* 2) How does community-owned infrastructure alter the use of digital technologies? What kinds of alternative arrangements to private home Internet emerge, and how are they justified and enacted? 3) How does the process of assembling, maintaining, and managing community infrastructures produce new urban geographies, whether through creating new subjectivities, altering community and individual positionality in urban political struggles, or through other means? Answering these questions requires a research design that allows insight into multiple overlapping social and spatial processes. My goal is to trace how and with what effects these processes play out. A key insight from the literatures I work from—and what I've learned from those in Detroit with whom I work—is that grounded geohistories of particular places matter deeply. Thus, my project is conceived as a single case study, and I rely on inductive interpretive analysis of a variety of forms of evidence. In this chapter, I provide empirical background for the case study, outline my methods of data collection and evidence, and reflect on my positionality as a researcher.

3.1. Empirical background to the case study

I have chosen to study the Equitable Internet Initiative (EII) because it is a theoretically and analytically significant case site for my research. The Detroit Community Technology Project, which runs EII, and its parent organization, Allied Media Projects, are nationally recognized leaders in media-based community organizing. They frequently collaborate with

national organizations like the New America Foundation, and they share their methods and strategies through widely circulated handbooks, curricula, and how-to guides and through AMP's annual Allied Media Conference, which attracts thousands of attendees from across North America and the world. The Equitable Internet Initiative is an attempt to scale up prior efforts to build community wireless networks and to develop and document a model for similar efforts in other places. My case study therefore serves as a jumping off point for inductive analysis of community wireless networks and proposes theoretical insights that can shape future research into community Internet networking in and beyond Detroit. The specific geohistory of EII and DCTP indelibly shapes the theoretical insights I make here, so I begin with an explanation of the broader empirical context of my case study.

3.1.1. Downtown and the Neighborhoods: DIY urbanism amidst redevelopment

The well-worn story of Detroit's rise and fall in the 20th century is often told as a story of the relationship between the city and its suburbs. It's a story of interstate highway construction, racial strife, white flight, and capital mobility, told many times from many perspectives (see for example, Young 1994, Sugrue 1996, Kinney 2016). Here, however, I am less interested in the relationship between the center city and its suburbs and more interested in a different urban political dynamic: the often contentious relationship between a city's downtown and its outlying neighborhoods. Downtown redevelopment as a strategy for urban revitalization is a well explored topic in urban geography and planning studies, and Detroit serves as a fine exemplar of this dynamic in urban politics, just as it did 20th century suburbanization.

In recent years, Detroit's Greater Downtown area has seen significant investment in property development, service provision, and crime reduction. A number of high profile companies have moved into the area, and residential occupancy in the city center is at 98 percent (Hudson Weber Foundation 2015). The City government and numerous public-private

partnerships have invested heavily in this redevelopment, offering massive tax incentives for developers and housing subsidies for workers at the city's largest (white collar) employers to incentivize them to live in Downtown and nearby Midtown instead of the suburbs.

However, there exists an intense division in Detroit between "Downtown" and "the Neighborhoods." In many of the Neighborhoods—that is, areas of the 139 square mile city that fall outside of the 7.2 square miles of Greater Downtown—the city's much-heralded "recovery" feels like a pipe dream. In the city as a whole, the residential occupancy rate is only 72 percent, with many blocks experiencing overwhelming vacancy (Data Drive Detroit 2018). About 38 percent of residents live below the federal poverty line, and 23 percent of Detroiters are unemployed (Hackman 2014). The City's recent practices of widespread water shutoffs and evictions from tax foreclosure have further soured many residents' views of Downtown's power players. Every year since 2014, between 17,000 and 33,300 Detroit households have had their water shut off for non-payment of bills, sparking concerns about public health (Ikonomova 2017). The practice was first started under the state-appointed Emergency Financial Manger who replaced Detroit's elected government during its fiscal crisis but has continued since, despite calls for the City to address underlying issues of water affordability. Similarly, the City carries out a controversial practice of tax foreclosures and evictions, foreclosing on homes that owe three or more years of property taxes and auctioning off tens of thousands of properties—many occupied—each year. Yet, Detroit is one of the most tax burdened cities in the country, and many argue that the vast majority of homes are illegally over assessed and that the City has failed to properly implement its tax exemption program for homeowners living below the poverty line (Ikonomova 2018). A large percentage of the foreclosed homes are purchased by

speculators who leave the properties vacant, worsening the city's extensive blight (Akers and Seymour 2018).

While these practices of development and displacement frequently draw sharp criticism in the Neighborhoods, do-it-yourself urbanism (Iveson 2013, Finn 2014, Talen 2015) abounds outside Downtown. Makeshift bus shelters line streets where potholes have been hand-filled with gravel. Urban farms and homemade parks dot vacant lots whose ownership is often unknown or tenuous. Volunteer block groups escort students to and from school and patrol neighborhoods for dangerous activity. This informal urbanism is alternately valorized and disallowed by the City, depending on its priorities in a given moment. Even so, informal practices of survival continue apace, regardless of how they do or do not fit into Downtown's vision of appropriate forms of capitalist spatial practice at any given moment. In the absence of adequate formal systems of provision, Detroiters have developed longstanding ground-up community survival strategies like the DIY practices noted above. These strategies attempt to address infrastructural insufficiencies, and for many, they also represent an attempt to build a city that isn't beholden to powerful capitalist interests altogether. This is a key part of the geohistorical context in which community infrastructure projects have arisen in the city and is the tradition in which the Detroit Community Technology Project operates. I now turn to the specific practices of DCTP and its Equitable Internet Initiative.

3.1.2. Origins and scope of the Detroit Community Technology Project

The Detroit Community Technology Project (DCTP) is both a project and an organization. It is not a standalone non-profit but a Sponsored Project of the Allied Media Projects (AMP), a 501(c)(3) that serves as a fiscal sponsor and financial manager for DCTP. AMP's Sponsored Projects program includes some 75 arts, media, and technology projects in Detroit and across the United States, but DCTP is one of the largest and most active. It has

permanent staff (who work out of AMP's office, and many of whom do other work for AMP as well) and shorter-term project staff, and its relationship with AMP is more reciprocal than many other Sponsored Projects. DCTP provides technical support to AMP, managing its equipment rental program and running wireless networks for AMP's annual conference, for instance.

AMP is an important hub of community organizing in Detroit. It acts largely as a networking and facilitation organization, building what it calls "critical connections" between organizations and individuals in Detroit and beyond who are working to build "a more just, creative, and collaborative world" (Allied Media Projects, n.d.). It is one of the main facilitators of grassroots community organizing in Detroit. Its annual conference is a key site of networking; about a third of AMC attendees come from Detroit, and it often feels as if representatives from every grassroots nonprofit and activist group in the city are present. In addition, the Sponsored Projects program supports almost 40 Detroit-based projects with fiscal sponsorship, project planning assistance, and fundraising support, helping new projects get started without them having to form standalone 501(c)(3) organizations. Finally, AMP helps facilitate coalition-building among groups in the Detroit and produces zines, podcasts, and reports to document its organizing principles, provide how-to guides, and occasionally offer recommendations for organizing practice[1] in an effort to share its strategies as widely as possible.

The DCTP traces its roots through a complex confluence of AMP activities. In part, it grew out of the conference, where in 2009, DCTP Director Diana Nucera and others organized what was called the Media Lab, a space where conference attendees could tinker with different technologies to learn hardware and software skills in a hands-on, "potluck" skills-share environment. The Media Lab was the first iteration of what DCTP now calls DiscoTechs, which

[1] See, for instance, the "How we Organize the Allied Media Conference" zine, the "Critical Connections" podcast, and the "Changing the Conversation: Philanthropic Funding and Community Organizing in Detroit" report.

are meant to help demystify technology for people of all skill levels. Another outcome of the 2009 Allied Media Conference that was significant to the development of the DCTP was the Detroit Digital Justice Coalition (DDJC). After the Obama Administration announced that its post-2008 economic stimulus package would include $7.8 billion of funding for increasing broadband technology adoption, organizers from across the country gathered at the AMC to discuss how to leverage the grants for grassroots work. The granting program, called the Broadband Technology Opportunities Program (BTOP), aimed "to help bridge the technological divide… in communities across the country" (NTIA n.d.) and included grants for infrastructure development, community technology centers, and digital literacy training and outreach. Those at the 2009 AMC were concerned that most of the grants would be made towards top-down "digital divide" interventions and discussed how to leverage BTOP grant money for grassroots organizations and community-led initiatives instead. They critiqued the way "digital divide" discourse posits the existence of digital have-nots who simply lack access to technology. In a session titled "A Healthy Digital Ecology: Creating a Community Vision for Federal Funding," they instead framed their conversation as one of transforming existing technologies to benefit communities that are marginalized by social structures and not merely left out of society's benefits (Allied Media Projects, 2009).

This AMC conversation led to the formation of the Detroit Digital Justice Coalition, a group of organizers engaged in anti-poverty advocacy, environmental justice work, and independent media production, who developed a set of "digital justice principles" that "expanded the limited vision of 'broadband adoption' to visions for 'healthy digital ecologies' in which people not only had access to the Internet, but had the skills to use the Internet and other communication tools to transform their communities" (DDJC, n.d.). The key aspect of this

reconceptualization was not that it included skill development in addition to enhancing access to technology (by 2009, this was already a widely accepted interpretation in national discourse of what it meant to "bridge the digital divide"), but rather that it leveraged those skills and tools for community transformation. This meant that the constituent organizers and individuals that made up the original DDJC were not necessarily technologists but were organizers and activists already engaged in movement work who were interested in how digital tools could expand their existing repertoires.

DDJC has relied on a dense network of federal and local funds to do the work it does and has creatively secured resources to support its efforts. In conjunction with researchers at Michigan State University, DDJC successfully applied for BTOP funding in 2010. The $1.8 million grant[2] was used to fund three programs—Detroit Future Schools, Detroit Future Youth, and Detroit Future Media[3]—administered by the Allied Media Projects and the Eastern Michigan Environmental Action Council. The programs established community technology centers at the organizations that participated in the DDJC and trained youth, teachers, and community leaders in digital practices and technology implementation to support organizing. After the end of the grant period, Detroit Future Media was spun into two initiatives: Co.Open—a series of workshops on topics such as data mapping and video production—and the Detroit Community Technology Project.

While the focus of my research is specifically DCTP's Equitable Internet Initiative, DCTP does additional work that has importantly influenced EII, so I next provide a brief overview of that other work and its significance to EII. The EII is largely structured around two

[2] Part of a larger $5.2 million grant that also served residents of 8 other Michigan cities via partnerships that were separately administered by community colleges in Lansing, MI, and Jackson, MI (NTIA, 2013).
[3] Not to be confused with Detroit Future City, a controversial strategic framework to revitalize the city that developed by the Detroit Economic Growth Corporation (DEGC) in the wake of the City of Detroit's 2013 bankruptcy. A trademark dispute over the naming concluded with DEGC settling with Allied Media for an undisclosed amount.

sets of DCTP's activities: The Digital Stewards Program and DiscoTechs. The Digital Stewards Program provides the training model for the neighborhood members who design, build, and maintain the networks, and the DiscoTechs provide the model for broader community engagement. To a lesser extent, it has also been influenced by a research project that DCTP has undertaken with some of its partners into data justice and municipal open data practices.

First, DCTP co-developed with the Open Technology Institute the Digital Stewards Program as a model for training community technologists in the technical and community organizing skills necessary to plan, build, and maintain community Internet networks. The Digital Stewards Program was influenced by the citizenship schools of the Civil Rights Movement, through which thousands of black Americans learned how to read and write. The goal of the schools was not just literacy for its own sake, but for learners to pass the literacy tests that were put in place in many Southern states to prevent them from voting, thus enabling them to engage in building structural change through electoral participation. The Digital Stewards Program takes from this model both its pedagogical approach and its connection of individual capacity building with structural change. In this vein, DCTP posits that community technology training can be used "to build the power of disenfranchised communities to fundamentally transform the power structures of the country" (Lee, 2016). The Digital Stewards curriculum uses popular education techniques to train people to build wireless networks in their own neighborhoods. These techniques include designing curriculum that responds to community needs, meeting learners where they are and honoring their whole identities, fostering critical thinking and reflection, and having learners drive the process. About 50 Detroiters have been trained as digital stewards, and they've built ten community wireless networks in the city, including the three EII networks. Additionally, the model has been used in Brooklyn,

Washington DC, Sayada (Tunisia), and Dharamsala (India). While some of the earlier networks that Detroit's digital stewards built are no longer in operation, the network of stewards remains active, meeting monthly for brainstorming and work sessions, helping one another maintain the extant networks and experimenting with new projects, such as the June 2018 installation of a demonstration solar-powered router.

The Digital Stewards Program model has had a significant influence on EII, as teams of digital stewards run the EII networks in each neighborhood. Together, DCTP and the three anchor organizations trained 10-15 residents in each neighborhood as digital stewards in a 12-week course that covered community organizing strategies, software and hardware skills, and wireless network design. Of those trained in the free program, 5 in each group were then hired at $20/hour to work half-time building a community wireless network in their neighborhood. These teams of five were called digital steward apprentices. Whether or not they applied and were selected to work as apprentices, the graduates of these classes (about 35 people across all three neighborhoods) continue to participate in the activities of the broader network of digital stewards, and many of them also played a role in recruiting clients and users of the neighborhood networks and in recruiting students for the youth coding classes.

Second, DCTP and the DDJC developed the DiscoTech (short for Discovering Technology) model for teaching and learning about technology. A *How to DiscoTech* zine put out by DDJC and DCTP explains, "we identified the need to create a space where people can discover technology together, learn at their own pace, and learn from people who are accessible and understand the context of their neighborhoods and communities" (DDJC, 2012). The model arose largely from the experience of the Media Lab at the 2009 Allied Media Conference, but with learning stations where skills could be learned in about 10 minutes, geared more to specific

local context. DiscoTechs consist of a number of facilitated learning stations that participants can move through at their own pace and direction. Greeters welcome and orient participants, a host encourages participation and updates everyone on the status of things like raffles or food availability, a DJ plays music, and a documentation manager coordinates taking photos and video.

DCTP and the Detroit Digital Justice Coalition put on DiscoTechs across the city, but they are also a key strategy of the EII. EII digital stewards run learning stations in DiscoTechs to inform people about their work and recruit potential clients, and the DiscoTech model of decentered expertise and digestible lessons for a broad audience shapes the way EII Digital Stewards share information about the networks in their neighborhoods.

Finally, DCTP partners with the DDJC, the Detroit People's Platform, and researchers from the New America Foundation in a digital justice research project. The project was developed in part as a response to the City of Detroit's launch of an open data portal in 2015, and it examines how open data "can be both beneficial and harmful to residents, especially to communities that have been historically criminalized" (DCTP, n.d.). Audiences for this work include both city officials—the City's former Deputy Technology Director, Garlin Gilchrist II, who was largely responsible for the launch of the open data portal, also sits on the Allied Media Projects' Board of Directors—and community residents. Outputs of the project have included a set of guidelines for equitable open data, which DCTP has presented to the City, and a series of DiscoTechs across the city about data justice. These DiscoTechs have included stations designed to show people how to access and use the data portal, to teach people about the kind of information that is collected about them when they used digital technologies, and to help people

learn how to make flyers, use social media, and incorporate open data in their use of those technologies.

The framework of data justice has shaped EII through attention to how digital technologies and the data they produce and depend upon can be both beneficial and harmful to marginalized folks. EII digital stewards do not assume that Internet access will be an unqualified positive thing for their communities, even as they affirm its potential. Rather, they teach their neighbors about digital risks and ways to appropriately mitigate that risk, while also trying to make digital technologies more accessible. Like sex-positive safer sex education, the goal is not to intimidate people away from behavior that carries inherent risks, but rather to help them understand the risks as well as the benefits and to responsibly take steps to reduce risk while still enjoying the activity's benefits.

3.1.3. The Equitable Internet Initiative and Detroit's Islandview, North End, and Southwest Neighborhoods

The Equitable Internet Initiative is focused in three neighborhoods: Islandview, the North End, and Southwest (see figure 1 for a map of the neighborhoods in relation to one another and DCTP's office). EII is a partnership of the DCTP and three anchor organizations in each of the neighborhoods: Islandview's BLVD Harambee, the North End Woodward Community Coalition, and Grace in Action Collectives in Southwest. The three organizations have been in their communities for a long time, doing work that aligns with DCTP's theory of social change and partnering with AMP or its sponsored projects on various efforts over the years. BLVD Harambee[4] is located on Detroit's east side, and it is a non-profit associated with Church of the Messiah. The 140-year old Episcopal church is pastored by Reverend Barry Randolph and

[4] BLVD stands for "Building Leadership for Village Development" and also references the Church's location on East Grand Boulevard, a ring road that traverses the city and is known throughout Detroit as The Boulevard. Harambee is a Swahili word meaning "pull together," and it references a Kenyan tradition of self-help. The word has seen broad uptake in American Afrocentric cultural organizations.

assistant pastor Reverend Wally Gilbert, and—unusually for its denomination—it represents a congregation that's over 60 percent black men under 30. BLVD Harambee is a largely youth-focused non-profit business incubator that the church supports along with a low-income housing cooperative it operates in its neighborhood. NEWCC is primarily a transit and economic justice advocacy group that runs a low-power FM community radio station. It's headed by Reverend Joan Ross and collaborates and shares office space with the Detroit People's Platform, a frequent AMP partner that co-organized the Data Justice DiscoTechs. Grace in Action Collectives is a former AMP Sponsored Project that is the non-profit arm of Grace in Action Church, a bilingual Evangelical Lutheran Church in America congregation. GIA Collectives was founded in 2012 and is headed by Meghan Sobocienski. It coordinates worker-owned cooperatives and has a strong youth focus. BLVD Harambee and NEWCC serve primarily black communities, while Grace in Action primarily serves a latinx immigrant community.

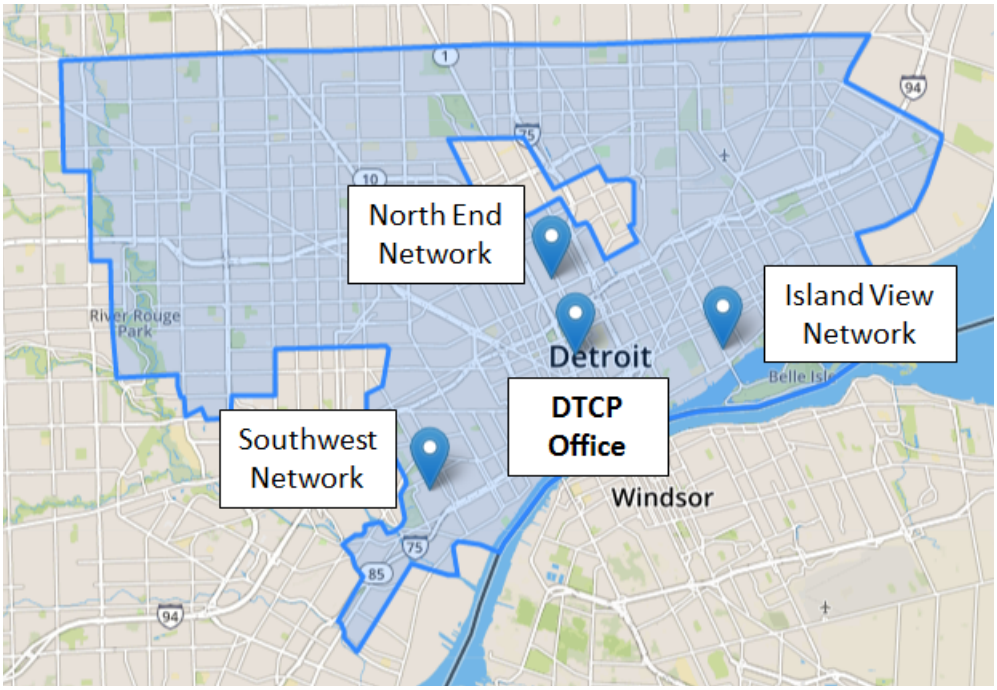

Figure 1 Network locations. Map of Detroit showing the locations of the three networks and the DCTP office relative to one another.

DCTP's staff act as the central coordinators for EII, including Director Diana Nucera, Program Coordinator Janice Gates, and IT Coordinator Anderson Walworth (see figure 2 for an organizational diagram of the actors involved in EII). They work out of AMP's office in the Cass Corridor neighborhood of Detroit, which is centrally located between the three sites. Andy Gunn, former Senior Field Engineer at the Open Technology Institute who helped develop the Digital Stewards model, also consults via videoconference and occasional site visits on technical matters. Each of the three sites has a project manager (Gilbert, Ross, and Sobocienski, respectively), a digital steward trainer selected by the anchor organization, a team of five digital stewards who build the networks, and a pair of instructors for the NextGen Apps aspect of EII, a 16-week youth coding class that took place in the fall of 2017,[5] who all work out of the anchor organizations' offices. Each neighborhood also has a volunteer advisory board to help make governance decisions about the network moving into the future. With one or two exceptions, the digital stewards for each site were residents of the neighborhoods. The trainers were all Detroiters and had existing relationships with their anchor organizations, but only one of the three lived in the neighborhood they worked in. NextGen Apps Instructors almost all lived outside of their organizations' neighborhoods.

EII distributes bandwidth bought wholesale from a locally owned fiber optic ISP, using what is essentially a hub-and-spoke WiFi network. The fiber ISP, which operates in downtown Detroit and doesn't have cables laid in any of the three neighborhoods, sends a WiFi signal to each of the three anchor organizations using a powerful point-to-point connection. From there, the 1 gigabit signal is further distributed to the neighborhoods using a combination of sector antennas and point-to-point relays set up on rooftops across each community. Earlier community

[5] I served as one of two NextGen Apps instructors at NEWCC. Though that experience informed much of my participant observation related to curriculum development and pedagogical strategies, I took no field notes on any aspect of the program that directly involved youth, and the NextGen Apps program is not a focus of this research.

wireless networks that DCTP helped build in Detroit between 2010-2016 tended to use a mesh network structure and distributed bandwidth from commercial Comcast subscriptions donated by businesses and community organizations. A mesh network architecture—where all nodes in the network can send and receive data and signal—is more resilient to failure and shutdown than a hub-and-spoke configuration, but the desire for higher speeds and more reliable connection necessitated the purchase of bandwidth from the fiber provider rather than Comcast and therefore distribution from a central location as well.

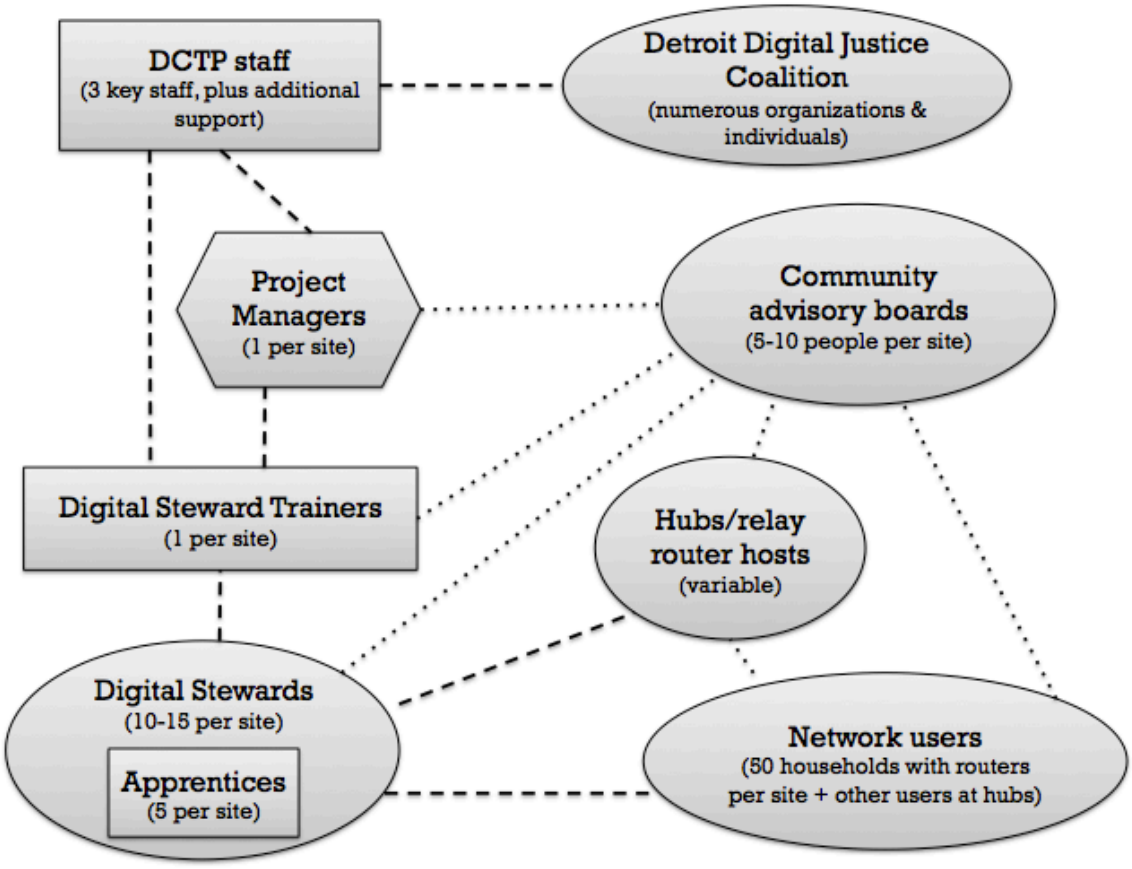

Figure 2 Organizational structure of EII's community wireless networks. Dashed connecting lines indicate a relationship that includes exchange of information and of substantial resources, such as materials, training, or funds. Dotted lines indicate an exchange of information. Rectangles indicate that the actors are paid for labor related to EII, and ovals indicate that actors are unpaid. Program managers are in hexagons to indicate that while the managers are not compensated, their organizations (NEWCC, Grace in Action Collectives, and BLVD Harambee) do receive funds that are used for EII operations.

While the neighborhood networks are still being built out, they will eventually connect 50 low-income households in each community, with 1 gigabit of bandwidth distributed across the homes in each neighborhood. Unlike most commercial Internet services, which provide download speeds that are 3-5 times faster than their upload speeds (Molla 2017), the EII networks provide symmetrical upload and download speeds. The purpose of this is to make content production as easy as content consumption. To identify households to include in the network, digital steward teams canvassed their neighborhoods in various ways, for instance, going door-to-door, presenting at community meetings and church services, flyering at food pantries and other gathering spaces, and drawing on their existing personal networks. They developed surveys to give to potential clients in order to identify need and potential benefit. While they asked questions about income and household composition, they never asked anyone to verify their answers in order to model trust and to attempt to be minimally invasive. They were upfront with potential clients that while the service would be free for the first year, eventually they might ask network users to contribute some money to sustain the service, likely on a sliding scale. Once they identified clients who were eligible and confirmed that connection to the network was technically feasible for their address, they signed a contract that briefly outlined expectations and responsibility for equipment and scheduled an installation.

In addition to connecting households, the networks also connect various "hubs," which are gathering places or facilitators of community building that the digital steward teams identified as important in their neighborhoods. These have multiple functions. First, for the networks to function smoothly, routers need to be connected by line-of-sight, and network design needs to take into account barriers like large trees. Many of the hubs are organizations that occupy some of the taller buildings in each neighborhood, and they have easier line-of-sight to

the central distribution point and can serve as relay points for nearby households. Second, hubs that serve as community gathering spaces may receive a connection themselves, making them de facto community technology centers. DCTP anticipates that this will strengthen community social capital by growing connections among residents and neighborhood organizations.

3.2. Forms of evidence

In studying these practices of DCTP and the Equitable Internet Initiative, I collected evidence through three methods: 1) participant observation, 2) in-depth interviews, and 3) data archiving and document analysis.

I conducted participant observation for this project over 18 months spent in Detroit from April 2016 to June 2017 and September 2017 to December 2017. During this time, I attended community meetings, technology fairs, and conferences, where I observed EII staff conduct outreach, teach technology skills, and share information with community technology organizers from other sectors and cities. The gatherings I attended included four DiscoTech fairs, an outreach meeting held by the Southwest Digital Steward team about their EII network, an outreach meeting for EII as a whole, and the 2016 and 2017 Allied Media Conferences. I also attempted to get a sense of broader technology organizing in the city, attending a Digital Humanities conference at Wayne State University, attending a meet-up and joining the Slack group of an amateur technologist collective in the North End that was unaffiliated with DCTP, attending public lectures related to the City of Detroit's smart city and open data efforts, and attending Detroit Startup Week, a free, corporate-sponsored civic technology conference in the city.

I assisted with the Digital Steward Training curriculum by developing a module on digital mapping and co-taught a NextGen Apps youth coding class in conjunction with the North

End EII network. I developed the mapping module for the Digital Steward Training as a volunteer. This entailed meeting with EII staff to discuss the goals of the module, independently developing a tutorial for preparing geodata and making maps with Google My Maps, and iteratively revising the module with EII staff to ensure its scope was feasible. As a NextGen Apps instructor, I was a paid employee, working 15 hours per week for 16 weeks as co-instructor of a coding class for middle and high school students. We taught the students HTML, CSS, and JavaScript from curriculum developed by EII staff. I took no field notes on any aspect of the program that directly involved youth, and the NextGen Apps program is not a focus of this research, but this experience informed much of my understanding of DCTP's pedagogical strategies and commitments. Our class met three days a week, and I would typically work from the NEWCC office on these days, sharing space with the North End Digital Stewards team. The experience thus also helped me establish greater rapport with the North End team and gave me greater access to their daily activities.

I observed network planning meetings with teams of EII digital steward apprentices and participated in a router installation and maintenance trip. Because of my work as a North End NextGen Apps instructor, I worked most closely with the North End team but I also observed at least one meeting of Digital Stewards at each of the other networks. On the router installation and maintenance trips, I assisted the North End team with hauling gear, testing cables, positioning routers, checking line-of-site, and installing ground wires. I observed how the team made decisions in the moment, how they divided the work, and communicated with those who were hosting the routers.

Finally, I conducted participant observation by using community wireless networks developed as part of EII and other DCTP projects. For the first period of my Detroit fieldwork,

from April 2016 – June 2017, I lived just around the corner from the Allied Media Projects office and nearly in range of one of DCTP's first mesh installations, the Cass.Co network. I did not have a home Internet subscription during this time and would get online through a combination of using a neighbor's network, using the Internet at a nearby coffee shop, visiting libraries, and occasionally using my phone or computer to log onto the Cass.Co mesh network from the parking lot outside the AMP office. I also used this network when I visited the AMP office. In fall 2017, when I taught in the North End NextGen Apps class, I would often work from the NEWCC office before our class met, using the North End EII network. Utilizing community wireless networks in this way, and relying on shared networks when I didn't have a private home connection, gave me insight into the networks' speed and reliability and gave me the experience of relying on community-provided Internet. This helped me viscerally understand the experience of using the networks, with attendant concerns about network security, frustrations with occasional service outages, and troubleshooting processes.

In conjunction with participant observation, I interviewed key participants in community wireless networking efforts in Detroit. I conducted semi-structured in-depth interviews with 22 individuals. These included DCTP staff, site managers for all three EII networks, Digital Stewards from the three EII networks, members of the Detroit Digital Justice Coalition, and a router host and network user. In these interviews, I tried to understand how different actors conceptualized digital justice work, what motivated their participation in community networking efforts, and how they understood the relationship between digital justice organizing and other forms of community organizing. I also used interviews to gain insight into the technical specifics, pedagogical practices, and workflow mechanics of the EII networks.

Interview participants comprised a majority of the key actors involved in EII, and I sought the perspectives of the full range of actors involved in building and maintaining community networks. Though I did not formally query interview participants on demographic characteristics, our conversations and interactions indicate that participants were demographically representative of those involved in the scene: slightly more women than men, mostly people of color, largely low- and middle-income, with significant numbers of queer folks and church-affiliated people. Digital Stewards and others involved in specific EII networks tended to be residents of the neighborhoods in which they worked. Throughout the text, I have identified by name those participants who requested to be identified, and I have written about those who wished to be unnamed in such a way as to avoid identifying them.

I collected written documents related to EII and digital justice organizing in Detroit. These included zines produced by the DDJC and DCTP, handbooks on community technology and popular education from DCTP and AMP, and program notes from the Allied Media Conference. They also included websites, email newsletters, and Facebook pages for the three anchor organizations involved in EII and the website for EII itself. I also examined news coverage of EII.

These documents provided insight into how EII and its collaborators represented their work publicly. Zines and handbooks also provided more detailed insight into technical and social practices through which networks were built. Newsletters and social media posts helped me understand the relationships among the different organizations involved and how they collaborated on different campaigns and organizing efforts.

3.3. Analysis

I analyzed these data inductively and iteratively, identifying core themes and concepts from the data and developing theoretical insights as I worked through the different forms and pieces of evidence (Elwood 2010). I coded the data manually using a combination of in-vivo and open coding (Strauss and Corbin 1990, Cope 2010). I validated my theoretical insights with iterative analysis and triangulation across data sources and types.

In-vivo coding highlighted consistencies and contradictions in the data and also helped me identify conceptual insights made by research participants themselves. I coded words and phrases used by interview participants and found in written documents such as "healthy digital ecosystems," "DIY," and "community." I rely on the theoretical insights developed by research participants themselves whenever possible. For instance, when I identified a concept through in-vivo coding, I would often ask interview participants directly about how they understood the concept in order to clarify how different actors used a term and to ascertain how those concepts gained meaning and resonance for them.

I used open coding to identify themes that research participants or data sources described using more colloquial terms. In developing these codes, I incorporated themes from my conceptualization of digital inequality and infrastructural survival, such as "resilience discourse," "poetic imagination," and "knowledge politics." I would sometimes raise my emerging theorizations with key research participants and ask for their responses to the themes I identified. In this way, they could offer challenges or support to my theorizations, providing further data that I used to triangulate my initial interpretations.

3.4. Navigating my positionality as a researcher

I come to this research as a person with a situated standpoint and methodological commitments to feminist and anti-racist praxis. Much of my thinking about what it means to be a feminist and anti-racist researcher has been formed in direct conversation with members of DCTP and their collaborators through the Allied Media Conference. Over the years I've attended the conference, I have participated in a research justice network gathering and attended many sessions on participatory and community-based research. These conversations motivated me to undertake extensive preliminary fieldwork from 2013 to 2015 to determine how to design my study in a way that could be beneficial to DCTP and in a way that would be minimally disruptive to their work. I have lived and worked in Detroit on and off since 2012, and I drew on my personal and professional connections to establish rapport and discern appropriate ways to design my study. Like many community organizations, DCTP and its partner organizations experience a certain amount of research fatigue (Clark 2008), and I strove to foster reciprocity and transparency throughout the process.

Throughout the research I navigated positionality as an outside researcher, though certain aspects of my identity and practice have also lent me partial status as an insider. One marker of my outsider status is that I am white, working in a space composed primarily of people of color. Certainly, there were other white people involved in EII, but given the ways white privilege and racial exploitation operate in both research and non-profit contexts, my whiteness unsurprisingly tended to produce distrust when I first met many research participants. I was also aware of my class status during the research. Though I have experiences of early childhood poverty and housing insecurity, my family's whiteness and educational access made my parents economically mobile over the period of my upbringing. I myself am highly educated, and so while I understand

intimately how experiences of poverty have lifelong impacts, I identify and am usually identified by others as middleclass. My educational and racial privilege are aspects of my identity that I have spent years trying to understand and process accountably, and I would not have attempted this research if I had not begun that work long prior to this project.

Other aspects of my identity that were significant to how I showed up in the research include my personal geographic history, my queerness, and my faith background. I am not from Detroit, but I was raised in Michigan's second largest city of Grand Rapids. At the start of interviews, when I asked interview participants if they had any questions for me, I was often asked to place myself in the work. How did I come to Detroit, and how did I come to be interested in EII? I found that my status as a Michigander—and particularly as an urban Michigander as opposed to a suburban or rural Michigander—was one of the things that made my interest in Detroit's community networks most easily legible to the folks I worked with. My gender expression shifted over the course of my research from more femme to more androgynous-presenting. As I presented as more visibly queer, I noticed that I was often read as more trustworthy by the significant portion of my research participants who were also queer, and this positively impacted my ability to establish rapport. I grew up as a practicing Protestant Christian and received an extensive theological education. This made it relatively easy to engage in conversations about faith and theology with research participants whose religious commitments motivated aspects of their work with EII. On a couple of occasions, I also worshiped with some of my colleagues in EII. To an extent, my social circles overlapped with those of my research participants, especially the younger ones and queer ones. I played on a soccer team with a member of the DDJC, would often run into AMP employees around my neighborhood, and would see others at events like protests, music events, and potlucks. In this

way, though I was always transparent about my status as a researcher, I also interacted with my research participants as a neighbor, a colleague, and occasionally a friend.

I am cognizant that I stand to gain significantly more from this research than my colleagues in EII, but with their input and feedback, I also attempted to foster reciprocity in numerous ways. I've provided interview transcripts to interview subjects, in some cases highlighting areas that they reflected back to me could provide helpful information for their work. I volunteered for DCTP whenever possible. I would be flattering myself to think that they got as much from the exchange as I got from them, but I was able to offer some of my professional expertise in developing a digital mapping module for the digital stewards curriculum and in making additional maps of some of their survey data for them. To the extent possible, I attempted to embed myself in the ecosystem that supports DCTP's work, for instance, volunteering as a legal observer for protests organized by some of AMP's sponsored programs and making maps for the Detroit People's Platform, a long-time AMP partner that also shares office space with one of the EII anchor organizations in the North End. I shared resources when possible, giving people rides and sharing food when I could. Finally, I fostered reciprocity by working as a NextGen Apps instructor for the final period of my research. I was paid for this work, which was hugely significant to my ability to stay in Detroit and support myself beyond the period for which I had initially budgeted, but I was also able to provide useful labor to the organization and substantively support its work as a contracted employee.

CHAPTER 4: VISION-BASED ORGANIZING AND TECHNO-FUTURING ON THE MARGINS

In this chapter, I examine the poetic practices of techno-futuring evident in the work of the Equitable Internet Initiative. I conceptualize techno-futuring as a set of socio-technical practices that are future-oriented. I use the term "techno-futuring" rather than the more common "techno-futurism" (see Halley and Vatter 1978, Berghaus 2009) to emphasize processes and practices over ideology. Techno-futuring can take many forms, and it isn't necessarily grassroots-based. It exists in cultural forms, such as speculative fiction and speculative design (Gunn and Candelaria 2005, Dunne and Raby 2013); in economic forms, as evidenced by the dominance of innovation theory in so many industries (Godin 2015, Sauter 2018); and in policy forms, such as Estonia's Data Embassy Initiative (Robinson and Martin 2017) or Chile's 20th century experiments with cybernetic governance (Medina 2011). I examine how EII enacts progressive practice of techno-futuring to challenge mainstream narratives of the techno-future and the digital-socio-spatial forms and relations envisioned and enacted in such mainstream narratives and practices.

In this chapter I focus on the techno-futuring practice of *vision-based organizing* developed by my colleagues in Detroit and their partners. The term vision-based organizing is not a theoretical innovation of mine, but of theirs. Vision-based organizing is a process of strategy formation, decision-making, and pedagogy that seeks change by building alternatives to structures of oppression, rather than just critiquing them. It is rooted in a poetic imagination that envisions how the social and material circumstances that shape urban life could be transformed to strengthen the existing community, then develops a strategy for achieving that transformation

by drawing on human resources already present in the community.[6] When applied to socio-technical systems such as community wireless networking, vision-based organizing becomes a practice of techno-futuring.

The arguments I develop here respond to key epistemological critiques from post-colonial studies about the geopolitics of theory (Said 1979, Mbembe 2001, Chakrabarty 2002, Connell 2007, Robinson 2006, Sheppard et al. 2013). Any practice of techno-futuring is specific to its geohistorical context. This is as true of mainstream techno-futuring as it is of grassroots alternatives that have emerged in Detroit. The implications of this are two-fold. First, we must understand that in spite of their presumed universality, hegemonic discourses and theories are, in fact, specific to the contexts that produce them and are insufficient to make sense of other contexts. Just as treating cities of Global North as places from which to forge theory and cities of the Global South as sites to collect empirical data produces insufficient explanatory frameworks for understanding Southern cities (Bunnell and Maringanti 2010, Roy and Ong 2011, Parnell and Robinson 2012, Lees et al. 2015), so too do the frameworks developed in studying Silicon Valley fail to explain technological development in places like Detroit.

Second, theorizing socio-technical practice from the margins, rather than the core, can produce concepts that give us new ways of understanding both margins and core. In urban theory, Roy (2003) urges scholars to "pose Third World questions of First World places." Putting this into practice in a study of homelessness and slums, Roy interrogates American concepts of propertied citizenship from the perspective of Indian expectative property rights, exposing the provincial nature of American norms and shedding light on paradoxes in both contexts that

[6] This approach is distinct from Asset-Based Community Development (ABCD), which has gained popularity in the last decade. While vision-based organizing shares ABCD's attention to community strengths over community deficits, it is fundamentally linked to a critical analysis of poverty and inequality that politicizes community mobilization, whereas ABCD is linked to privatization and a devolution of state responsibility (DeFilippis et al. 2011, MacLeod and Emejulu 2014, Aimers and Walker 2016).

provide openings for paradigm shifts. Similarly, I explicate vision-based organizing in order to not only better understand how technological development and political struggle unfold in impoverished and racialized urban spaces but also to challenge the uncritical optimism of techno-utopianism and the desire for control through algorithmic governance that have been forged in core spaces of technological development.

In this chapter, I first briefly consider the limitations of mainstream techno-futuring for understanding the Detroit context. As critiques from the critical race studies of technology and geographic literature on smart cities and platform capitalism make plain, techno-utopianism is clearly insufficient to produce an equitable techno-future. At the same time, futuring practices that anticipate risk and attempt to promote security only propagate and reinforce existing inequalities. And yet, the choice doesn't have to be between utopian optimism and dystopian anxiety. Rather, EII teaches us that imagination and practices of techno-futuring can acknowledge race and class-based oppression rather than erase it, and then function as a means of addressing the unevenness of technological development in a specific place and time. To analyze how this takes place, I then examine the specific geohistorical context in which the socio-technical practices of EII have developed, tracing the influence of black radicalism, liberatory theology, and Afrofuturism on vision-based organizing. Finally, I analyze how vision-based organizing in Detroit challenges mainstream narratives of the techno-future, specifically through how it guides accountability and decision-making in the process of developing community wireless networks.

4.1. The limits of mainstream techno-futuring

Mainstream technoculture in the United States frequently engages in practices of futuring. One of the paradigmatic ways this is expressed is in ideologies of techno-utopianism, which hold

that technological advances can produce an ideal society in which environmental, social, political, and other challenges are solved with technology that enables greater efficiency, broader civic participation, better informed decision-making, and the elimination of bias (see Segal 2005 for a historical overview). I am particularly interested in what these utopian visions suggest about race and poverty. Early utopian understandings of race and the Internet lauded the imagined capacity of the Internet to erase racial difference through disembodiment and anonymity (Chun 2006, Nakamura 2008). This is captured by a now iconic 1993 *New Yorker* cartoon that showed a dog sitting at a computer, saying to its canine companion, "On the Internet, no one knows you're a dog" (Steiner 1993), with the idea being that the anonymity rendered by Internet protocol enables all users to interact equally, regardless of identity.

Research on race and technology, however, demonstrates that even when the Internet was a largely text-based medium, erasure of racial difference was a myth (Nakamura and Chow-White 2012). Not only did race and other aspects of difference affect who used the Internet in the first place and how they used it (Mack 2001), but digital spaces were productive of racial difference in a number of ways. From assumptions of default whiteness and a lack of digital representations of people of color (Nelson 2002) to Orientalist identity tourism through online role-playing (Nakamura 1995), the early Internet was far from a post-racial utopia.

With the rise of "Web 2.0" (O'Reilly 2005) and the greater incorporation of visual elements into Internet technology, the narrative that the Internet erases racial identity has changed. Instead, 21st century technoutopian narratives laud the Internet's supposed capacity to usher in an era of radical participation, where difference exists but no one is excluded, such that racial difference can be celebrated instead of erased and class difference can be overcome (Nakamura 2008, Nakamura and Chow-White 2012). This is echoed in slogans like Cisco's

"human network" campaign or Facebook's claim to "connect the world." It is also evident in the triumphant narratives surrounding smart cities and the so-called sharing economy. In the digitally connected smart city, all citizens can supposedly enjoy a higher quality of life, with technological solutions for existing inefficiencies in mobility, service provision, governance, and education (Hollands 2008, Townsend 2013, Kitchin 2014). Digital platforms like Uber and Taskrabbit are heralded as opportunities for everyone to participate in an open marketplace, buying and selling services with minimal friction and low barriers to entry (Richardson 2015, Sundararajan 2016).

Critical data studies of platform capitalism and smart urbanism question these triumphant claims, however. Work on digital labor markets, for instance, highlights how digital workers in the gig economy may experience some benefits from greater flexibility, but they also experience heightened precarity, with diminished bargaining power and fewer opportunities for advancement (Lehdonvirta 2016, Malin and Chandler 2016, Graham et al. 2017). Work on the production of environmental externalities, such as carbon emissions from increased cloud computing, belies the narrative of smart urbanism's efficiency (Carruth 2014). Lack of regulation—and decentralized labor and consumer markets that resist regulation—produces new inequities, such as ride sharing platforms' failure to accommodate consumers and workers with disabilities (Rogers 2015, Hu 2017, Reed 2017) and racial discrimination on room sharing platforms (Todisco 2014, Edelman et al. 2017). Rather than usher in a utopian era of equity, critics of smart urbanism and platform capitalism argue that these discourses are mobilized in service of neoliberal capitalism, which ultimately produces geographies of heightened racial and economic unevenness (Wiig 2015, Zwick 2018).

On the other hand, critical data studies also highlights an alternative set of mainstream techno-futuring practices that attempt to secure the future by anticipating and proactively mitigating risks. Rather than being techno-utopian, this anxious futuring is dystopian and utilizes technological tools in pursuit of geopolitical, economic, and environmental security. From this perspective, the open potentialities of the future are problematized as risks rather than opportunities (Anderson 2010, Amoore 2013, Leszczynski 2016). To address these potential threats, urban big data is mobilized in an algorithmic risk calculus that takes place in various ways and at various scales, from preventing individuals from traveling along routes that are predicted to be "dangerous" (Thatcher 2013) to predictive crime mapping systems that pre-emptively dispatch police to areas of anticipated crime (Jefferson 2018). Whether or not such attempts at risk mitigation are "effective"—and empirical research into efficacy is presently lacking, as are definitions of what constitutes efficacy in most cases—critical data scholars warn that such practices of big data-based futuring further entrench various forms of spatial inequality, since they legitimize the supposed neutrality of data and depend on algorithms that cannot be divested of racial and other biases (Leszczynski 2016, Jefferson 2018).

Whether dystopic or utopic, mainstream practices of techno-futuring are clearly insufficient to produce an equitable techno-future. This does not mean, however, than any kind of future-oriented technical practice must be abandoned. Rather, my analysis of the Equitable Internet Initiative indicates that future-oriented vision and imagination can stimulate liberatory socio-technical practice when it is rooted in a rigorous analysis of present inequality. Instead of ignoring how race and class-based oppressions function and thereby re-entrenching or reproducing them, techno-futuring can acknowledge how processes of racialization and impoverishment take place—including via technology—in order to envision ways of disrupting

those processes. Importantly, the EII practices I examine here are rooted in a specific space and time, so I next turn to an examination of their specific geohistorical context.

4.2. Roots and influences of vision-based organizing in Detroit

Vision-based organizing as articulated in EII is shaped by the geohistorical context in which DCTP operates. First, it is rooted in a black radical politics inherited from movements for liberation via local activists like Ron Scott and Grace Lee Boggs. Second, it's linked to the cultivation of a liberated imagination, influenced by both theologies of liberation and Afrofuturist cultural traditions in the city. I contend that it's vital to understand the geohistorical context that shapes DCTP's practices of techno-futuring because these practices emerge in dialectical relationship with processes of racial, economic, and gendered oppression that also take place in Detroit historically and today. Just as multifaceted processes of oppression are expressed through particular spacetimes, so too does the transmission of analytical and political repertoires that attempt to resist and undo those oppressions. In tracing the geohistory of vision-based organizing in Detroit, I model a mode of analysis that traces how the past inflects the present and how present analytics frame future-oriented politics, and I highlight what this mode of analysis illuminates, namely a radical political praxis in Detroit that is an assemblage of diverse critical analysis, modes of reflexive and intergenerational learning, and future-oriented ontological claims. This assemblage is the foundation of vision-based organizing: the techno-futures that Detroiters are imagining and building are rooted in their geohistorical experience, which is vital to understanding their political significance.

4.2.1. Black radicalism in Detroit: politics beyond the state, place-based pedagogy, and critical reflexive inquiry

A longtime center of radical community organizing in Detroit is the Boggs Center to Nurture Community Leadership, which operates out of Detroit's east side. The Center is named

after its founders, Jimmy and Grace Lee Boggs. Jimmy died in 1993, but Grace lived until 2015 and was active in the city even through the last years of her long life. Along with a number of others affiliated with the Boggs Center, such as Ron Scott (who also died in 2015), Shea Howell, and Rich Feldman, Boggs directly mentored many of the organizers who work with AMP and DCTP. The political analysis they imparted to Detroit's younger activist community is rooted in lifetimes of struggles against capitalist exploitation and racial oppression and for civil rights and black power.

Grace Lee Boggs' influence on grassroots organizing in Detroit is immense (Baker 2018). A Chinese American who grew up in New York City, she completed a PhD in philosophy in 1940 and worked for years with socialist historian C.L.R. James in Chicago. In 1953, Boggs moved to Detroit, where she married Jimmy Boggs, an autoworker, activist, and theorist of black working-class struggle. In the mid-20th century, she was a member of the communist party and active in the national movements for civil rights and black power. Jimmy and Grace corresponded with Malcolm X and Martin Luther King Jr., supported the Dodge Revolutionary Union Movement (DRUM), and worked frequently with members of the Black Panther Party in Detroit, including Ron Scott (Boggs 1998, Boggs and Kurashige 2012). After Coleman Young was elected the first black mayor of Detroit in 1974, the Boggses and their collaborators began to question the limits of black political power within the existing structures of government (Boggs and Kurashige 2012). Though they praised Young's efficacy at integrating the institutions of local government, they staunchly opposed his attempts to attract big capital to a depopulating Detroit, decrying the destruction of the Poletown neighborhood to make way for a General Motors assembly plant and opposing his plan to build casinos in the city.

Watching schools close and jobs disappear from the city, they sought instead to develop ways for struggling Detroiters to find meaningful work outside of the formal economic sector. In 1992, Grace and Jimmy opened the Boggs Center and launched Detroit Summer, an ongoing youth program that combines service to the community with reflective political inquiry and the cultivation of place consciousness. Though she's been critiqued for the small-scale focus (see Jones 2012)[7], this place-based pedagogy was vital to Boggs, who wrote in a 2000 article on the topic:

> Global capitalism relentlessly displaces people and abandons places because it views local communities, cities, and even nations as inconveniences in the path of progress. Place consciousness, on the other hand, encourages us to come together around common, local experiences and organize around our hopes for the future of our communities and cities. […] Place-based civic activism is also unique in the way that it links issues [… and] provides opportunities to struggle around race, gender, and class issues inside struggles around place. (Boggs 2000)

For Boggs and her collaborators, place-based activism was a way of grounding struggles against intersecting forms of racial, economic, and gender oppression. As a result, many of the campaigns that the Boggs Center and its collaborators have undertaken in Detroit are strongly tied to spatial politics, including urban gardening and it attendant struggles for land tenure, developing community land trusts for housing, and undertaking infrastructure projects for both Internet and solar power.

The emphasis in Detroit Summer on reflective political inquiry was also characteristic of Boggs' approach to community transformation. From her early training in Philosophy, Boggs' work was heavily influenced by Hegelian dialectics, and one of the central tenets of her thinking

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[7] Jones critiques the Boggs's turn, in the late 60s, towards Detroit and away from the national labor movement and broader socialist politics as a reactionary acceptance of neoliberal capitalism and its incumbent responsibilization. Critiquing Boggs and Kurashige's 2012 book *The Next American Revolution*, Jones writes, "Far from calling on workers to oppose the attacks on jobs and living standards, she proposes they seek an individualist solution through gardening and other attempts as self-sufficiency. However, there is no individual solution to the monumental problems mankind faces."

was the concept of dialectical humanism. A supplement to orthodox Marxism's dialectical materialism, dialectical humanism "asks for evolution of the self in simultaneity with efforts to change the world, to be accountable for ourselves and others as we interrogate barriers to equality, and face our complacency in how they are maintained" (Baker 2018, 441). This approach emphasizes the relationship between political imagination and individual self-knowledge, asserting that self and community exist in a dynamic relationship to one another.

Many of the Allied Media Projects and DCTP staff have taken part in Detroit Summer and have been mentored by Boggs and others at the Boggs Center. AMP Director Jenny Lee identified this connection as critical to the development of vision-based organizing within DCTP:

> I would say the framework of visionary organizing is one that I learned through my involvement with Detroit Summer. [… It was] the idea that we as social justice activists have to be kind of creating the alternative infrastructure, the alternative world we want to see, alongside resistance to the current paradigm, the current systems. And they arrived at that conclusion through their decades of experience in the black power movement, in particular in this city.

Lee described how, for instance, how the Detroit Coalition Against Police Brutality, led by Ron Scott, was an inspiration for much of AMP's work:

> [The Coalition] would resist and fight, in the courts, all these incidents of police brutality. But then […] they were really growing this vision of Peace Zones for Life that was like, 'How do we heal and create community in such a way where we can resolve conflict without needing to go to the police and bringing them into these circumstances where they're likely to cause further violence?'

In this way, AMP and EII have inherited from Boggs and other elders in the Detroit organizing community a strong place consciousness, a desire to work outside the bounds of formal political organizing, as well as a commitment to self-transformation in conjunction with community transformation.

4.2.2. Future oriented ontologies: Detroit's theologies of liberation and Afrofuturist cultural traditions

If black radicalism provides the analysis of present inequalities that undergirds EII's approach, its imaginaries of future liberation come from the Church and Afrofuturism. Christian theologies of liberation provide one inspiration for the visions of liberation that guide vision-based organizing in the Equitable Internet Initiative. Churches have long been centers of community formation and hearths of civic engagement in communities of color in the United States (Billingsley 1999, Baldwin et al. 2003, Wong et al. 2008). For this reason, Churches—especially those that serve their geographic neighborhood and not scattered members who commute from a distance for services—offer many advantages as anchor organizations for community wireless networks: tall steeples have excellent line of sight for router placement, church buildings can be used as meeting spaces, and existing social networks make outreach easier.

In addition to these material and social advantages, theology has long been a terrain of poetic thought, from Christian abolitionism to Marxist liberation theology (Alves 1968, Wilmore 1972, Boff and Boff 1987). Certainly, churches have also been associated with social conservatism in communities of color (Wong et al. 2008, Harris 2010), but my research suggests that for many EII participants—and especially for the program coordinators the sites—Black Church theology and practice provide significant motivation for their participation in the program. Church-affiliated nonprofits serve as anchor organizations at two of the three EII sties, and the executive director at the third is a pastor. The influence of liberatory theology and Christian praxis was perhaps most pronounced at the Islandview network, which is based at Church of the Messiah and operated as part of the church's BLVD Harambee non-profit. The households connected by this network are all part of Church of the Messiah's extensive low-

income Housing Corporation, and because networking and outreach is coordinated through the church's networks, most of the site's digital stewards, as well as its digital steward trainer, are members of Church of the Messiah, while the site's project coordinator is Rev. Wally Gilbert, Assistant Pastor of the church.

Liberatory theology has shaped the poetic imagination of vision-based organizing in its teleological belief in freedom and its belief in all people's inherent deservingness. Critical geographers tend to be deeply skeptical of teleologies, but for some EII participants, the Christian concept of divine providence was deeply motivating. For instance, Reverend Ross, project coordinator for the North End network, expressed her motivation for her organization's work in these terms:

> I think you really have to believe that God has a purpose and a direction, that He must have given me these ideas. Because on my best day I would not want to do any of this. On my best day I would say, look, you've worked a lot of years, you need to sit down and retire. But every day there's this voice that keeps on saying, 'You can do this, and you should do this.'

Theology also grounds the organizations' commitment to radical hospitality and belief in all people's inherent deservingness of good lives. Where other programs to provide Internet to low-income households—like Comcast's Internet Essentials program—often frame their work in terms of recipients worthiness and sometimes even try to restrict use to educational or employment purposes, EII's networks do not ask residents to prove their need or justify the ways they use the network. Instead, they are open to participation from anyone in the coverage areas who self-identifies their need. "We're the Church," said Pastor Barry Randolph of Church of the Messiah, "We don't have to apologize for working with the least of these."

Cultural traditions of Afrofuturism are another influence on EII's poetic imagination. Afrofuturism is a cultural movement in literature, music, fashion, and art. The term was coined

in 1994 by Mark Dery, who defined it as, "Speculative fiction that treats African-American themes and addresses African-American concerns in the context of twentieth-century technocultures—and, more generally, African American signification that appropriates images of technology and a prosthetically enhanced future" (Dery 1994, 180). Early pioneers include musician Sun Ra, science fiction writers Octavia Butler and Samuel R. Delany, and artist Jean-Michel Basquiat. Like Philadelphia, the Bronx, and other black urban centers, Detroit has been a hotbed of Afrofuturist thought and practice. Techno was born in the city, black and militant. As a musical genre, techno is a mechanical reinterpretation of funk and soul filtered through drum machines and synthesizers that only the Motor City could originate (Sicko 2010, Benabdellah 2017). While it is now associated more with Northern European cities, techno was pioneered in Detroit by DJs Juan Atkins, Derrick May, and Kevin Saunderson, among others. Funk too has deep roots in Detroit. George Clinton and Parliament-Funkadelic were based in the city for many years and recorded much of their 1975 album *Mothership Connection* at United Sound Systems in the Cass Corridor. A full-sized, DJ-booth-equipped interpretation of P-Funk's Mothership—a spaceship out of which Clinton's alter-ego, Dr. Funkenstein, emerged during the band's Earth Tour—is stationed at ONE Mile, a community arts space in the North End that hosts a router for the EII network in that neighborhood. During my fieldwork, I attended a mayoral campaign launch party (at ONE Mile) for Ingrid LaFleur, an artist and activist who essentially ran on a platform of Afrofuturism, albeit unsuccessfully (DeVito 2017). adrienne maree brown is also an important Afrofuturist literary influence based in Detroit. She co-edited a 2015 anthology of short stories inspired by Octavia Butler called *Octavia's Brood: Science Fiction Stories from Social Justice Movements* with Walidah Imarisha.

Afrofuturism shapes the Equitable Internet Initiative in subtle but distinct ways. Many of the EII staff and participants cultivate creative practices that are shaped by the Afrofuturist tradition. DCTP Director Diana Nucera, for instance, DJs and makes music under the name Mother Cyborg. At one laser-filled live show, she used an interlude to inform the audience about an upcoming FCC vote on net neutrality, proclaiming, "Mother Cyborg says: take care of each other—and save the Internet!" Others involved in EII are Afrofuturist poets, science fiction writers, and visual artists. This connection was especially apparent in the North End network. Numerous North End neighborhood organizations have a connection to the Afrofuturist art community in the city and host routers for the network, including ONE Mile, the American Riad (a public art and community housing project), and Red Door Digital (a gallery, community space and print shop). At the request of the NEWCC Digital Stewards Trainer Monique Tate, the youth coding students in the North End Next Gen Apps class made a scale model of the ONE Mile Mothership for our neighborhood's station at the December 2017 DiscoTech. The Digital Stewards continue to display that model at community meetings and events where they table, evoking the character of the neighborhood and visually underlining the techno-futuring work of the project.

Afrofuturism has shaped the poetic imagination of vision-based organizing in its connection of past and future, its emphasis on self-knowledge, and its emphasis on technical practice and experimentation. Paradoxically, the past is always present in Afrofuturism (Dery 1994). Neil Drumming (2017) puts it this way: "[I]t takes into account the past in a lot of ways. It imagines that black people's forms of survival, through the slave trade, through persecution, that that's almost a technology in itself, the ways in which we've come through those things, and that everything that's been a part of our culture has made it possible for us to pave the way for

the future." The erasure of black history and black identity via the dislocation of slavery has also shaped Afrofuturism's attention to self-knowledge. Greg Tate states that science fiction comes "from a basic human desire to know the unknowable, and for black writers, that desire to know the unknowable directs itself toward self-knowledge. Knowing yourself as a black person—historically, spiritually, and culturally—is not something that's given to you, institutionally; it's an arduous journey that must be undertaken by the individual" (quoted in Dery 1994, 210). The technical practice invoked by Afrofuturism is particularly well suited to the technical practice of EII. Speaking mostly about hip hop as it relates to Afrofuturism, Samuel Delany says, "to look at any of these black cultural youth movements as an easy and happy development blossoming uncritically from the overwhelmingly white world of high-tech production […] is, I suspect, thoroughly to misread the fiercely oppositional nature of this art: scratch and sampling begin, in particular, as a specific *miss-use* and conscientious *desecration* of the artifacts of technology and entertainment media" (Quoted in Dery 1994, 193). In the same way, the technical practice of EII is innovative, but also oppositional and a product of bricolage.

Together, the diverse influences of black radicalism, liberatory theology, and Afrofuturism provide the analytical and poetic foundation of EII's vision-based organizing. This foundation enables vision-based organizing to function as a socio-technical practice that challenges mainstream techno-futuring and enacts otherwise possibilities. Across EII sites and across the individuals involved at all the sites, the three influences had varying levels of significance. Not all of them resonated for every participant, but at least one almost always came to the surface when they talked about their motivations and goals. With its decentralized structure and emphasis on trust and rapport, the overall structure of EII is flexible enough that this ecumenism was a strength rather than a detriment. Now that I've outlined the geohistorical

influences on vision-based organizing and their significance, I next turn to an analysis of how it operates.

4.3. Vision-based organizing as a practice of techno-futuring

Vision-based organizing is a method of pursuing social change that the Allied Media Projects and its collaborators have developed over time. It is highly iterative and decentralized; incorporates frequent reflection and experimentation; and prioritizes relationship building over achieving specific goals. It was developed intentionally as an alternative to the strategic planning frameworks that philanthropic funders have pressured AMP and its collaborators to adopt (Ignaczk et al. 2017, brown 2017a). Where strategic planning prioritizes the articulation of long and short-term goals and the development of measurable outputs to assess progress, vision-based organizing establishes grounding principles and embraces a more flexible, emergent relationship to goal setting over time. adrienne maree brown, who runs an AMP sponsored project called the Emergent Strategy Ideation Institute, has written about this process in a book called *Emergent Strategy:*

> In movement work, I have been facilitating groups to shift from a culture of strategic planning to one of strategic intentions—what are our intentions, informed by our vision? What do we need to be and do to bring our vision to pass? How do we bring those intentions to life throughout every change, in every aspect of our work? This often results in groups centering work that doesn't depend on factors outside of their control (such as funders, or elections, which come and go and should be well used but not directive or debilitating). The clearer you are as a group about where you're going, the more you can relax into collaborative innovation around how to get there. (brown 2017, 70)

Referencing brown's work, AMP director Jenny Lee echoes this:

> It's really a theory of change that's come about through [brown's] work and our work and others in this shared space, both in Detroit and nationally, just kind of resisting the idea that—or seeing the futility of—long-term fixed strategic plans that have these benchmarks and set outcomes, given the volatility of the world, and being able to be guided by principles that are really grounding and help orient us to what we're supposed to be doing but allow for one thing to lead to another, more so than trying to prescribe.

Because they receive foundation funding, AMP and DCTP often find it strategically necessary to articulate program goals and measure outcomes to satisfy funders. However, the vision-based organizing framework guides their internal decision-making processes and daily operations. Developing multiple literacies for their operations in this way is indicative of how they engage in strategic survival politics, tactically shifting back and forth as necessary.

Practically, vision-based organizing works by asking a group of stakeholders to envision the future they want around a certain set of questions, then to strategize how to build that future, not with goals and measurable outcomes, but with values that will keep the group focused on the initial vision. Who constitutes the collection of stakeholders varies depending on context, but EII organizers consistently deemphasize the role of technologists or other "experts" in the process. One of the clearest examples of this is the initial composition of the Detroit Digital Justice Coalition, who developed the digital justice principles. Instead of technologists, the majority of the people who made up the DDJC at its founding were environmental justice activists, anti-poverty organizers, and artists. Jenny Lee explained:

> It's part of our whole effort of getting technologists to think more about the human and relational aspects than just the tech when it comes to problem solving. […] So we were starting from this point of like, well, how can the Internet and media and technology be this layer on top of the really rich community organizing infrastructure of this city? Versus, seeing it as this silver bullet or the Internet as this idealized space that we needed to bring people into. Because the Internet isn't going to solve everyone's problems, and there's a lot of really harmful things on the Internet.

The process of reimagining possibilities for the future thus begins with gathering stakeholders from among the communities most impacted by existing inequalities, instead of those traditionally trained to think of themselves as problem solvers.

Collective visioning was evident in EII operations in numerous ways, including the subtle and mundane. For instance, it was frequently used pedagogically in community meetings as a

way of inviting attendees into participation. At one meeting I attended, an informational gathering held early on in the EII project timeline, participants divided into groups to discuss the question, "In 2040, what do you want our neighborhood to look like? How does digital technology play a role in that?" These questions were a way of getting participants to think through the issues of technology organizing in relation to themselves and the places they inhabit and to introduce us to the practice of developing an imagination around what might be possible. The discussion in this instance was largely rhetorical in that we weren't developing a plan to achieve the neighborhood visions we shared. It was instead a small invitation to think together technopoetically, as a kind of practice for deeper participation later. Collective visioning was not just an inconsequential exercise, however. To understand its more significant enactments in EII, I next turn to an exploration of the Digital Justice Principles.

4.4. Operationalizing vision-based organizing through the Digital Justice Principles

As a process of strategy and decision-making, the most important thing that vision-based organizing has yielded for EII is the Digital Justice Principles. As explained in more detail in chapter three, these are a set of values developed by the Detroit Digital Justice Coalition (DDJC) in 2009 that guide the group's digital justice activism: access, participation, common ownership, and healthy communities. The DDJC is an extant group of activists that the Detroit Community Technology Project grew out of. To develop the principles, AMP director Jenny Lee conducted individual interviews with a dozen coalition members, asking them to articulate a vision of digital justice in relation to their work. The DDJC coalition members are primarily non-technologists. Instead, they are environmental justice advocates, anti-poverty organizers, artists, and independent media producers. After Lee conducted the interviews, the group listened to an edited compilation and collaboratively identified themes that emerged across the interviews to

come up with the principles. The process took a number of weeks and demonstrates AMP's emphasis on critical connections and iterative, collaborative processes. Years later, the digital justice principles remain fundamental to DCTP's work. Staff, digital stewards, and community members are all trained in the digital justice principles early on in any participation with EII, and every zine and handbook that DCTP publishes begins with an overview of the principles. The principles have a number of impacts on operations. Below, I outline key impacts on accountability and decision-making.

The digital justice principles served as a frequent accountability check on operations. One way in which this was especially apparent was in the decisions DCTP staff made about who to collaborate with and how to represent those collaborations. It was vital to DCTP staff that potential collaborators share their understanding of digital justice and their commitment to the digital justice principles. This manifested at many levels. One high-level collaboration where this was apparent was with the Internet Service Provider through which EII is getting bandwidth for its first years of operation. The ISP, a local company that operates a fiber optic network in greater downtown Detroit, is eager to call itself a partner with DCTP, and has represented itself in media interviews and public events as both a beneficent donor and equal co-conspirator in the EII effort (see Mondry 2017). However, DCTP rejects this characterization, and over the duration of my fieldwork, staff increasingly distanced EII from the company. They generally refused to name the company in communications about the project, and they explicitly asked me not to name them either. Both DCTP staff and the anchor organizations' project coordinators reminded me in interviews that DCTP purchased the bandwidth. One person, for instance, interrupted an explanation of how the signal gets to the neighborhoods to make this clear to me: "Our provider—which, I like to refer to them as our Internet provider or our source for the

Internet, because their name kind of precedes us, and we're not partnering with them, we're buying it wholesale, so it's not—they don't really deserve any special mention." While working with a local company provided benefits to DCTP over working with a national company like Comcast, the ISP's putting profit motives over a principled commitment to digital justice—and especially the principle of common ownership—meant DCTP could not see them as an equal partner in EII.

Lower stakes collaborations—or collaborations that carried with them less path dependency and less financial investment—were also assessed according to potential collaborators' commitment to the principles. For instance, a member of the Digital Justice Coalition who joined a few years after the principles were developed described being informally "vetted" by Diana Nucera before she was welcomed into the group. This echoed my own experience of being met with Nucera's skepticism when I first began this project. It was only after I attended two DiscoTechs and spoke at length with her and others about my motivations and commitments that she agreed to give me access. If potential collaborators' motivations weren't in line with the principles, they were asked not to participate. For example, one person was asked to leave a Digital Stewards training class when the instructor felt that his interest in technology was too instrumental instead of being rooted in the slow-moving relationship building that characterizes DDJC's commitment to healthy communities and broad participation.

Accountability through the digital justice principles also motivated EII's refusal to surveil users of the networks. Many programs to provide Internet service to low-income users prioritize use for purposes deemed to be productive. The FCC, for instance, offers discounts to assist schools and libraries in areas with high poverty in providing Internet service through the Universal Service Fund E-Rate program, but it restricts use to "educational purposes" (FCC

2018). This is too limited a perspective under the digital justice principles, which state, "Digital justice integrates media and technology into education […] to expand the process of learning beyond the classroom and across the lifespan" (DDJC 2012, 4).

DCTP thus rejects the notion of categorically "good" and "bad" uses of technology. "You can't actually put parameters on people's educational practices," said Nucera.

> I could be on YouTube, looking at some stupid shit, some music video that someone made that's wearing whatever, like a banana suit. And then I see something else that makes me wonder like, "How do you make a banana suit?" And then I figure out how to make a banana suit, and then I also figure out how to make a banana shake and ice cream because that happened to come up too. […] One thing leads to another. It's infinite possibilities.

In keeping with its reliance on popular education pedagogies, DCTP conceptualizes learning in expansive terms; they believe that it cannot be limited to formal educational settings and often results from unexpected processes. DCTP therefore refuses to monitor anyone's use of the EII networks or to restrict access to content.

DCTP's expansive understanding of learning under the digital justice principles is important to this refusal to surveil use, and so too is its understanding of how surveillance can make vulnerable communities even more vulnerable. The principles "prioritize the participation of people who have been traditionally excluded from and attacked by media and technology" (DDJC 2012, 3). This motivates DCTP's Data Justice research, including its Our Data Bodies project, its guidelines for city governments with open data portals, and its series of Data Justice DiscoTechs across Detroit and accompanying zines. Our Data Bodies is a collaboration between DCTP, community organizations in Charlotte, NC and Los Angeles, CA, and a team of academic researchers led by Virginia Eubanks that seeks to understand how members of vulnerable communities—such as recently incarcerated folks and people receiving public assistance—experience digital privacy or lack thereof. The guidelines for open data draw on this research in

order to "resist the criminalization and surveillance of low income communities, people of color and other targeted communities" (DDJC and DCTP 2017), and include recommendations such as not retaining the personal information of those who access city services and performing regular security audits of city data storage practices. EII is connected to this work in the Data DiscoTechs, which EII digital stewards participate in. Stations at these DiscoTechs attempt to demystify data, help community members understand the risks of open data as well as its potential uses for community organizing, and how to use data to make maps, charts, or art. By researching how surveillance affects marginalized communities, they better understand the risks of digital connectivity; by educating these communities about these risks and teaching people how to mitigate them, they prepare EII users to participate in digital life as safely as possible.

The digital justice principles also inform decision-making when conflict arises in the project. One EII staff member said:

> A lot of times it's a place where, when you don't know what to do, you can look at the principles and then it's like 'Oh it's obvious what we do. It's obvious what we do now.' I'm just a firm believer in that, and I think it's the only reason why I'm here right now, and the only reason why these projects have come this far.

This re-centering function of the principles was most apparent when I interviewed the digital stewards responsible for designing and building the networks, whose jobs put them in the position of making frequent, on-the-ground decisions. While project managers at the three sites spoke about the principles in vague terms and couldn't identify specific examples of how they came to matter to the project, the digital stewards who did the most on-the-ground technical and community organizing work, found them frequently helpful.

One story appeared in interviews with multiple members of one neighborhood team and illustrated how the principles functioned to help the team make decisions amid conflict. At one point, the North End team reached an impasse in designing their network with stewards who had

different ideas of how to move forward unwilling to compromise. Their digital steward trainer, Monique Tate, suggested that they all turn to the principles for guidance. In doing so, they were reminded of their commitments to the project and its goals and found a solution. Heru House, one of the stewards described it this way:

> Like we got to a point when it was like there was some friction between folks on the team, just impatience or folks irritated with one another. And she brought back the—'OK, now we're going to start this meeting with the digital justice principles, and let's go back and review this as a common ground for everybody.' It was real cute, you know, but it was on time. It was like, 'Oh! So here's the principles. We gotta read this again. Yes, OK.'

Another steward, Gabby Knox, also identified the principles—and Monique's role in maintaining focus on them—as key:

> Monique was a major help in that. That's why it was set up that way, right, to have a constant reminder of those principles, or someone whose space in the situation was to hold those principles for us, giving us enough room to come to them and to need them or figure out when to place them without some kind of controlling or rule book thing. […] I think [Monique] kind of morphed into those principles themself in the way they moved. So that was an example for us to move in a different way if it got too far. And people's personalities helped in that, just knowing that we want to see it last and the bigger purpose of it was always a thing. Like we're all here because of this larger thing and these people. That was always at the forefront.

The principles were developed from the ground up and from a vision of the future that those in the Digital Justice Coalition wanted to see in Detroit. They were operationalized in this same spirit: by the people doing the work on the ground, with an eye toward the future they wanted to build.

4.5. Conclusion

In this chapter I have analyzed EII's practice of vision-based organizing to examine how community wireless network organizers build toward liberated techno-futures. I analyze vision-based organizing as a socio-technical practice and trace its geohistorical influences in black radicalism, theology, and Afrofuturism. DCTP organizers draw on black radicalism inherited

from local activists and thinkers like Ron Scott and Grace Lee Boggs to develop a strategy rooted in place-based pedagogy, critical reflexive inquiry, and community autonomy. From black and brown theological traditions, they draw a poetic belief in freedom and in all people's inherent deservingness that motivates many participants. Afrofuturism provides a framework for connecting the past and future to the present and furnishes further emphasis on self-knowledge and on technical practice and experimentation.

Drawing on these influences, DCTP organizers conceptualize the future as a place-time in which digital technologies can help advance the community organizing practices through which they contest socio-economic, environmental, and other inequities in their communities. They refuse dystopian techno-futuring practices like algorithmic policing as well as utopian practices like smart urbanism strategies, which inevitably either re-entrench oppresssions or reproduce biases that result from existing racial and class inequality. Instead, they enact techno-futuring rooted in a robust analysis of dispossession and racialized inequality to produce the digital justice principles, which guide accountability and decision-making in the process of building community Internet and enable them to push beyond the limits of existing theorizations of the techno-future.

CHAPTER 5: MEETING NEEDS AND REWORKING SYSTEMS WITH INFRASTRUCTURAL SURVIVAL PROGRAMS

In this chapter, I consider how infrastructures of community Internet shape urban political struggles around resource provision and local autonomy. While critical data studies scholars have given significant attention to how applications of digital technologies shape knowledge politics and urban governance, they have paid far less attention to the infrastructures that underpin these digital technologies and the politics in which they are implicated (Pickren 2016). Studying digital infrastructures in conjunction with the technologies they support gives us valuable insight into how power circulates and how social agency is exercised and negotiated through the material and social assemblages that make up digital technologies. I engage questions of infrastructural visibility—the tendency of infrastructure to switch between the foreground and the background of users' awareness—to examine how organizers bring technical infrastructure into the foreground. This foregrounding of infrastructure allows them to rework both the technical systems of Internet provision and the social relations that surround them. I argue that the process of building community wireless allows organizers both to refuse the intractability of large infrastructural systems and to strengthen social infrastructures of community organizing. In this way, they build technical and social infrastructures towards a particular end: to strengthen place-making and place-keeping and ultimately to begin enacting just digital futures.

5.1. The intractability of backgrounded infrastructure

As discussed in chapter 2, large infrastructural systems tend to be black-boxed and hidden by design, largely disappearing from view as they function as a background substructure

that supports other activities. In Heideggerian terms, infrastructure withdraws into the background and becomes "ready-to-hand," unnoticed and therefore ready to serve its purpose (Heidegger 1962). In the predominant model of Internet provision in the United States, individual households (that is, non-precarious households in areas where service is available) purchase connections from private Internet Service Providers. In this system, Internet infrastructure is largely invisible background, noticeable only when the connection goes down or the bill is due. While all infrastructural resources tend to be backgrounded in this way, Internet infrastructure is arguably even more black-boxed than infrastructures for resources like water and electricity because the geohistorical context of its development has produced less public sector involvement in its maintenance. In the United States and many other countries, water and electric infrastructures are more likely to be publicly owned, and even where privately owned, in the U.S. they came under extensive federal regulation in the early 20th century, at a time when the government played a more interventionist regulatory role than it does under contemporary neoliberalization (Kwoka 1996, Gómez-Ibáñez 2003). Meanwhile, Internet infrastructure has been built only since the late 20th century, at a time of much looser government oversight (Warf 2007, Crawford 2013). The resulting lack of regulation contributes to the backgrounding of Internet infrastructure.

The predominant model of Internet provision produces many inequities, and the backgrounding of infrastructure produces intractability that makes it difficult to address them (Bowker and Star 1999, Parks 2009, Mattern 2013). Some of the inequities that particularly concern organizers involved in EII include the uneven service that the predominant model of Internet provision engenders, the way it predisposes Internet users to consume rather than produce web content, and the existing system's vulnerability to the erosion of net neutrality. In

order to rework these inequities, participants in EII bring Internet infrastructure that is "normally" backgrounded into the foreground and in this way make tractable what was intractable.

Certainly, there are ways to resist these inequitable effects of predominant Internet provision and push for changes to the existing system. For instance, a broad coalition of consumer groups, tech industry lobbyists, and media justice organizations have fought the repeal of net neutrality rules through formal political channels (Fung 2018). DCTP and AMP have participated in these efforts, joining other organizations in advocating directly to the FCC and mobilizing their networks to join protests, leave comments on the FCC proposal to end net neutrality protections, and to call on Congress to demand greater oversight of the FCC. But in addition to these efforts at resisting the impacts of the predominant system, DCTP fights the system's intractability by helping communities refuse to participate in it to the extent possible. In its place, they enact their own infrastructural systems, making adjustments to better suit their needs. Their strategy is not simply refusal-as-withdrawal, but rather, a refusal of the dominant system along with the building of another.

5.2. Other internets are possible: reworking broadband provision

By building Internet infrastructure themselves, EII participants are able to rework aspects of commercial practices of Internet provisioning that don't serve their communities. One of the most obvious failures of the predominant model of Internet provision is uneven service and inaccessibility. In the EII neighborhoods, the cost of private home Internet service is prohibitive for the majority of residents, and even when service is accessible, it is typically of such poor quality that the connection is frequently interrupted. For instance, Megan Sobocienski, director of Grace in Action Collectives and Project Manager for the Southwest EII network, described

how from 2012-2014, her organization could only get slow, dial-up service delivered to its location on Vernor Avenue, a central business corridor in Southwest Detroit. She continued:

> Now we have business Comcast for $85 a month that provides us like 15 megabits of downloading and like 3 of uploading. So it's very minimal, and even now, we're not getting those speeds. So every month I call them and they discount our bill because we're not getting the speeds that they tell us we're getting. […] Anytime there's a storm, the Internet goes down. So we'll be in the middle of working and the Internet will just go down. And we'll call Comcast, and we have business Comcast, which means we pay more for nothing and have no option to pay less. And we'll call them, and they'll send someone out within like 48 hours, which, […] if that ever were to happen downtown, it would be unacceptable. And it's somehow acceptable for that to happen in business here.

Instead of acting as a seamless subtender of use, the infrastructure requires constant upkeep in the form of phone calls to the ISP and maintenance visits. The cost of Internet service for many is thus an expense of both money and time. Even when customers are able to secure discounted service fees, doing so costs significant time, which is also a finite resource. This positions customers and ISPs as adversarial subjects and results in provision that is likely even more variable across space and differentiated groups of customers than existing measures are able to show.

EII reworks this by making high quality Internet service available regardless of a household's ability to pay for the service. The small nature of the network means that service isn't universally available, but for those who are in the coverage area, EII collectivizes costs, divorcing individual access from individual ability to shoulder the costs. When there are maintenance issues, network users contact their neighborhood stewards. The relationship between digital stewards and the network users is mediated not by a contract-based exchange of money for service but by relationships of trust and reciprocity. Digital steward apprentices still expressed a goal of delivering good "customer service," especially as they look towards future years where users may be asked to pay a small amount for service, but they maintained a

commitment to doing things differently from commercial ISPs. This meant collectivizing costs, and also collectivizing risks. Unlike commercial ISPs, the EII networks don't hold router hosts primarily responsible for damage to the equipment. North End apprentice Gabby Knox said:

> [We looked] at things that have been established, picking apart some of the ISPs that already exist and some of their contracts and some of the things that they're asking from people. And a lot of those things [we did] are based in community. For instance, even the contract to give to people: there's a certain protection, there's a certain trust that you're giving this person to have this equipment, there's a certain respect though, from a community end. You don't necessarily want to say that if something happens to this directly that it's all your [the router host's] fault—because this thing could blow off the stand, or so many things could happen. So just taking in the differences that we want to intentionally put in to our business when we approach […] neighbors in this community. That was a major thing.

By separating individual access from individual means and collectivizing risk rather than monetarily securitizing it,[8] EII advances participants' subjectivity first and foremost as neighbors, rather than as customers. Whereas commercial ISPs interact with customers as unitary and abstracted subjects, EII approaches participants as subjects-in-relation who are situated in place. Users of EII's networks are not merely clients who only ever just pay the bill. Rather, they are emplaced relational subjects who participate in DiscoTechs, sit on the networks' community advisory boards, or use and make resources with and for the networks. I examine these relational practices in more detail in section 5.4 below.

A system of collectivized costs and risks is largely possible thanks to the digital stewards' own status as neighborhood residents. This gives them the ability to establish trust and reciprocity with their neighbors, which isn't possible for commercial ISPs whose relationship with customers is mediated only through the exchange of fees for service. In this way, the digital stewards who make and maintain the networks are also positioned as subjects-in-relation, not simply interchangeable units of labor. Unlike many top-down technology training programs, the

[8] See the empirical background in chapter 3 for greater detail on how this system of collectivized costs and risks operates.

digital stewards program is not a traditional jobs training program meant only to teach the stewards employable skills. Rather, the program is designed to maximize both their personal growth and the success of the place-based networked. The importance of trust and rapport among digital steward teams was a theme that came up in multiple interviews. The program also prioritizes holistic capacity building for all individuals over efficient divisions of labor. Heru House explained:

> Everybody on the team has learned to do a little bit of everything. […] So folks who were more geared to doing more pamphlet canvassing the neighborhood are also making wires and doing the grounding part and setting the antennas up and configuring them and putting them together, you know what I mean? So people are very well cross-trained for their abilities and have gotten over some of their fears too. One of the people in the group was a little hesitant on ladders and now is up on ladders, carrying stuff up and down ladders. I'm like, "OK, you comfortable with that?" And that person was like, "Heck yeah, don't even worry about it. I got it." So, growth!

This meant that installations and other work sometimes took longer than if the teams had divided labor more efficiently, but it also meant that all five apprentices in each team received well-rounded training. This had benefits for their personal growth and for network robustness, since the skills and knowledge necessary for any one part of the process was invested in multiple individuals.

Another aspect of Internet service provision that EII reworks is the dominant model's prioritization of content consumption over content creation. In keeping with its understanding of Internet infrastructure as both social and technical, DCTP understand the mainstream prioritization of consumption over production as a result of capitalist cultures of consumption, but they also see it produced through technical practices that prioritize upload speeds over download speeds. Whereas commercial ISPs typically provide service with download speeds that are 3-5 times faster than their upload speeds (Molla 2017), making it easier to download large amounts of digital content than to upload it, EII provides symmetrical upload and download

speeds. DCTP asserts that providing symmetrical upload and download speeds enables them to counter this technical predisposition towards consumption over production.

Providing conditions that promote digital production is important to EII for reasons of neighborhood place-keeping and residents' economic wellbeing. Digital storytelling was one of the early motivators for DCTP's work. DCTP Director Diana explained:

> For us, broadband adoption was around storytelling. Like if you were able to find a reason why the Internet was important to you and how you could use it for your life besides just consuming, then you would adopt it. Because then you are a producer of content for this. And so that's like the other politic of digital justice is that we want to move people from being just consumers of information to producers of it.

Members of the organization argued in interviews that digital storytelling is an important aspect of place-keeping, as neighborhood residents use digital technology to "tell their own stories" in order to fight displacement, argue for City resource allocation to their communities, and develop a positive sense of neighborhood identity. Nucera cited the example of Music Box, an oral history project of the Cass Corridor neighborhood deployed on the DCTP-built Cass.Co mesh network. Lee offered the example of an AMP-sponsored youth media project that recorded the impact of school closings on different neighborhoods. Both examples emphasize the importance of access that includes strong upload capacity, which enables such multimedia storytelling. Digital production is also important to the anchor organizations' goal of economic wellbeing for their communities. Sobocienski described how Grace in Action Collectives' cooperative businesses allow youth to find employment opportunities without having to leave the community and enable vulnerable people in her neighborhood to make a living doing work as co-owners of the businesses, making them less exploitable than when they previously did piecemeal work with temp agencies. The poor quality service available to GIA through Comcast has made it difficult for them to compete with digital businesses located in places with more reliable connections, and

securing a high-speed connection through EII is important to this aspect of their place-keeping activities.

Finally, EII participants see local control of networks as a way to maintain net neutrality, regardless of federal regulations on the matter. As explained in the introduction, the principle of net neutrality holds that Internet data should be treated uniformly, so that ISPs can neither slow delivery of data nor enact paid prioritization of data for certain sites over others. Recent changes made by the Federal Communications Commission, however, have ended these net neutrality protections, allowing ISPs to treat broadband Internet service as a commodity rather than a utility. FCC Chair Ajit Pai claims that less regulation will benefit consumers, but opponents anticipate that over time it will lead to further stratification of service quality between rich and poor Internet users. Additionally, they fear it will stifle free expression, as ISPs can block or slow loading times on websites displaying content they dislike or charge web platforms to ensure their speeds are prioritized, disproportionately impacting the independent platforms preferred by content creators from marginalized backgrounds.

EII has responded to worries over the end of net neutrality by committing to maintain the old rules voluntarily. As the last-mile service provider to network users, EII is able to promise that it won't artificially slow down or speed up data to or from any particular websites. The fiber optic ISP through which EII gets its bandwidth could still presumably prioritize some data over others, and because the FCC's decision was announced as EII was already well underway, DCTP's agreement with the ISP doesn't explicitly cover this. However, DCTP can secure future agreements with either its existing broadband provider or other providers that promise to maintain net neutrality over the network.

By collectivizing costs and risks, positioning network actors as emplaced subjects-in-relation, providing symmetrical upload and download speeds, and committing to net neutrality, EII reworks the technical infrastructure and political economic arrangements of Internet provision. In this way, community Internet organizers refuse the intractability of large ISPs and reinvent models of infrastructural provision in order to better suit their needs. Doing so requires that they open up infrastructural black boxes, or in their terms, demystify technology. In the next section, I consider how making infrastructure visible to the communities that rely on it not only allows EII organizers to rework technical infrastructure, but also to rework the social relations that surround technical systems.

5.3. Foregrounding technical infrastructure, backgrounding social infrastructure

As community wireless networks come into being, they're highly visible in the EII neighborhoods, both to the crews of digital stewards who have to design, build, and maintain the networks, and to a lesser extent, to the rest of the community of network users and the community advisory boards made up of neighborhood residents. The collectivized nature of the networks means they depend not only on neighbors finding value in the end product (Internet access), but also on their understanding how the infrastructure itself is built and maintained. In spite of the ways that this foregrounding allows EII participants to rework Internet provision in their neighborhoods, theoretical work in STS problematizes this infrastructural visibility. Drawing again on Heidegger, Internet infrastructure is not "ready-to-hand" for EII communities, but rather "present-at-hand" (Heidegger 19662). For Heidegger, presence-at-hand represents a kind of failure insofar as it precludes an object from being put to further use (Heidegger 1962, Harman 2011). As the object of foregrounded attention, the network is unavailable to be put to

use in service of other goals: megabits per second become something to test and measure instead of something that enables a page to load or an email to be sent.

Existing empirical work on community technology has also highlighted how activists sometimes experience the foregrounding of infrastructure as an obstacle to participation and a barrier to scaling up (Sandvig 2011, Ames et al. 2014). For instance, in a study of an innovative project to bring Internet access to remote Native tribes in California via solar powered mountaintop antennas, Sandvig (2011) found that the Native technologists involved experienced the need to innovate as a heavy burden. "Their users didn't deserve to be the guinea pigs of the networking world, and they aspired to 'just plain Internet,'" he writes:

> If we had the chance to do it again, they say, we wouldn't do it this way. Instead, they speak of spending their time writing more grants or raising more money to hire contractors who are already expert. Rather than delight in learning about tower construction, the expertise is a reminder that they had to do it themselves, and they didn't have the money or the status to have the same infrastructure as everyone else. (190)

I expected to find similar sentiments among EII participants, but they consistently rejected this analysis. Instead, they emphasized how community Internet infrastructure both depended on and strengthened a co-constitutive social infrastructure—that of community organizing—to show, contra Heidegger, that presence-at-hand does not preclude readiness-to-hand. Explaining their thinking in terms of the poetics that I analyzed in chapter four, DCTP organizers and EII participants argued that when they build community technology, the making of *community* is just as important as the making of *technology*. Thus, I trace how the work of building wireless networks (a foregrounded activity) was also the background to community building activities, which in turn became a backgrounded infrastructure for other community organizing efforts, around issues like environmental justice and transit access. In this way, community wireless networks function as a survival program. That is, they simultaneously deliver a service that

meets immediate community needs and function as part of a broader effort to politicize the community to push for broader structural change.

5.4. "Healthy digital ecosystems": social infrastructures of community technology

In its *Teaching Community Technology Handbook*, which was the pedagogical foundation for all of the trainings that took place through EII, DCTP outlines how popular education techniques shape its approach to community technology. The book cites as a model the Civil Rights Movement's citizenship schools, which trained black folks in the American South to read and write in order to pass literacy tests to be able to vote:

> In this context, the purpose of literacy was to build the power of disenfranchised communities to fundamentally transform the power structures of the country. There was a feedback loop between the process of self-transformation (learning to read) and structural transformation (voting and broad civic engagement). (DCTP 2015, 18)

Building on this, they call on community technology organizers to build technology that responds to a need and that connects individuals to processes of broader structural change: "A network should not be the goal, but a means to an end. It should be clear that the technology projects serve a critical need articulated by the people most impacted" (DCTP 2015, 35). The digital stewards are technologists—they learn to build and install hardware, configure routers, and write code—but they are also community organizers who are trained to recognize the needs of their communities and build social infrastructure to go along with the technical in order to respond to those needs.

More than half of the digital stewards curriculum thus teaches skills of community organizing. As Nucera explained, "We realized that it's a lot easier to teach someone tech than it is to teach someone community organizing." Indeed, while a few of the stewards and steward trainers came to the program with existing technology skills, they overwhelmingly identified themselves as community organizers or facilitators who were curious about how Internet could

support their other projects. Nyasia Valdez put herself in this group. Valdez is a project manager for Young Nation, a youth-focused organization that frequently partners with Grace in Action Collectives, and she was tapped by GIAC's Sobocienski to be the digital steward trainer for the Southwest network. She said:

> [At the time I thought] I'm not tech savvy, I do phone stuff, I don't make app developments but I mess around with them—like that's about it. Social media's like as far as my technology goes. So that was like a little scary. […] And so I was like, OK, let me challenge myself, because it's a really interesting project and it'll benefit a lot of the people that Grace in Action works with and Young Nation works with.

Many digital steward apprentices also identified themselves as initially coming to the project with stronger backgrounds in community organizing than technology. The North End network, for instance, included Knox, who farms and mentors young farmers in the neighborhood, and Candace Jones, a transit justice advocate who organizes with the Detroit People's Platform, which shares office space with NEWCC.

For many of those already engaged in community organizing activities, EII supported their existing work. Valdez noted that the Internet service itself achieved this, as delivering a service like Internet helps build capacity for outreach. Similarly, if in a more mundane way, every single EII meeting or event I attended included food—usually a substantial meal—capturing how the organizing process was designed to not only build collective power but also to meet basic, material needs for folks who sometimes struggled to get their needs met. The act of building the networks also built greater trust and familiarity. As the digital stewards canvassed door-to-door about the program and ran community meetings, they got to know more neighbors and strengthened existing ties. Knox said, "I get to not only meet people in my neighborhood, which is what I was already doing, but I get to bring something to them and leave them with something that they will want already."

The organizing process provided opportunities to build connections among the anchor organizations and community hubs that served as relay points and open access spots. This was especially true for the Southwest network. Grace in Action's building is not tall enough to receive the backhaul signal from the ISP downtown, so they needed to find a neighborhood partner with a tall enough building to receive the signal before it could be distributed through the neighborhood. Of the three possible candidates, all of the buildings were owned or run by older white men with whom GIA did not have particularly strong ties. "We had a difficult time, like myself being a young white woman, and then the digital stewards being young, mostly women of color. […] Actually trying to convince people to take us seriously was really difficult," said Sobocienski. After trying two of the three with no success, the team worked out an agreement with Southwest Solutions, a large community development organization that has a mixed reputation in the neighborhood. Sobocienski explained:

> "No permanent enemies, no permanent allies, only permanent interests" is the organizing principle I think of, because they have not been awesome partners to this community, but they were amazing. […] We finally did get a signed contract, and honestly they also in the contract are protecting us, should [the fiber ISP] want to expand to the neighborhood, and [they're protecting] our ability to build a network versus [The ISP's] ability. And so not only have they become partners, but they've also figured out how to be visionary partners that would use their institutional weight to back us, which was not something I ever imagined but am really impressed with.

The process of building community wireless allowed GIA to strengthen its network of partners in the neighborhood, and in this instance, it also contributed to how it collectivizes risks.

In addition to these connections among organizations, the process provided opportunities for the digital stewards to build connections with hub organizations. Knox gave an example to illustrate this:

> If someone asks me, "Hey, where can I do this community workshop thing?" it helps that we've already set up the idea of hubs and talked about that with these places. People need spaces to do things, and if we're exchanging and bartering—all these words I like to use

> outside of this—if we're doing this and giving you Internet and helping you establish something that you would usually be paying for outside of this network—outside of the network of community—then it doesn't hurt you to give in to that network also and say 'I got space for this youth coloring session' or whatever, you know? It's opening doors. I see the value in that instantly.

This example also illustrates how the networks shift the nature of costs; instead of paying for service only with fees, organizations can contribute by sharing their space, which is only possible because of the intimate connection between technical and social infrastructure. The benefits of this development of community social capital exceed its contribution to building community Internet networks, to foster other opportunities for collaborating on shared campaigns and related activities.

DCTP organizers described the development of social infrastructures of community technology as the growth of a "healthy digital ecosystem," where Internet access is part of a process of relationship building around many issues of neighborhood organizing. Nucera expressed it this way:

> The metaphor [of a healthy digital ecosystem] calls for much more than just placing equipment down somewhere. You have to facilitate the conversations around connectedness; you have to create something that actually does allow people to connect and build relationships. […] So that's why the foundation of our work is relationship building, because we believe it's within those relationships that keeps the soil healthy.

Because DCTP is concerned with embedding its technology work within broader community organizing efforts, they do not experience the foregrounding of technical infrastructure as a burden. Instead, with community networks, Internet becomes the foregrounded topic of community meetings and door knocking outreach work, but in the process, it also acts as a background for deeper practices of organizing and relationship building.

5.5. Conclusion

In this chapter, I have analyzed the ways that EII reworks the technical and social aspects of infrastructural provisioning. First, I examine how community wireless networks rework broadband provision by collectivizing costs and risks, promoting content creation, and upholding net neutrality. Second, I draw out how networks contribute to broader community organizing efforts and foster what DCTP conceptualizes as healthy digital ecosystems. I argue that community wireless networks constitute politicized infrastructural survival programs that simultaneously meet community needs and foster broader structural change.

My analysis uses a relational understanding of the social and material aspects of infrastructure to draw out how EII's community networks contrast sharply with commercial Internet provision. Commercial ISPs treat customers as unitary and abstracted subjects in a highly black-boxed system mediated by a commodity exchange. When this system fails Internet users—as it frequently does in racialized and impoverished communities where ISPs have insufficiently invest in quality infrastructure—the costs are amplified: not only must individuals pay a service fee, but they pay in time when the service is inevitably disrupted and needs to be repaired. In contrast, community wireless networks treat networks users and network maintainers as emplaced, relational subjects. In this system, costs and risk are shared and the foregrounded activity of building technology also becomes a background to building community social capital and organizing capacity. Thus, community wireless networking positively amplifies investments of time such that they contribute doubly to the technical and social infrastructures that constitute the network. While I argue elsewhere in this dissertation that we need to get away from analytical frameworks that focus too exclusively on critiques of neoliberalism, this relational analytic frame allows me to demonstrate that the politics being enacted through the Equitable

Internet Initiative actually speak back to a neoliberal reading of socio-spatial relations, belying its discourses of individualism and efficiency.

CHAPTER 6: CONCLUSION

In this dissertation, I have explored community wireless networks as they respond to overlapping forms of socio-spatial inequality. Specifically, I have examined how community technologists and organizers in Detroit utilize vision-based organizing as a means of building liberatory techno-futures, and how adopting a community-based infrastructural approach to digital inequality enables them to rework both the material circumstances of Internet provision and the social relations that surround these networks. My research has filled important gaps in our understanding of the urban politics that surround digital inequality by starting from the perspective of those marginalized urban residents whose experiences and spatial practices are often illegible to the dominant political economic order.

First, I argue that the socio-technical practices of community wireless networking provide a means of building liberatory techno-futures. Mainstream theories and practices of techno-futuring, such as techno-utopianism or big-data enabled risk mitigation, are problematically either utopian or dystopian. Neither framework takes into account how race, class, and other forms of social difference are produced in and through technological practice. My use of a socio-technical analytic frame allows me to trace EII's process of vision-based organizing, which challenges mainstream utopianism and dystopianism with its alternative practices of techno-futuring.

By acknowledging race and class oppression rather than erasing them, DCTP opens a door for EII to address the unevenness of technological development in its specific place and time, even as its work is influenced by complex geographical and temporal imaginaries linked to other places and times. Specifically, DCTP's practices of vision-based organizing have produced the digital justice principles of access, participation, common ownership, and healthy

communities. Throughout the EII process, these principles provide accountability and guide decision-making when conflict arises. I further argue that vision-based organizing and the challenges it issues to mainstream practices of techno-futuring are possible only because of the geohistorical context that gives rise to vision-based organizing, namely its black radical analysis of intersecting forms of oppression and the poetic imaginaries of liberatory theologies and Afrofuturism.

Second, I argue that EII's infrastructural projects allow organizers to rework both how Internet service is provisioned and the social relations that surround Internet provisioning and use. EII organizers refuse to accept Internet service that is provisioned by commercial ISPs as their only option, and instead they build small, malleable, community-controlled infrastructures. I argue that by foregrounding and broadly demystifying infrastructure in this way, they make intractable systems tractable instead of accepting them as black-boxed. This allows them to rework the infrastructures to operate by other-than-capitalocentric logics and demonstrate that other internets are possible. Specifically, they collectivize costs and risks, match upload speeds to download speeds to better foster practices of digital production, and they commit to upholding net neutrality. This enables them to address the infrastructural ways that the increasing digital mediation of everyday life uniquely disadvantages marginalized communities and to refuse one of the dominant political economic cudgels of our time, the end of net neutrality.

I then argue that bringing technical infrastructure into the foreground in this way enables social infrastructures of community organizing to recede into the background in a productive way. This foregrounding of technology and backgrounding of community building helps establish what DCTP organizers conceptualize as a "healthy digital ecosystem," or a socio-technical network in which building, repairing, and using digital technologies supports processes

of relationship building around many issues of neighborhood organizing. Specifically, I trace how EII strengthens relationships among community organizations in each of the three neighborhoods and between digital stewards and those organizations. Many digital stewards come to the work already as facilitators of community building in their neighborhoods, and EII helps deepen and strengthen their existing work, as it helps them meet their communities' material needs and build capacity and social capital. Community wireless networking thus creates the grounds for sustaining and transmitting the political analyses and radical poetic imgainaries that are the bedrock of Detroit's place-keeping traditions and of the myriad survival programs that organizers in the city have created over time.

This research makes a number of empirical and theoretical contributions. I offer an empirically grounded analysis of digital infrastructures, which critical geographers working on technologies and inequalities have long argued is needed (Zook et al. 2004). While others have more recently begun empirical research into the socio-spatial production of digital infrastructures and their implications for the uneven development of capitalist political economies (Gilbert 2010, Gilbert and Masucci 2011, Pickren 2016), my work extends theirs. I show how practices of social valuation and creative visioning are central to digital infrastructure provisioning. I also demonstrate that against all odds, alternative modes of digital infrastructure provision are surviving and thriving. Whereas prior empirical work on infrastructure shows how digital inequalities are produced and perpetuated at the infrastructural level just as they are at the level of digital applications when the logics driving those infrastructures are capitalist and neoliberal, my analysis shows that there also exist digital infrastructures that operate through other-than-capitalist political economic and social logics. Further, I empirically extend geographic research on infrastructural commoning, which has tended to focus on locally bounded water and waste

infrastructure using a political ecology lens (Furlong 2010, Anand 2012, Meehan 2012, Ranganathan 2014, Gidwani 2015). In addressing this gap, I demonstrate that even though broadband Internet is a resource whose utility is constituted in part by its globe-spanning networks, local efforts can rework last-mile provision to foster infrastructural malleability. My analysis thus helps broaden geographers' understanding of the range of resources that can be analyzed through the lens of urban commoning.

My arguments advance contemporary research in digital geographies in important ways. First, theorizing community wireless networking as kind of survival program allows for a deeper and more nuanced analysis of the socio-technological practices of these efforts and their political significance. My analysis helps move the debate beyond "digital divides," where much analysis of impoverishment and digital inequality has remained mired for many years. What attention to both socio-technical practices and infrastructural relations point to is that technical systems like community wireless networks do not function outside of past, present, and future social relations. The technical is made meaningful only through collective endeavor. Routers, bandwidth, and wires on their own have very little significance to the Detroiters working in EII; what gives those artifacts meaning and value are the digital justice principles, the infrastructures of social relations that they shape and are shaped by, and the future worlds they are intended to help bring into being. This is a dramatically different way of thinking about equity and access around digital infrastructure than the digital divide model that has dominated theory and policy for several decades. Specifically, reading for socio-technical practices and infrastructural relations reveals the much more complex and wide-reaching politics being enacted through infrastructural commoning.

Second, while critical digital geographies scholars have called for a new politics of theory that thinks digital geographies through critical race theory, black geographies, and queer theory, there is very little work that has attempted to do so. My dissertation joins a small group of early career scholars who are beginning to address this gap (cárdenas 2016, Jefferson 2017, Geiseking 2017). My project follows black geographies' analytic and political imperatives to read for erased and concealed geohistories of black life. These theoretical and analytic moves position me to apprehend long present yet overlooked tactics like vision-based organizing, to trace their genesis in geohistorical antecedents of black radicalism, Afrofuturismm, and theologies of liberation, and to discern the altered futures they are building.

This approach of reading for difference and paying attention to concealed geohistories also informs the contributions my work makes to geographers' studies of urban governance regimes and studies of impoverishment and resilience. It helps me push back against dominant geographical critiques of neoliberalization, which I argue overwhelmingly reify the object of their critique. I argue that critical geographers' analytical tendency to identify the ways subaltern socio-spatial practices can be coopted to contribute to neoliberal governance and development effectively conceals the ways these subaltern practices simultaneously advance alternative urban politics. Against this, I start from the perspective of "invisible/forgettable" (McKittrick and Woods 2007) urban actors to analyze how attempts to foster community resilience and autonomy advance a politics of survival-pending-revolution (Newton 1972).

In the few years since I began this work, questions of survival and resilience have taken on new urgency as racialized, impoverished, and otherwise marginalized communities have experienced greater state repression under the Trump administration. As protections for vulnerable communities have been eroded, calls for the development of mutual aid and mutual

defense programs in these communities have increased (for example, Lazare 2016, Spade 2016, Kaba and Hayes 2018, Karlin 2018). These shifts remind us that questions about the necessity for and utility of survival are far from mere abstract questions of academic theory but are also urgently important to people living in vulnerable communities. As state apparatuses become even more tenuous as tools of protection and even more pernicious as tools of oppression, community alternatives to formal resource provision are likely grow increasingly important to attempts to foster resilience and survival. I therefore suggest that urban geographers ought to turn greater attention towards the progressive edges and terrains of possibility of urban commoning, rather than the imperfect ways these strategies are incorporated into mainstream, neoliberal governance.

Finally, my work contributes to contemporary research in black geographies. Many of the foundational works in black geography rely on historical or literary methods and trace geohistorical commensurabilities between black communities' past and present socio-spatial practices (e.g. McKittrick 2006, Woods 2007, Nieves 2007). My dissertation shares an epistemological resonance with this work, in that my mode of explanation similarly traces geohistorical socio-spatial imaginaries and their present and future implications. However, my work is primarily ethnographic. In this way, I join a small group of more junior scholars who are broadening the methodological repertoire of the sub-discipline. Further, my work brings digital geographies into conversation with black geographies. There is a vibrant consideration of race and digitality emerging in black studies and sociology (see, for instance, the Fall 2017 issue of *The Black Scholar* on black code studies (Johnson and Neal 2017)), but much of this work has focused on comparative literature analyses, digital systems architecture, and analyses of social media politics. In contrast, my work on black *geographies* is important because it theorizes

digitality into grounded socio-spatial processes and urban political economies. I consider how digital techniques and processes figure into socio-spatial practices of place-making, place-keeping, and resilience in black communities and other communities of color.

My dissertation suggests several directions for future research into the urban politics of community technology organizing. The first concerns sustainability of community wireless networking. Presently, there are very few examples of long-term community-based Internet infrastructure projects in the United States (Byrum and Nucera 2018). EII is well positioned to transition from a largely grant-funded initiative to a self-sustaining effort, and this transition is likely to yield valuable insights into how such shifts unfold. What realignments of responsibility accompany this transition, and how are they navigated by the actors involved? How will the changes that might come with this transition affect the political valences of community networking?

As the networks develop, I also anticipate that they will be deployed in more and more urban political struggles. One significant area in which marginalized Detroit residents contest inequitable development and struggle against banishment is related to housing foreclosures. Every year, the City of Detroit forecloses on tens of thousands of houses for failure to pay taxes. Many thousands of these are occupied, often by renters who are unaware of their homes' tax status or by owners whose poverty status qualifies them for the City's property tax exemption. Foreclosed homes are auctioned in the annual Wayne County property auction—which is conducted entirely online—and occupants of homes that sell are typically evicted by the new owners. How are community wireless networks deployed to contest this displacement? Do activists use networks to share information about the foreclosure process or to place auction bids for renters who want to keep their homes as owners? Michigan law requires that dumpsters be

placed at all eviction sites, and anti-eviction activists sometimes stage home defenses by occupying the home to prevent the placement of the dumpster. Internet access enables activists to work remotely while staging such defenses, and community networks may strengthen capacity for this kind of action. In the processes of tax foreclosure and eviction, how is banishment achieved digitally—and how are community networks deployed to contest it?

Questions also remain about how community wireless networks operate at different scales and across space. Here, I have analyzed the three EII neighborhood networks as a single project, but what might be revealed through a comparative analysis that takes into more account the differences among the three sites? Alternatively, what contestations or alliances exist between community wireless network organizers and citywide actors, such as the City government or local philanthropic funders? DCTP organizers build many trans-local alliances as well. They have partnered with organizations based in New York City to deploy the digital steward training model in Red Hook, Brooklyn, and have communicated with community technologies in cities across North America and the world. They distribute their *Teaching Community Technology Handbook* broadly and have presented on the digital justice principles at conferences in North America and the UK. How do their ideas travel to sites beyond Detroit, and how do groups in other places adapt DCTP's strategies and structures to fit their different contexts? Answering these questions would expand current geographic knowledge about how non-hegemonic theories and practices are transferred to new contexts.

APPENDIX: Digital Justice Principles

These principles were developed by the Detroit Digital Justice Coalition in 2009. They can be found at http://detroitdjc.org/principles/, and in the *Teaching Community Technology Handbook*, available at http://detroitcommunitytech.org/teachcommtech.

Access

- Digital justice ensures that all members of our community have equal access to media and technology, as producers as well as consumers.
- Digital justice provides multiple layers of communications infrastructure in order to ensure that every member of the community has access to life-saving emergency information.
- Digital justice values all different languages, dialects and forms of communication.

Participation

- Digital justice prioritizes the participation of people who have been traditionally excluded from and attacked by media and technology.
- Digital justice advances our ability to tell our own stories, as individuals and as communities.
- Digital justice values non-digital forms of communication and fosters knowledge-sharing across generations.
- Digital justice demystifies technology to the point where we can not only use it, but create our own technologies and participate in the decisions that will shape communications infrastructure.

Common ownership

- Digital justice fuels the creation of knowledge, tools and technologies that are free and shared openly with the public.
- Digital justice promotes diverse business models for the control and distribution of information, including: cooperative business models and municipal ownership.

Healthy communities

- Digital justice provides spaces through which people can investigate community problems, generate solutions, create media and organize together.
- Digital justice promotes alternative energy, recycling and salvaging technology, and using technology to promote environmental solutions.
- Digital justice advances community-based economic development by expanding technology access for small businesses, independent artists and other entrepreneurs.
- Digital justice integrates media and technology into education in order to transform teaching and learning, to value multiple learning styles and to expand the process of learning beyond the classroom and across the lifespan.

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