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Coding Community

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Abstract

Coding Community

Matthew Warren Wilson

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Coding Community is an inductive study of the relationships between technological innovation, urban neighborhood revitalization, government-performance measurement, and quality-of-life indicators. It is a recognition that cities are increasingly being geocoded, that the urban and code-work are co-constitutive. As public and private spaces are being ‘linked up’ to expansive data networks through sophisticated mobile and wireless geographic information technologies, this research analyzes particular, everyday moments of mapping occurring in ten neighborhoods within Seattle, Washington. Between the years 2004 and 2007, the nonprofit organization Sustainable Seattle conducted over 25 participatory street surveys in a program called the “Sustainable Urban Neighborhoods Initiative” (SUNI). Participants in these street-level surveys collected geographic data about community “deficits” and “assets” using handheld devices, while walking around their local neighborhoods. Collaboratively

geocoding their urban landscapes, these residents marked graffiti, litter, vacant buildings, abandoned automobiles, and sidewalk obstructions, as well as, ‘friendly’ business districts, appropriate building facades, peopled sidewalks, and healthy vegetation – all among their categories of interest, initially borrowed from a New York City foundation responsible for developing the handheld devices. The Fund for the City of New York created the software for the handheld devices and developed a protocol for getting citizens involved in measuring government performance. This research asks, how do handheld geographic information technologies constitutively arrange subjects and objects in Seattle-based community mapping practices? Its findings contribute to the existing literature in urban political geography and GIScience, by discussing the implications of the increasingly individualized ways that bodies are coded and given digital form in the governing of city spaces.

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Preface

I am writing this from my assigned desk in my graduate student office in Smith Hall 422, located on the Liberal Arts Quadrangle of the University of Washington. My office, which I share with three other graduate students, served as Dick Morrill's windowless computing space. I sit where his computers once churned through card stacks, at a time when geographic research materials looked quite different. Another lost passerby leans in, "Is there a restroom on this floor?". To which I recite my refrain, "No, on the third floor". Graduate work is a multiplicity of practices.

Writing is one of these such practices. I come to *Coding Community* with a great deal of excitement. I have realized that the practices which compose the work of community can be discussed in relation with technological endeavors. However, the actuality of writing these relations are tricky, as they reside not disciplinarily, but more-than-disciplinarily, in the hybrid spaces of university-community partnership and the spaces of GIScience-studies-meets-urban-political-geography. Still,

To write is to walk on a pavement of citations. To read is to hear a hand whisper under a table. To explore possible worlds is to be a geographer with a mind that matters and a matter that minds. To gamble is to realize that every thought gives off a throw of dice. (Olsson 1991: p. 50)

The following chapters chart a different territory for those camped in either GIScience or urban political geography. As such, it is a "throw of dice". It attempts to map new connections, to stories that are not so new. That communities are becoming more responsible for their neighborhood-ness is not news to those whose research explores

the changing role of citizens under neoliberal regimes. However, this narration works to describe the multiplicities of materials and discourses that permeate this responsabilization, so called.

The timing of this coding of community is notable, as will be further discussed in Chapter 4. These coding practices pre-exist the surge of activities marked by the label *volunteered geographic information* and *neogeographies*. However, the relationship between these labels and the practices described within this dissertation are worth mentioning. Before there would be locational-enabled cellular telephones and digital video cameras and mobile, locational web applications to process these data, there were other kinds of locational coding practices. Obviously lower tech than what is currently available, these handheld technologies mark a first and second wave toward mobile computing technologies as we currently understand them. *Coding Community* signals these locational practices, and seeks to understand them as hybrids, cyborgs, boundary objects, and borderlands.

The writing of hybrid work is difficult, and that is not to say that I am particularly successful at it. Perhaps hybrid work is never to be successful. Successful hybrids are perhaps no longer hybrids. As such, *Coding Community* attempts to map the processes that make the spaces in which we live, by remaining attentive to the everydayness of their coding. I hope it is at least successful at holding your attention.

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Reading and writing groups have made the recent years of 'professionalization' more palatable (see Kaserman and Wilson 2009). I thank Mark Purcell, Chris Fowler, Kevin Ramsey, Jon Glick, Jeff Masse, Rowan Ellis, Maureen Hickey, Bonnie Kaserman, Barbara Poore, and Jentery Sayers for their willingness to engage my ideas with patience and enthusiasm.

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Dedication

To all my family in northwest Missouri,
especially Mom, Dad, and Dallas,
thank you for keeping me coded within your community.

Chapter 1. Coding community: An introduction

This research examines the practices that constitute community in programs of urban assessment. Throughout, while I'll be using the words 'community' and 'neighborhood' interchangeably¹, I look to explicate the material and discursive practices that make up their use.² *Coding Community* specifically narrates the practices surrounding the coding of community³ in a four-year mapping program facilitated by a nonprofit in Seattle, Washington called Sustainable Seattle. In doing so, it explores how technologies are imbricated in emerging urban political imaginaries, specifically how these knowledge productions make possible certain objectifications and subject formations.

1.1 Opening illustration

The coding of community takes place in neighborhood meetings at community centers, churches, local business backrooms, and library basements. I'll begin with a vignette of one of these mapping meetings from my field notes. The Uptown neighborhood

¹ As Martin (2003) discusses, citing *Urban Fortunes* by Logan and Molotch (1987), concepts of community and neighborhood are interconnected although not entirely synonymous, implying a sense of values and identity shared within a territorial district.

² As such, this research seeks to inquire into forms of "postmodern community" that Delanty advances, marked by "a shift from identity to difference, from certainty to contingency, a community beyond unity, from closed to open communities, and an embracing of liminality, which is to be found less on the margins of society than in its urban centres" (2003: p. 132). Therefore, my use of the terms 'community' and 'neighborhood' serves to indicate multiple forms of community -- geographic and virtual -- but emphasizes specifically the *practices* in the guise of community.

³ I use the word 'coding' in this research to signal a variety of practices, including the material inputting of data entries into software, stored on hardware, as well as the more immaterial marking of objects and subjects as *things* of inquiry, a deterritorializing process of translation and generalization.

held their community mapping training in the old Seattle City Light building at the foot of the Space Needle. Now named the Uptown Neighborhood Center, the City Light's Power Control Center, built in 1963, is an octagon of thick, cold concrete, designed without windows. This modern building, imagined to withstand nuclear fallout, once provided power for the entire city and now is a communal space for community organizations including Uptown Alliance. (Seattle Department of Neighborhoods 2000)

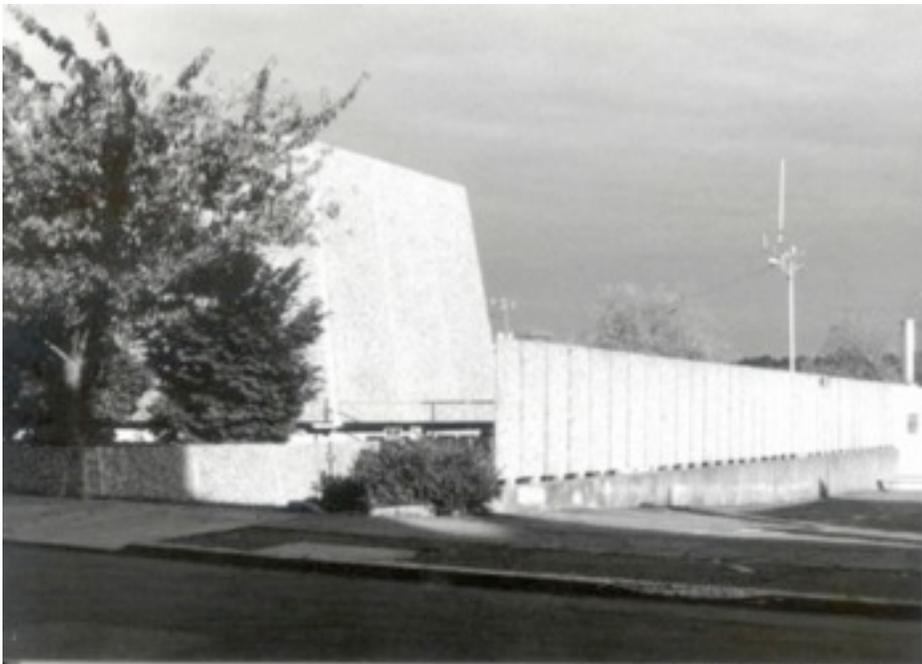


Figure 1.1 The Seattle City Light Power Control Center was built in 1963, and now houses the Uptown Alliance, a neighborhood organization just north of the Space Needle.

Entering the building from Roy Street, with the Space Needle looming overhead, it is impossible to ignore the Cold War histories of this power center, the space race, and the World's Fair urban imaginaries of the 1960s (see Klinge 2007). Once within the building, I was directed to the central control room, where a makeshift auditorium was in place. Behind the row of folding chairs, a grid of retired power

meters and controls composed the rear of the room. A screen was drawn in front of a world map. The meeting was nearly ready to begin.

The gathering of volunteers and residents of the Uptown neighborhood was called to order by Charlotte⁴, a member of the Uptown Alliance, as the representative from Sustainable Seattle was running late. Charlotte thanked those assembled, and remarked that the surveys they were to participate in would help the City of Seattle respond to the needs of their neighborhood. The assembled residents began discussing the recent activities in their neighborhood, and the focal points that needed attention.

Flora Muñoz and Martha Pitzen, staff members at Sustainable Seattle, arrived with their interns from the International District Housing Alliance: Tonya, Ken, and Ron. Each was carrying computer cables and handheld PDAs, lanyards, and clipboards. Muñoz quickly assembled the computer projector and booted her laptop, while the residents curiously studied the mess of cables and computer peripherals stacking up on the table. The training PowerPoint file was loaded. The title ‘Training the Eye’ projected across the screen and the meeting was underway. Several slides into the presentation the residents had been informed of their objective: to map the ‘assets’ and ‘deficits’ of the specified streets in the Uptown neighborhood, and in doing so, prioritize which areas of their neighborhood needed attention.

During this training, Robert, a local business owner, sternly asked when the neighborhood would see changes based on the survey they were about to complete. He

⁴ Throughout, I use pseudonyms.

continued by asking, “What sorts of resources would Sustainable Seattle provide?” Muñoz, having had this line of questioning before, paused, and replied that Sustainable Seattle’s role was to assist neighborhoods in identifying their concerns and making these available to responsible parties. Careful to disrupt Robert’s treating of Sustainable Seattle as a customer-serving entity, she continued the training, only to be interrupted again.



Figure 1.2 Two residents use the handheld device to enter conditions about their streets in the Capitol Hill neighborhood of Seattle. (Sustainable Seattle 2005)

The residents were being trained as to how to code the presence of litter into their handheld computer devices (see Figure 1.2, above). Robert, bothered by his own attempts to control litter, rallies his fellow community surveyors to be vigilant of litter on the sidewalks. The discussion in the room turns to the problem of outsiders, to those that enter the neighborhood adding to the problem of litter and loitering. Another

long-time resident shakes his head in frustration and declares that the public telephone in the neighborhood needs to be removed. He continues, that the phone booth acts as a magnet for particular undesirables in the community – insinuating that those bodies that use the public phone do so to engage in illegal drug activity or prostitution. A number of his neighbors agreed. The phone attracts urban decay: graffiti, litter, and loitering youth⁵.

Muñoz tried to steer the conversation back to the handheld devices. The data model used to capture ‘assets’ and ‘deficits’ were carefully constructed to avoid marking certain people. She pointed out that surveyors could code these concerns as the presence of graffiti, litter, empty alcoholic containers, drug paraphernalia, used condoms, and abandoned shopping carts. These were the objects of the street, and the appropriate objects for coding.

From the central control room of the windowless Power Center, the freshly trained resident-surveyors emerged into the March Seattle sun. They tilted their handheld devices to avoid the glare, and entered their starting location using the attached stylus. Community was to be coded, entered into digital storage using a predetermined computing language. In this digital format, the ‘community’ could be uploaded to virtual spaces, or could be re-signified in the form of a map, chart, or table. It would be used to move community members towards a discussion of ‘priorities’ as well as used to motivate municipal government to invest resources in the built

⁵ I further this discussion in Uptown in Chapter 5, to describe how these measurements of the built environment slip into questions of appropriate living.

environment.

This research begins with a curiosity, namely, how do we narrate these kinds of technological innovations? The use of mobile technologies is obvious and everyday; its use permeates life. Granted, these are still technologies of the privileged and the few. What is not needed is yet another academic arguing whether or not these technologies *empower* their users, or whether or not these technologies inspire an engaged citizenry. Rather, my curiosity about *how* to document these kinds of innovations lead to another line of questioning: *how* are these technologies enabling a different kind of documentation, a different kind of recording/recording of everyday life. What (or who) are being mapped in these kinds of survey projects aimed at improving neighborhood quality-of-life? How do we trace or counter-map the various implicated actants?

1.2 Argument

The argument that proceeds to address these questions can be characterized in three dimensions, conceptual, methodological, and substantive, following the research process outlined by Brinberg and McGrath (1985). Here, I argue that *these kinds of technologies are not simply convenient, passive tools of new forms of governance. Instead, they themselves are active agents in subject formation.* I investigate how handheld, geographic information technologies ‘overdetermine’ community mapping efforts, how these technologies -- treated as an assemblage -- condition the coding of community, thereby reformulating space and those subjects within. To do this, I

examine the discourses of their self-told histories, social-political milieus, development, and implementation.

1.2.1 Conceptual dimension

The larger research agenda that informs this specific project focuses on contemporary assemblages of information technologies and society. Conceptually then, my agenda emphasizes ‘assemblages’, in the sense that Deleuze and Guattari (1987) set out.

Assemblages are the discursive and material collectivities that criss-cross notions of Technology and Society, that carefully map the connections among the strata of technological development and societal progress. It is across these interfacing planes, between technology and society, that my research seeks to cut.

This research is a kind of science studies approach as Latour (1993, 2005) outlines, attempting to carefully navigate between constructivist and naturalistic accounts. For Latour (1993), the critical study of science is encumbered by approaches which emphasize “things-in-themselves”, ignoring the tethering of “things” to their broader subjects, which solely emphasize their socialization or their “social context”, or which emphasize “meaning effects and language games” (p. 4-5). Instead, Latour advocates a reorientation towards tracing the actor-networks of science and technology, of the hybrid, human and nonhuman practices in the crafting of scientific knowledge.

In her critique of technology, Haraway (1991, 1997) similarly challenges her readers to rethink the myriad ways in which technology is situated -- historically, politically, socially, culturally -- but, through such situating actually rework notions of

history, politics, society, and culture. To do such situating, I have drawn upon her writings on cyborg theory, as is further discussed in Chapter 2. More broadly, this kind of inquiry, into the discursive-material practices of knowledge, is directly informed by theorists who have been called poststructuralist. My argument is therefore also informed by notions of power and performativity, through the later writings of Michel Foucault (1990 [1978], 2008) and Judith Butler (1993, 1997).

Within geography these kinds of conceptualizations have yet to inform the *practice* of critical GIS research⁶. In other words, I am not only interested in using theory to analyze the products and processes of GIS development and implementation (issues of interoperability, metadata, ontologies), but to also *situate* these products and processes within more diffuse and abstract notions of subject formation, vision, space/place, embodiment, and historical narration. Therefore, this project is part of a continued effort to articulate what relationship critical social theory has with GIScience. As such this research experiments with the theories of hybrids and cyborgs, to inquiry into their substantiations both within the critical GIS literature and within the use of geographic information technologies.

1.2.2 Methodological dimension

Methodologically, this research is an exercise in avoiding slipping into technological determinist narrations, of ‘the technology made them do this’ accounts which engender

⁶ Furthermore, there are resistances over shared terminologies. This became evident at a panel session of researchers in critical cartography and critical GIS, wherein panelists disagreed and, further, refused to discuss what ontology means in critical GIS research (Aitken et al. 2007).

a sort of finger-pointing that plagues some technology critiques. How convenient would it be to argue that because these community groups used handheld technologies they inevitably descended into counting mechanisms that hegemonically displaced the underrepresented? Instead, this research aspires to grant agency to a multiplicity of human and ‘more-than-human’ actors, as those interested in hybrid geographies have advocated (c.f. Whatmore 2004). This is not complexity for complexity’s sake, however. The coding of community implicates theories of government, nature, and culture. It enrolls histories of technology, nonprofits, and academic disciplines. It also requires our active participation, and therefore engages the diverse literature on participatory action research. “And ... and ... and” as Delueze and Guattari (1987: p. 98-99) write.

What is needed, then, is a methodology for the everyday. Michael Curry writes that our charge “is to place the everyday experiences of the users of that technology in a broader context, and thereby to make them visible in a different way” (Curry 1998: p. xii). As such, I make his point a methodological one, to experiment with pathways of articulating the everyday uses of geographic information technologies, so that they read differently. This means that what we define as the technologies of critical GIS should broaden to include Internet maps, location-enabled portable devices, re-mediations of existing cartographies, as well as oral and animated mappings. In Chapter 3, I treat in more detail the actual methods used in this research.

1.2.3 Substantive dimension

Users of geographic information technologies, conceptualized as geocoders, make a mess of conventional definitions of geographic information systems. They use *web 2.0* websites like Flickr and Panoramio, Google Earth and OpenStreetMap, and log spatial data on their web-enabled cellphones and GPS-enabled cameras. While many definitions of GIS include the people, processes, and organizations that make up the system, these more contemporary processes are rapidly changing and, relatedly, the people and organizations that make up GIS are becoming more diverse. The study of GIS must therefore recognize the particularities of each instantiated system, that each are unique. Substantively, in this study of the use of geographic information technologies, the software and hardware are unique to community mapping and government-performance measurement. It is the task of this research to document the people, organizations, and processes that are implicated in this software and hardware -- and the eventual creation of data.

1.3 Motivations

My broad interests are at the interfaces of machines and questions of life, of the intersections that machinic language and machinic comportment force. I situate these broader interests in the fields of urban geography, political geography, and geographic information science.

Within urban geography, I draw specifically on research documenting the changing forms of urban governance in North American cities. This has been studied with regard to identity (Brown 1997a, 1999, 2000, 1997b; Martin 2002, 2003, 2004;

McCann 2002), in looking at the intersections of urban competitiveness and quality-of-life indicators (McCann 2004, 2007; Harvey 1989b; Pacione 1990; Ley 1990; Rogerson 1999; Holden 2006b), in the spatial strategies of cities to discipline certain bodies/practices (Herbert 1996, 2001, 2006; Herbert and Brown 2006; Mitchell 1995a, 1997a, 1997b, 2003; Cresswell 1996; Brown 2009), and in the emerging interfaces between the urban and the technological (Crang, Crosbie, and Graham 2007; Crang and Graham 2007; Graham and Wood 2003; Graham and Marvin 1996; Graham 1998, 2005; Kaika and Swyngedouw 2000; Swyngedouw 1996, 1999, 2006; Swyngedouw and Kaika 2000; Kaika 2005; Gandy 2005).

This latter interest, of understanding urban governance through studying the relationship cities have with the natural and the technical, particularly overlaps with the field of political geography. Here, I draw interest from research in the broader shifts in governing practices (Harvey 1989a, 1997 [1975 and 1981], 2001, 2005a; Peck and Tickell 2002; Brenner and Theodore 2002; Larner 2000, 2003; Herbert 2005), in the particular subjectivations that result from these practices (Elden 2001b, 2001a, 2007; Cruikshank 1999; Gibson-Graham 2006 [1996], 2006; Ferguson and Gupta 2002; Crampton and Elden 2006, 2007; Brown and Knopp 2006, 2008; Huxley 2006), in research on the hybridities composing these subjectivities (Whatmore 1997, 2002, 2004; Wylie 2006; Talen and Brody 2005; Hillis 1996; Castree 2003; Braun 2005), and more specifically, in research that studies the spaces constituted by technological innovation (Thrift and French 2002; Galloway 2004; Kinsley 2008; Graham 2005;

Dodge and Kitchin 2005b, 2005a, 2007; Dourish and Bell 2007).

My research is energized by the intersections of these two fields of urban and political geography with geographic information science, in the study of geographic information technology development and use. Within this field, I am interested in the historical process of narrating the emergence of GIS-use as an object of study (Pickles 1995, 1997, 2004, 2006; Sheppard 1995, 2005; Sieber 2006; Elwood 2006b; Carver 2003; Schuurman 1999, 2000; Openshaw 1991, 1992; Clark 1992; Taylor 1990; Taylor and Overton 1991; O'Sullivan 2006; Schuurman and Kwan 2004; Schuurman and Pratt 2002; Leszczynski 2007; Wilson and Poore forthcoming, 2009; Nyerges and Jankowski 2004), in the development of new practices/technologies for broader participation in the use of GIS (Dragicevic and Balram 2006; Jankowski and Nyerges 2001; Nyerges and Jankowski 1997; Nyerges 1993; Nyerges, Jankowski, and Drew 2002; Nyerges, Ramsey, and Wilson 2006; Cope and Elwood 2009; Jung 2009; Laituri 2003; Carver 2001; Kwan 2002a; Kwan and Knigge 2006; Matthews, Detwiler, and Burton 2005), and in the critical study of cartographic, GIS, and geocoding practices (Rose-Redwood 2006; Crampton 2001, 2004; Crampton and Krygier 2005; Del Casino Jr. and Hanna 2005; Elwood 2006a; Ghose 2007; Harris and Hazen 2005; Harvey 2005b; Poore and Chrisman 2006; Warren 2004; Ramsey 2008).

1.3.1 Motivating questions

These three geographic research areas inform my specific research question: How do handheld geographic information technologies constitutively arrange subjects and

objects in Seattle-based community mapping practices? In other words, how are subjects and objects invested and problematized in the practices of mapping? How do they *become*?

In asking these questions, I specifically extend work in urban geography that looks at urban quality-of-life indicators by examining the bodily aspect of this neighborhood assessment practice. Additionally, I conceptualize quality-of-life indicator practices as a further spatial strategy in the disciplining of urban residents, extending the work by geographers examining the exclusionary practices enabling the control of city spaces. This research also contributes to the existing literature tracing the connectivities between the urban, the natural, and the technological, by examining the specific practices associated with geographic information technologies in community mapping.

This research question extends work in political geography that looks at the political permeations of the technical. I invest discussions of the political implications of geographic technologies with further documentation of the discursive-material uses of these technologies. Specifically, I am interested in the usage of these technologies by the neighborhood advocate. Doing so further extends work in geography that emphasizes the hybridity of human and 'more-than-human' assemblages, by raising the importance of the discursive-materialities of the devices themselves. And as Wendy Larner (2003: p. 511) has suggested, further research is needed on the actual techniques of neoliberalism. This project furthers this call by interrogating the practices associated

with government performance-measurement indicators, as these logics intersect the work of neighborhood quality-of-life assessment.

While this research most directly contributes to critical studies of cartographic and GIS practices, it also creates room for the creative discussion of alternative development and use of geographic information technologies, by not foreclosing their potential to exceed their military-industrial and surveillance origins. As such, this research extends the conversation on the origins of geographic information technologies, by narrating the history of the handheld computer and its employment as a personal geographic information technology.

1.4 Overview

This research into the coding of community has eight related findings: 1) the development and marketing of mobile technologies advances a discourse of *connected mobility*, which I shall define; 2) the discourse of *connected mobility* is co-articulated with the broader discourse of *citizen empowerment* in programs of governmental accountability and neighborhood quality-of-life; 3) mobile, handheld technologies become one way in which a Seattle nonprofit could *mobilize*, as in create pathways for supporting their organizational mission; 4) the use of indicators to assess the urban environment enables the construction of a causal relationship between the disorder of the built environment and social disorder; 5) the emphasis on measurement of urban disorder constitutes the imagination of a city of information flows, wherein the objects of the street are digitally connected to municipal agencies; 6) in an imagined city of

information flows, data matters such that space is *transduced* through data collection, storage, analysis, and representation; 7) the collection of data using handheld technologies constitutes a geocoding subject, which is programmed to visualize the street as a series of discrete, knowable objects; and 8) the training of neighborhood residents to measure their city streets enabled the marking of certain bodies through objectification.

This research proceeds in six chapters. Chapter 2 reviews my conceptual framework and Chapter 3 discusses how I conducted this research. Chapters 4 through 6 address my research question from three different angles: 1) in placing the history of mobile technologies in conversation with the mission of the Seattle and New York City organizations, 2) in a discussion of the work of government-performance measurement and indicator development, and 3) in a critique of the training protocol used for the coding of community, respectively. A concluding chapter reviews the argument and findings, as well as provides the next steps in continued research about the coding of community. Chapters 4 through 6 are overviewed below.

Connected mobility and the obviousness of handheld computers: This chapter reviews the present histories of the handheld computing device, to analyze how the emergent discourses of these devices permeate an organization's interest in using mobile technologies to gather geographic information – to map communities. In the section *A genealogy of the handheld computing device*, I begin by looking at the handheld computer as a further branch in the history of computing, setting it off from

the centralized computing of the US postwar period and from the personal computing movement of the 1980s. Drawing from these histories of the handheld computer, in the section titled *Birth of a cyborg citizen*, I then describe how The Fund for the City of New York decided on the use of handheld computers to measure the performance of governments and how Sustainable Seattle localized this mobilization discourse, thereby constituting a kind of cyborgian citizenship.

Measuring performance and indicator-work: quality-of-life as qualifying life:

This chapter investigates how the discourses of performance measurement and indicators interact with the quality-of-life missions of the Seattle nonprofit and the New York City foundation. Here, I argue that quality-of-life indicators and government-performance measurement actively constitute subjects by qualifying life – especially through motifs of crime, homelessness, and graffiti. To qualify life is to mark certain bodies as problems, to qualify which kinds of living is assumed and which kinds are remarkable. In this chapter I explore how this constitutive process is undergirded by concerns of the quality of data, particularly about problems in information flow, consistency, and perception. In the section, *A genealogy of the indicator*, I review the ‘indicator’ as an object of urban governance, and discuss how this object can be traced through a Giuliani New York City (and the theory of broken windows) to The Fund for the City of New York’s program on government-performance measurement and finally onto Sustainable Seattle’s development of neighborhood indicators. In the section, *Flows of information*, I draw in writings about

the flows of the city to talk to the practices of tracking information in Seattle. In the section, *Producing datascares*, I discuss the data collected during the street-level surveys, how these data practices brought about questions of living, how their collection and quantification mattered along these lines, and how my own data practices were implicated in these questions about quality.

'Training the eye': formation of the geocoding subject: This chapter analyzes the geocoding protocol that was created by the New York City foundation and was adapted by the Seattle nonprofit. Titled 'Training the Eye', this training procedure serves three purposes for the organizations: to train the participants in the use of the technologies, to standardize the survey practices, and to legitimize the data. However, I argue that this training protocol works in other ways. Technologies of citizen engagement in governmental practice, such as those of the street-survey program, enact an embodied cartographic vision that is productive of liminal subjectivities. This form of mapping, of geocoding, constitutes things in place, things becoming out-of-place, and things wholly out-of-place, that are always-already external to place. These practices of geocoding, of assessing place in space, are intensely bodily, both in their messy enactment of digitally-extended vision and in their data-based imaginings of bodies at the margins. In the section, *Mapping bodies*, I draw upon theories of the cartographic gaze to discuss how technologies of vision constitute particular urban imaginations. In the section, *Geocoding subjects*, I discuss how subjects are formed through the discourses and practices of geocoding. In the section, *'Training the eye'*, I

enroll the concept of the cartographic gaze to analyze the training protocol, to ask: how are these geocoding practices and the training protocol embodied and how does this technological embodiment enable constructions of difference, of bodies at the margins?

• • •

Coding Community creates an opening, to discuss the everyday mappings occurring in our neighborhoods, across our cities. Its relevance is not limited to cities, however. The work of coding is inescapable. This is not to say that it determines our actions. Instead, I choose to understand code work as conditioning the possibility of action -- be it enabling and disabling, empowering and disempowering, democratic and antidemocratic, corporate and independent; and, and, and. May the work of the conjunction hold your interest.

Chapter 2. Cyborg geographies: Towards hybrid epistemologies⁷

This research treats the coding of community as a distinctly cyborgian practice. Cyborgs grew to popular cultural prominence in the 1980s, represented by films like *Blade Runner* (Scott et al. 1982). As a theoretical concept, cyborgs were re-purposed for scholar-activists in *Manifesto for Cyborgs* (Haraway 1985). Drawing on this re-purposing, I enroll the concept of the cyborg in two directions. First, the coding of community requires an interplay of organic and technic being. The neighborhood residents who code their city streets do so through technological adaptation and extension. They use handheld computers and employ a machine language to read and represent -- and *make* -- their urban landscapes. Second, and relatedly, the coding of community requires hybrid knowledge production. It requires a mashing together of knowledge practices -- a kind of *instrumentality*, of thinking with/by/through instruments -- to produce the illusion of Fact, of a single, unified Author.

In this chapter, I discuss these two directions of enrolling the cyborg, by placing them in tension. I argue that the later notion of the cyborg -- as a figuration for *hybridly knowing* -- is downplayed or absent from Geography's engagement of cyborg theory. Therefore, I advance what I call *cyborg geographies* as a project of *knowledge-making alliances*. Cyborg geographies enact a recognition that hybrids, like cyborgs, are not only spaced, but that they produce space. I outline a critical methodology to

⁷ A version of this chapter is forthcoming, 2009, in *Gender, Place & Culture*.

inquiry into these spaces, to highlight the importance of hybrid epistemologies.

2.1 Introducing the cyborg

Cyborgs can be figures for living within contradictions, attentive to the naturecultures of mundane practices, opposed to the dire myths of self-birthing, embracing mortality as the condition for life, and alert to the emergent historical hybridities actually populating the world at all its contingent scales (Haraway 2003: p. 11).

Cyborg geographies enact hybrid ways of knowing. This chapter argues that the cyborg's frequent citation as a literal marker for machinic-organic life has clouded the role of the cyborg *as a figuration*. I emphasize figuration as a technique in scholarly practice, as in the drawing of a figure to illustrate an argument. Figurations enabled the creation of new worlds, to explain through demonstration. While geographic literatures have cited the cyborg to signal an ontological hybridity (e.g. Whatmore 2002; Swyngedouw 1996; Kitchin 1998; Schuurman 2002), the epistemological hybridity of cyborg figuration has been less explored. I take this argument up to articulate a renewed critical methodology in geographies of naturecultures and technosciences⁸, as these are the domains where cyborgs inhabit. It is a call for greater specificity of the cyborg as an artifact of feminist critiques of science – a specification that actually broadens its use. Here, I propose a re-reading of cyborg theory, such that narrations of knowledge-in-the-making are conceptualized as a witnessing, situating, acquiring, and diffracting – epistemological hybrids of the cyborg. I argue that this understanding of the cyborg places knowledge-making-actions within the messy and

⁸ I borrow the terms technoscience and natureculture directly from Haraway, to demarcate literatures that insist on the co-constitutiveness of technology, society, and science and the natural and the cultural, respectively.

risky realm of creative, strategic, fallible encounters, and is historically aware of the everydayness of our technological adaptations.

As this chapter suggests, the cyborg is not always understood in these terms. Instead, the cyborg is typically understood as an ontological concept, as a machinic-organic hybrid⁹. Ontological hybridity is about contingent beings and about forms of becoming that challenge dualist narratives, like human/machine, nature/society, and the virtual/real. Geographies of naturecultures and technoscience have each interrogated these kinds of hybridities (Kitchin 1998; Whatmore 2002; Swyngedouw 1996; Schuurman 2002).

However, to not engage the cyborg as an epistemological hybrid is to be inattentive to the partial and contingent practices of knowledges-in-the-making. As the epigraph by Haraway alludes, cyborgs are about both *living within* and *remaining attentive* to the contradictions of technoscience and naturecultures. The cyborg is therefore a simultaneous being/becoming and knowing/seeing conduit through which to conduct critical study. Human geographers have only partially made use of this conduit, for example in studies of identity in cyberspace and of urban ecologies (e.g. Kitchin 1998; Kaika 2005). I argue for more attention to cyborg epistemologies in these spaces to further ground our critical projects in their study. I situate this claim in research that explores boundaries and boundary-makings, such as work in naturecultural geographies, that challenges scholarly convention in studying the city

⁹ Indeed, this is how Haraway often premises the cyborg (1991; p. 149), and this reading is the oft-quoted reference to the cyborg for geographers.

and the wild, and technoscientific geographies, that explores the contingencies of technological and cultural production. I ask, how do we narrate the production of knowledge in these geographic subfields and what is the role of cyborg theory in these narrations?

This chapter begins by revisiting the work of Haraway, from cyborgs to her recent writings on companion species, to demonstrate how figuration works to *do* knowledge productions differently. Indeed, her work has influenced geographic study, namely in two directions: to bolster feminist critiques of the production of spatial knowledges, and as a series of jumping-off points for studies of technologically-mediated spaces and human-animal relations. This chapter is framed primarily as a critique of the latter, and an extended contribution of the former. Following this review of the cyborg as a figuration, I develop techniques for researching and writing these geographies. In the final section, I demonstrate my argument in the study of technoscientific and naturecultural space-times, by surveying the cyborg concept in selected geographic literatures. It is important to recognize how knowledge-making endeavors are inevitably messy and rife with boundary-crossings. This recognition involves an incessant questioning of *how* we know, *how* we theorize.

2.1.1 Cyborg figurations

Over two decades after she offered her ‘manifesto for cyborgs’, Haraway’s reaches into the metaphorical and the figurative remain a rich source for critical engagement. The cyborg is both a site and sighting for boundary crossings, framing the tension for this

chapter. The cyborg can seem to be an academic trend, and while its use stretches across popular culture, cultural critique, and technological innovation, it is a particular process of critique and critical engagement that deserves further consideration. In this section, I emphasize figuration, and the cyborg as an example of figuration, to consider its role in writing critique. What is at stake is how we know what we narrate, in projects that research the multiplicities of bodily representations through innovations like cyberspace, urban ecologies, GIS, and bioengineering. These are innovations enacted through hybridity; I argue that cyborgs are writing devices to narrate these hybridities.

Figuration is Haraway's overarching approach in critique, while recognizing Prins's (1995) argument that it is impossible to distill a methodological agenda in her research. Figuration is her aid in narration. Just as authors provide figures to illustrate arguments, figurations illustrate worlds. Haraway chooses figurations that have 'real' meaning and then re-claims their purposes in critique, and in this sense, figurations trope. Examples include the cyborg, gene, brain, chip, database, ecosystem, race, bomb, simian, species, and fetus (Haraway 1991, 1997, 2003). As reclamations, these figurations act as entry points. Cyborg figurations walk worlds, and as Shields (2006) suggests, the cyborg shares tendencies with *flâneur*. Haraway describes such figurations as stem cells, "[o]ut of each one you can unpack an entire world" (Haraway 2000: p. 138). Figurations are a kind of radical personification – an inhabiting of figures with the purpose of narrating (Gane and Haraway 2006). The point of doing so

is

to make a difference in the world, to cast our lot for some ways of life and not others. To do that, one must be in the action, be finite and dirty, not transcendent and clean. Knowledge-making technologies, including crafting subject positions and ways of inhabiting such positions, must be made relentlessly visible and open to critical intervention. (Haraway 1997: p. 36)

The making of knowledge is the action of figuration, to open it to a radical visibility. It is this visibility that enables intervention through the un-working and re-working of knowledge production – to inspire an always partial storytelling of (post)modernity. These figurations seek to move beyond polemics, and the either-or jousting of certain feminisms, specifically identity politics, by entering (in order to undo) their dualistic fields of operation.

Figuration is neither entirely metaphorical nor literal; its political prowess lies in its ambiguity. Figurations transcend rationalities and invoke multiplicity, but motivate a kind of objectivity through embodied perspective. This is described as the inhabiting of performatives (Haraway 1997: p. 179). Figurations are about arrangement, as a series of arguments or the composition of an image. In this sense, figurations are deeply spatial, as they are representative. Indeed, Haraway invokes a mapping sense of figuration:

We inhabit and are inhabited by such figures that map universes of knowledge, practice and power. To read such maps with mixed and differential literacies and without the totality, appropriations, apocalyptic disasters, comedic resolutions, and salvation histories of secularized Christian realism is the task of the mutated modest witness. (1997: p. 11)

Figurations map. However, these are maps of contingency and relationality. In other words, figurations form geographies, to inhabit them. That figuring is a matter of

inhabitation and that this inhabitation enables a critical visioning, is the epistemological rooting of this sort of ontological messing. In a poststructural vein, Haraway is interested in what gives these figures their particular shapes and what challenges permeate their shaping. This is a renewed storytelling – of re-situating these knowledges in ways that may contradict their usual moorings. In this sense, figurations both map and dis-map with their enrolling of “mixed and differential literacies”.

The cyborg emerges as a figuration from Haraway’s need to tell certain truths about scientific processes. The cyborg (short for cybernetic organism) is an image being continually drawn, fabricated, figured since its ‘birth’ in the 1960s. As a material-semiotic entity, the cyborg is employed as a figuration in Haraway’s critique of military-industrial relationships with science and technology. As a narrative device, the cyborg is composed of complicated and contradictory associations: of technologies and biologies, virtualities and physicalities, discursivities and materialities. It is complicit in generative projects of difference. The cyborg begins, after all, as the “cyborg enemy” (Harvey and Haraway 1995: p. 514) – an enemy that needs to be reclaimed, or queered, into new possibilities. To engage in generative projects of difference, the cyborg advances a re-writing of the narratives about military-industrial relationships with science and technology. However, not all cyborgs tell these particular stories (cf. Gray 1995, 2000; Balsamo 1996; Stone 1995; Foster 2005; Halberstam and Livingston 1995b).

Her interest in the cyborg is detailed in *Manifesto for Cyborgs*, reprinted in a

collection of essays titled *Simians, Cyborgs, and Women* (Haraway 1985, 1991). In this manifesto, Haraway introduces cyborgs as transgressing three boundaries: between human and animal, organism and machine, and the physical and the non-physical. She situates these transgressions in the ubiquity of electronics and their embeddedness in various practices, organizations, industries, and militaries. It is this pervasiveness of the microelectronic that marks the potential for a cyborg manifesto, that in these moments when “the difference between machine and organism is thoroughly blurred”, we can recognize “totalizing theory is a major mistake” and can take “responsibility for the social relations of science and technology” (1991: p. 165, 181). Here, Haraway is addressing the feminisms and Marxisms of the 1980s as they came aground in the massive movements of capital around the development of communication and biological technologies in Silicon Valley, California. By insisting on the heterogeneity forced by our microelectronic and bioengineered present, Haraway sees the political and ethical potential for hybrid subjects – that in these moments of intense diversification of economies emerge multiple kinds of subjects, resistive and contradictory. The micro(electronic) (bio)politics of the cyborg is a trickster in its opposition to grand narratives of progress, domination, and emancipation. The cyborg project illuminates, for instance, the heterogeneity of gendered identity, and insists on the construction of its supposed naturalness. Cyborg vision thus ‘sees’ an ontological hybridization premised on hybrid epistemologies. Without such epistemological and ontological visioning, critiques of knowledge practices remain routine, and lack the

riskiness of embedded narration. Routine critiques of knowledge practices are those that lend themselves too easily towards determinisms and constructionisms, the slippage of ‘the-machine-made-me-do-it’ and the convenience of relative perspective.

From this initial manifesto, cyborg figuration grows into an entire book project, allowing Haraway (1997) to explore this kind of storytelling, of working within figurations. Two major parts make up the project: semantics and pragmatics. The first part emphasizes a meeting between a post-gendered post-human, FemaleMan©, and a technically-‘enhanced’ mouse, OncoMouse™: the former an elaboration of a science fiction character, the latter, the first patented animal, ‘developed’ by Dupont to harbor cancerous cells. Here, Haraway exercises her figuration’s strength as a narrative device, to place in conversation literary fiction about post-gendered identity and genetically-altered/infused, cancer-growing rodents. The second part considers how the cyborg, again as a writing device, embodies a troubling of boundaries, between the technical and political. Here, she discusses the gene, race, and the fetus as a few of several stem cells in which she places responsibility for the legitimating knowledge systems of the world. These stem cells illustrate her call to a particular, embodied witnessing of scientific practices: figurations. Here, Haraway draws feminists to the practices of science and technology, to challenge reactions against objectivity and fiction, and to complicate feminist concerns with reflexivity.

In her *Companion Species Manifesto*, Haraway (2003) introduces a figuration to interrogate human-nonhuman relationships: the companion species, specifically the

dog. Companion species are about historicizing our relationships with animals, as mediation for biotechnology's colonization of the genome. Haraway (2003: p. 56) is intrigued by dogs as they are beings that are not-us; this figuration enables a worrying of the nature/culture binary, as "dogs are neither nature nor culture, not both/and, not neither/nor, but something else". These narrative devices are about *entering into* these histories, by writing their associations. Through inhabiting the narrative and exceeding "the maze of dualisms", the cyborg insists not on a "common language, but of a powerful infidel heteroglossia"¹⁰ (Haraway 1991: p. 181).

I have underlined the cyborg's role as a figuration: as a narrative device, to embed and craft associations, to historicize differently. The purpose is to enter into these storytellings, to make a mess of fact/fiction, subject/object, and mind/body. This sort of work opens up human geography to new political geographies of contingency, relationality, and difference within semiotic *and* material borderlands. The cyborg embodies these spaces, as a hybrid, to practice the production of knowledges. Hybridity is thus the means and ends to this knowledge production – a kind of working hybridity, where subjectivities are re-made in boundary crossings. Working hybrids invoke multiplicity, contingency, and blurred, unraveling boundaries between body and machine. They produce worked knowledges. Our relationships with microelectronics

¹⁰ Haraway has also described these kinds of collaborations as 'working hybrids'. Working hybridities are those that are exposed and are made vulnerable, "where epistemological and ontological risk define the name of the game" (1999). To provide an example of working hybrids, Haraway (1999) examines a series of reports produced by the Scientific Panel of the government of British Columbia, Canada to address conflict surrounding forestry practices on Vancouver Island. The alliances formed represent worked knowledges wherein the entities participating put themselves at risk, to challenge what it means (and why it matters) to have sustainable forest communities.

and dogs are indicative of working hybrids and worked knowledges – where all entities are altered in the process of association, where the line of association itself is blurred into near invisibility. These alterations, I argue, have two dimensions, ontological hybridity and epistemological hybridity, the former having been the more convenient usage of the cyborg, the latter an underutilized resource in critical geographic research. By not remaining attentive to the epistemological hybridity of the cyborg, we lose the critical politics of figuration – to make knowledge-in-the-making a visible practice.

2.2 Epistemological hybridity as strategies

The richness of the cyborg concept allows us to negotiate a multiplicity of spaces and practices simultaneously and in so doing develop epistemological strategies ... (Gandy 2005: p. 40, emphasis mine)

The resourcefulness of the cyborg stems, I argue, from its epistemological hybridity and the risk that comes with knowledge co-productions. The citation of the cyborg as an ontological hybrid – as a troubling of ontology – can mask this resourcefulness. To challenge this masking, I suggest how the cyborg figuration enacts epistemological strategies, as proposed by Gandy above. Figurations invoke multiple ways of being/becoming and knowing/seeing; as such, they are both epistemological *and* ontological. In this section, I develop the epistemological strategies of cyborg figuration, as it is these strategies that I argue have been subsumed in our fascination with ontological hybridity.

The cyborg has been taken up to mean and signal a litany of cultural production and critique. I advocate a return to cyborg theory, to recover the “epistemological subtlety and political prescience” of the figure (Gandy 2005: p. 28). The purpose of

these risky, working hybrids is to not only provide a language of being or becoming, but to narrate this language in the co-production of knowledges. If ontological hybridity is concerned with what it means to *be* hybrid, I suggest that epistemological hybridity considers what it means to *know* hybridly. Here, I propose a cyborg geography that is attentive to these ways of knowing.

To *know* hybridly, I argue that cyborg figurations take up the language of witnessing, situating, diffracting, and acquiring. I read these as epistemological strategies. I have distilled these strategies from Haraway's writings of the cyborg and of companion species, from the lab to the kennel. It is a language taken up elsewhere in geography as feminist epistemologies (Rose 1997; Cope 2002; England 1994; Katz 1994; McDowell 1992; Lawson 1995). In arguing that these modes of epistemological hybridity are strategies of cyborg figuration, I broaden what is potentially enabled in the use of the cyborg. This is a re-activation of the cyborg, to intervene in narratives of knowledge production, to challenge their knowledges-in-the-making. These four interventions should be read as epistemological strategies in cyborg geographies. They enable an exploration of the coding of community by asking how technology (its development, implementation, and histories) constitutes subjects and objects of neighborhood revitalization.

2.2.1 Witnessing

Witnessing is a visioning of the various enactments and positionings of knowledge-in-the-making. The cyborg emerges from a need to witness: to observe, to provide an

account, and to be present. By placing the cyborg within the strategy of witnessing, I underline the critical impetus for this figuration. For Haraway, the title of her self-help manual is the fictive e-mail address of such a witnessing,

Modest_Witness@Second_Millennium (1997). Her cyborg is paradoxically a witness situated in modesty, and yet challenges the kinds of modest witnessing (observable truths) of science. Here, Haraway recounts female and male modesty, to draw certain distinctions. “Female modesty was of the body; the new masculine virtue had to be of the mind.” (p. 30) Her modest witness was to be simultaneously of “the self, biased, opaque”, just as it was also transparent and objective (p. 32). Witnessing was to be an embodied act of providing an account. Being both objective and subjective, the modest witness is inhabited in order to narrate the encounters of technoscience and natureculture. Haraway’s historical irreverence continues as we read her e-mail address. Second Millennium situates this witnessing, making visible that our time is literally situated in Christian salvation history – the second millennium after Christ’s birth. Here, Haraway calls on the language of witnessing to historicize Science’s co-implication with the salvation narrative. To understand this witnessing, Haraway stresses the need to historically situate, to “know those worlds” (p. 37) in which our subject-object relations are situated, and to realize the fiction “we are forced to live ... whether or not we fit that story” (p. 43). In doing so, Haraway embodies these narrations as a witnessing that is simultaneously partial and yet objective. She writes of a witnessing, that is “seeing; attesting; ... a collective, limited practice that depends on

the constructed and never finished credibility of those who do it” (1997: p. 267).

Haraway’s delight in this kind of cyborgian witnessing allows her to challenge reactions against vision. Instead of avoiding or revoking the concept of vision, she seeks to rework the concept, to insist on a kind of ‘seeing’ that is necessarily partial – but no less a Fact. This is a witnessing distinguished from relativism. By witnessing, we open up the practices of knowing – uncloaked from scientific rationalisms. Figurations do this work of witnessing – acting as a pivot to draw in the various contingencies and contradictions of knowledge-making practices. Geographers need this cyborgian witness to be attentive to a multiple situatedness, not from the single perspective of Author, but from the appendaged collection of authors-in-the-making.

2.2.2 Situating

Situating knowledges is a second epistemological strategy in cyborg figuration. The cyborg is witness to such situatedness – to counter, Haraway argues, “a leap out of the marked body and into a conquering gaze from nowhere” (1997: p. 188). However, the concept of situated knowledges does not indicate that our claims need to be grounded, or put in place. This is not a simple geography of perspective. Haraway seeks to clarify this mis-reading:

*...it is very important to understand that “situatedness” doesn’t necessarily mean place... Sometimes people read “Situating Knowledges” in a way that seems to me a little flat; i.e., to mean merely what your identifying marks are and literally where you are. “Situating” in this sense means only to be in one place. Whereas what I mean to emphasize is the **situatedness** of situated. In other words it is a way to get at the multiple modes of embedding that are about place and space in the manner in which geographers draw that distinction. (2000: p. 71, original emphasis)*

Similarly, Gillian Rose has taken up this concern about situated knowledges in geography (1997). Rose suggests that Haraway's situated knowledges are bound up with vision. Situated knowledges are, as Rose writes, a "siting [that] is intimately involved in sighting" (1997: p. 308). Situating knowledges requires powerful figuration and imagery; it is a tool for visioning difference. Cyborgs are sites from which to witness this "situatedness of situated". Witnessing and situating are co-dependent practices in cyborg geographies. To inquire about technoscientific and naturecultural encounters, geographers must inhabit figurations to 'see' and 'place', witness and situate, the multiplicity of relations that make our cyborg geographies. As figurations, cyborgs witness the various knowledge practices that constitute objects and subjects and the differences that are made – to situate, call attention to, the work that places or endows them with a geography. As a hybrid epistemological strategy, our recognition that the "geography is elsewhere" for these figurations, is about their multiple and often contradictory placings (Haraway 1991). To be attentive to this cyborgian situatedness, geographers have the responsibility to place these knowledges-in-the-making, not with some reified, exacted place, but as a placing – an objective, yet contingent, collusion of objects, subjects, and spaces.

2.2.3 Diffracting

As witnessing is about 'seeing' and situating is about placings, diffracting is about changing knowledges, reconstructing knowledge practices such that alternative understandings of these knowledges emerge. Cyborg geographies adopt a politics of

diffraction. In opposition to an epistemology of reflexivity, diffraction is resistive to reflections. The point is to *make* a difference, as opposed to reflecting upon it.

Haraway works the notion of reflexivity in feminist methodology, to oppose repeating the “Sacred Image of the Same”; instead, diffraction is a recording of the “history of interaction, interference, reinforcement, [and] difference” (2000: p. 102). Haraway uses the science of optics to draw a distinction between reflection and diffraction. The passage of light through a crystal separates light into its individuated bands; this sort of diffraction is about recording these various passages. Whereas reflections enable the mirror-images of ourselves elsewhere, diffractions work the image, to change the figuration, to alter the politics, and to construct knowledges differently. Hers is a different optics of politics, a “pattern [that] does not map where differences appear, but rather maps where the effects of difference appear” (1992: p. 300).

Diffraction works to tell new stories of technosciences and naturecultures – doing so requires not the mirror-image of reflexivity, but a visual metaphor based on difference and the enacting of differences. Diffraction, then, takes up various accounts, witnessed and situated, in order to radically alter them. It is therefore not enough to reflect on one’s co-implication in knowledge practices; rather, it is our responsibility to diffract, to document the difference generated by such knowledge practices. Diffraction is the mantra of the unbeliever, to resist incredulously our accepted experiences about knowledge-in-the-making, to enable different explanations within differing geographies.

2.2.4 Acquiring

Acquiring is a strategy for knowing hybridly – to allow the unknown and the alternatively known to inhabit our ways of knowing, to alter them permanently.

Cyborg geographies engage in acquisitions¹¹. These acquisitions involve the taking of risks to build working alliances in order to further interrogate naturecultures and technosciences. These risks could involve learning from the observed, taking up their discourses, to diffract, to alter these knowledge productions. That material-semiotic entities acquire each other, and “make each other up, in the flesh”, is the kind of ontological and epistemological risk present in working hybrids (Haraway 2003: p. 2-3; 1999). Beyond essentialized alliances, acquiring, as an epistemological and political strategy, is to “remain accountable to each other” (Penley and Ross 1991: p. 4). Further, to acquire is to become vulnerable to alternative, even contradictory, discourses – doing so, enables a kind of hybridizing diffraction that messes knowledge practices based in extraction, synthesis, and reflection.

While Haraway works the concept of acquiring after the bulk of her cyborg project was published, I suggest that acquiring is an epistemological strategy of cyborg geographies. The cyborg, after all, is an acquiring figuration – drawing in multiple, incongruous projects, such as projects of destruction and domination as well as projects for the enhancement of (non)human life. The pervasiveness of contemporary boundary

¹¹ Certainly, the discipline of geography is haunted by its legacy of acquisition, as Driver’s (1992, 1995) discussion of the imperial tendencies within the field attests. What I am suggesting here is not a return to those troubling acquisitions, but an ethic of making knowledges by working those hybrid encounters which place us at risk – to acquire one another in an enacting of responsible collaboration.

crossings requires our permanent availability to hybrid ways of knowing; we have the opportunity and responsibility to acquire and become open to change. This, I believe, is complemented by the kinds of openness – of co-productions – that permeates Massey’s conceptualization of space as “contemporaneous multiplicity” and as “under construction” (2005: p. 148).

In this section, I have discussed a series of knowing practices – epistemological strategies – to consider the cyborg *as a figuration*. In the following section, I demonstrate how the cyborg’s role as a figuration is lost in geographic literatures on naturecultures and technosciences. Haraway’s attentiveness to the spaces of knowledge production (the corporate laboratory, the genome archive, and the kennel) should give geographers pause, to critically consider how our cyborg geographies are timed and spaced in important ways, and *how* we know what we narrate. By attending to these spaces for hybrid ways of knowing, we embrace the messiness of our boundary-work and remain responsible to the entities that populate our space-times – human, nonhuman, posthuman, cyborg, *et alia*.

2.3 Working knowledges in natureculture and technoscience

In the geographies of natureculture and technoscience, there is a tendency to understate (or miss altogether) the epistemological hybridity of the cyborg figuration and instead connote ontological, categorical instability. I demonstrate that this is a missed opportunity to know hybridly the relations and adjacencies of knowledges-in-the-making. To take seriously cyborg figuration, geographers must expand notions of

hybridity beyond being or becoming. The inclination towards ontological hybridity might emerge from human geographers' concerns about the centrality of the 'human'. These concerns unravel the monoglossia of the human sciences, to decentralize what we imagine *to be*. Accordingly, hybridity is invoked to draw in other kinds of entities (animals and the computer), to destabilize notions of being and becoming – to ontologically hybridize. The cyborg often signals this ontological hybridity in geographic literatures, drawing upon the more common understanding of the concept: the “hybrid of machine and organism” (Haraway 1991: p. 149). By pushing back on this citation, I argue that geographers need to go further in their engagement here. I examine their engagement in selected geographic literatures about naturecultures and technoscience, and argue that within each the citation of the cyborg works less as a figuration for hybridly knowing, and more as a signal for hybrid beings/becomings.

2.3.1 Cyborgs in naturecultural geographies

The discomfort with the centrality of the human in human geography leads Sarah Whatmore (2004) to prefer the 'more-than-human' concept, as opposed to the posthuman. Here, Whatmore problematizes how temporality is invoked in posthumanism (see also Braun 2004). She reflects on her earlier work in *Hybrid Geographies*, a treatise on the production of naturecultural knowledges:

Using various devices to push hybridity back in time, I sought to demonstrate that whether one works through the long practised intimacies between human and plant communities or the skills configured between bodies and tools, one never arrives at a time/place when the human was not a work in progress. (2004: p. 1361).

The question of 'the human', as a work of “practiced intimacies”, remains. Whatmore

(2002) attempts to move beyond dualisms, and for her, hybrid geographies are spaces wherein dualisms like human/nonhuman and nature/culture are untenable. By thinking hybridity in this way, as the impossibility of binary thinking, Whatmore destabilizes nature-society traditions in geography – to demonstrate how this way of interrogating ‘nature’ intimates the ‘social’. Here, Whatmore historicizes urban relationships to the wild, from Roman uses of animals in the gaming arena to scientific inventories and animal management. She tacks between embodied, while partial, accounts of natures-societies and critiques of science through actor-network theory, and seeks to “practice geography as a craft”, to demonstrate the centrality of “wild(er)ness” to the social (2002: p. 3-4). While Whatmore’s investigatory motivations are insightful, I push back on her interpretation of cyborg figuration, as her reading illustrates how the cyborg has been limited to an ontological hybridity. I examine Whatmore and Eric Swyngedouw’s citation of the cyborg, to ask what work it performs in their naturecultural geographies, to consider: what is enabled by the cyborg in naturecultural geographies?

Naturecultural geographies are concerned more broadly with the nature-society tradition of the discipline, and hybridity is indeed one conceptual tool for problematizing this perspective. Energized by debates on the social construction of nature (Demeritt 2002), geographers have troubled the boundaries constituted by the nature-society tradition (Gerber 1997), thereby exploring the relationships between the natural and the urban (Swyngedouw 1996; Gandy 2005; Castree 2003; Braun 2005) and between animals and humans (Wolch and Emel 1998; Whatmore 2002; Philo and

Wilbert 2000; Brown and Rasmussen 2009). Responsibilities and connectivities are at stake in these debates – responsibilities to multiple ways of living and concepts of life and connectivities to those other, constitutive entities.

Whatmore (2002) exercises caution in her use of the cyborg, finding the cyborg a useful ontological figure, while being less enamored with the potential of the cyborg, epistemologically. She draws on the cyborg to illustrate the hybridity that was always present in our relationships with the ‘wild’. She recognizes the disruptive potential of the cyborg (1997), to de-purify the natural and the social. This de-purification works in an ontological sense. Further, she finds the cyborg less capable of expressing the material corporeality of nature-society connections.

[A]lthough Haraway’s account of hybridity successfully disrupts the purification of nature and society and relegation of ‘nonhumans’ to a world of objects, it is less helpful in trying to ‘flesh out’ the ‘material’ dimensions of the practices and technologies of connectivity that make the communicability of experience across difference, and hence the constitution of ethical community, possible (Whatmore 1997: p. 47).

That there is a tension in the concept of the cyborg as per Whatmore’s reading is clear. Considering the cyborg concept limited by a “one-plus-one” logic, Whatmore (2002: p. 165) instead suggests a hybridity “defined less by its departure from patterns of being that went before than with how it articulates the fluxes of becoming that complicate the spacings-timings of social life”. For Whatmore (2002: p. 187n16), cyborgs are “couplings... [where] difference is prefigured in the alterity of already constituted kinds”.

The cyborg figuration, for Whatmore, functions less as a point of entry in which

to inhabit the narrative. Cyborgs, in Whatmore's reading, are simply the possibility of becoming one from multiple beings/things. They operate less as figurations; they are not narrative devices. We are left, then, with a concept of the cyborg that is anemic, unable to take risks, to see (witness) and place (situate) differently, to fold in (acquire) and alter (diffract) knowledges-in-the-making. This is a cyborg-in-passing, a relic of 1980s cultural production.

While Eric Swyngedouw uses the cyborg as an entry point into historical-material analysis of the urban, I want to push his use of the cyborg – to enact the kinds of risks that come in narrating urbanizations. He writes of the “city as cyborg” to mark urban processes around water as intimately linked to bodily arrangements as well as regional and global relationships (1996: p. 80). More specifically, his entry point is a cup of water, to examine the connectivities between the urban and nature. By doing so, he emphasizes the city as a hybrid, telling stories of “its people and the powerful socio-ecological processes that produce the urban and its spaces of privilege and exclusion” (1996: p. 67). The cup of water symbolizes – figures – his entry into multiple discussions of urbanizations:

of participation and marginality; of rats and bankers; of water-borne disease and speculation in water-industry related futures and options; of chemical, physical and biological reactions and transformations; of the global hydrological cycle and global warming; of the capital, machinations and strategies of dam builders; of urban land developers; of the knowledges of the engineers; of the passage from river to urban reservoir (1996: p. 67).

By analyzing water in this way, Swyngedouw demonstrates the city as a hybrid – partially composed of the relationships mentioned in the preceding quote.

Swyngedouw's use of cyborg and hybrid are nearly interchangeable, both invoking a composition of various complementary and contradictory elements. He employs cyborgs to package a multiplicity of natural-urban environmental productions (Swyngedouw 1996, 1999, 2006; Swyngedouw and Kaika 2000). As Bakker and Bridge (2006: p. 17) point out, this invocation of the cyborg serves to emphasize the production of hybrids, or the "process of hybridization". Similar to Whatmore's reading of the cyborg as a 'coupling', Swyngedouw cites the cyborg to emphasize the productive combinations within the urban, referenced in his quotation above. By taking up the cyborg as a figuration, I suggest that the processes of hybridization could be opened, through the epistemological strategies of the cyborg. It is Swyngedouw's (1996, 1999) cup of water that needs this witnessing – to remain partial and open to multiple, and risky, narratives about political, cultural, and economic normatives as well as micro resistances and inconsistencies.

My selection of naturecultural geographies by Whatmore and Swyngedouw demonstrate the tension around usage of the cyborg concept – in the former, a reading of the cyborg not as a figuration, but as a coupling, and in the latter, a reading of the cyborg as emergent, assuming a pre-cyborgian condition, emphasizing the production of hybrids. This has demonstrated a need for a resuscitation of the cyborg citation, to recognize its potential for witnessing the situatedness of urbanization and urban study, to recognize their co-implicated discourses. What would it mean to write the cyborg city, where the objects of analysis illustrate the differences produced by their study, in

an always-incompleted project of working knowledges, and inconclusive evidences?

2.3.2 Cyborgs in technoscientific geographies

Technoscientific geographies have the potential to enroll cyborg figuration, to witness, situate, diffract, and acquire the multiplicities of subject-objects in space-times.

However, I argue that citations of the cyborg in these selected studies of cyberspace and geographic information systems associate the cyborg with a narrow ontological hybridity. Without sufficient attention to hybrid epistemologies, these technoscientific geographies miss the opportunity to make knowledges of difference. What remains is a technoscience of the same – a kind of inquiry that leaves technological knowledge production unchallenged and furthers a project of technological advancement by the few. To write cyborg geographies of technoscience, geographers must foreground the cobbled-together-ness of technoscientific practice – to elaborate their messy inception and risky encounters.

Technoscience indicates an alternative telling of (post)modernisms, wherein the productive tension between science and technology serves to exceed these very distinctions, including mind and body, subject and object, human and non-human, nature and society (Haraway 1997: p. 3). Technoscience is Haraway's emphatic rejoinder to scientific rationalism. The cyborg figure is the narrator of this rejoinder, to "bring the technical and the political back into realignment so that questions about possible livable worlds, lie visibly at the heart of our best science" (1997: p. 39).

Within geography, a limited literature explores the geographies of technoscience, to

distinguish among historical geographies of science and the histories of the geographical sciences (Powell 2007). The geography of technoscience is concerned with the production of scientific and technical knowledges, particularly how these productions constitute spatial relationships among nature, society, and technology. This research examines the practices of statisticians (Barnes 1998), high-energy physicists (Jons 2006), transgenic food production (McAfee 2008), and the gendering of office technologies (Boyer and England 2008). Although geographies of cyberspace and critical geographic information systems have not been cast explicitly as technoscientific study, here I consider how two researchers have drawn upon technoscientific critique – specifically that of the cyborg. I extend this critical lens to Rob Kitchin and Nadine Schuurman’s use of the cyborg in technoscientific geographies, to discuss the absence of the cyborg as a figuration involved in hybridly knowing.

The permeation of cyberspace into everyday life is what Rob Kitchin (1998: p. 394) terms “cyborging”. Identity is multiply produced in cyberspace, and cyborging, according to Kitchin, describes the “merging of nature with technology, as humans and computers coalesce” (p. 394). Kitchin and Kneale (2001) also enroll the concept of cyborging to discuss cyberpunk fiction. Kitchin’s usage of the cyborg concept is a marker for hybrid identification. Cyborging, for him, is a process of unification through merger and coalescence – the becoming of one, identifiable subject. Cyborging is a writing device to invoke hybridity, through analyses of lives lived online and literary

fiction. This device when used in cyberspace, according to Kitchin, enables a user to actively create identity, to cyborg. Cyborging is this process whereby, “[u]sers literally become the authors of their lives” (1998: p. 394). It is this hybridity-in-the-making that draws Kitchin to the cyborg concept, where cyberspace subjects “play” with “fantasies, ... othernesses, ... [and] crossdressing” (p. 395). Cyborging in cyberspace is about enacting hybrid identities in virtual and imaginative geographies.

However, I stress that this notion of ‘cyborging’ is limited to an ontological dimension. To enroll cyborg figuration is to witness and situate these productions of cyber-identities, beyond a recognition of their made-up becomings, and towards a critical visibility. Cyborging, as I alternatively read it, is not only coalescence, but also the always-unfinished project of attesting to the ways of knowing self and other in the network.

Similarly, Nadine Schuurman (2002, 2004) calls for “writing the cyborg”, arguing for increased use of GIS by women and underrepresented groups (2002: p. 261). To ‘write the cyborg’, or ‘perform the cyborg’ as Kwan (2002c: p. 276) has stated, is to invoke the cyborg as a process. Schuurman draws upon Haraway’s notion of cyborgs in the construction/use of geographic information technologies, countering critiques of its potential surveillance capability (Kwan 2002c). For Schuurman the prospect of GIS in the hands of the surveilled is a reworking of the technology in a cyborgian tone. Schuurman seeks to challenge the masculine inception of the technology, by actively re-rendering the technology from a feminist perspective

operated for/with female/other bodies, described as “strength in numbers” (p. 261). Her “feminist cyborg” seeks to “make GIS and geography a more equitable place not only for women but for many underrepresented and less powerful groups” (p. 261). Like cyborging in Kitchin’s (1998) review of cyberspace research, the point is to actively constitute the possibility of hybrid becomings. Schuurman traces the concept of the cyborg:

The cyborg of the 20th century was an amalgamation of technology and humanity. Using a computer to write, having a locator chip installed in your dog’s ear, or programming military-industrial applications all warranted the designation. Any confluence of silicon with animal or human behaviour and presto: a cyborg. Cyborgs of the 20th century had less to do with data than with silicon. The very fact that they incorporated computing was enough to earn the designation ‘cyborg’. ... ‘New’ cyborgs are, however, more than metal and flesh; they come to life in the presence of data (2004: p. 1337).

Schuurman argues that 21st century cyborgs are not necessarily made of microelectronics, but data. This use of the cyborg symbolizes a hybridity of being – of being/becoming more-than-human in an intermeshing of data and electronics. Our interactions with computing technologies designates our *being* cyborg. Further she (2002) advocates that the political challenge is to enable a feminist cyborg, by emphasizing the role of marginalized populations in the production of GIS knowledges. While one aspect of the feminist critique of science was to advocate the placement of more women in science positions (and to make more visible those women who are scientists), Haraway instead proposes situated knowledges – so as to avoid essentializing women’s role in (scientific) knowledge productions. The role of gender is multiply interpreted in cyborg figurations, according to Haraway (2003; see also Wajcman 2004) and Schuurman’s “writing the cyborg” is indicative of this tension.

Haraway's (2003: p. 47) political potency was to use the cyborg to resist militaristic, "man-in-space" projects, while also narrating their implicatedness in technoscientific agendas. Schuurman's use of the cyborg illustrates for her the complicated arrangement of humans and technology, without further asking what kinds of knowledges are made in these arrangements and how these knowledges may be made differently. Instead, Schuurman's citation of the cyborg figuration is to mark bodies *as* cyborgs, and does not inhabit the cyborg as a strategy in narrating knowledges-in-the-making.

The cyborg, as in the selected literatures above, often references a being/ becoming hybrid – emphasizing the ontological connotation of the concept. I argue that an opportunity has been missed in this citation. Beyond 'writing the cyborg', 'performing the cyborg', or 'cyborging' (each constitute hybrid ways of *being*), *knowing* hybridly requires an inhabiting of the figuration of the cyborg – to see the relationships and connectivities of naturecultural and technoscientific practice. To know hybridly, I argue for a return to the knowing practices of the cyborg, based on witnessing, situating, diffracting, and acquiring.

2.4 Conclusions

*We know, from our bodies and from our machines, that tension is a great source of pleasure and power. May cyborg, and this **Handbook**, help you enjoy both and go beyond dualistic epistemologies to the epistemology of cyborg: thesis, antithesis, synthesis, prosthesis. And again. (Gray, Mentor, and Figueroa-Sarriera 1995: p. 13, emphasis original)*

What would it mean to introduce oneself as a 'cyborg geographer', in the same sense that we introduce ourselves as human geographers? How do we complicate our own

proclivities toward the ‘human’? As cyborg geographers, we are responsible for being attentive to the partial and contingent practices of knowledges-in-the-making. This responsibility is two-part. First, we must recognize knowledge-making-actions as creative, sometimes strategic, and often fallible encounters. Second, we must be historically aware of our multiple adaptations in these actions. As Gray *et al.* provoke a taking-up of their handbook in the above quotation, they encourage the use of the cyborg *as an epistemology*. This signaling to the cyborg as a device, to be enrolled and invoked, parallels my insistence that figuration of the cyborg requires an inhabitation, to be *and* know hybridly. Cyborg geographers use figurations to fulfill their responsibilities.

In the midst of geographers’ explorations of the cyborg in terms of an ontological boundary messing, I have argued that the cyborg’s potential as an epistemological hybrid is underconsidered. Therefore, I have taken a more specified understanding of this hybrid epistemology as one of figuration. This is not to say that ontological hybridity is not important for cyborg geographers; indeed, knowing hybridly is steeped in being and becoming hybrid. However, I argue that what is at stake in knowing hybridly is *how* we know what we narrate. Cyborg geographers are interested in this question of how we know, but not in lieu of creating action. As hybrid beings interested in how we know, cyborg geographers emerge from their embedded narrations to warn against determinisms and constructionisms, to flag critiques that have become too routine. This is a responsible action – a responsibility fulfilled by

recognizing our implications in knowledge-making-actions. The recognition of our implications enables the writing of these geographies of contingency, relationality, and difference. This writing becomes the creative action of the cyborg geographer. To practice this writing, I have suggested four strategies: witnessing, situating, acquiring, and diffracting. That these ways of knowing are always an attempt to complete an incompletable whole is the name of the game. Partiality *and* objectivity are strange bedfellows. And yet the cyborg geographer enacts their coordination.

Following Haraway and limited geographic literatures that cite the cyborg, I have proposed witnessing, situating, diffracting, and acquiring as methodological endeavors, to know hybridly. By knowing hybridly through these strategies, knowledge practices become grounded throughout narratives about naturecultural and technoscientific phenomena. While these strategies are indeed co-dependent on the ontological hybridity of the cyborg concept, I highlight these to both return to the cyborg as a theoretical concept and to ground this concept as a figuration. I propose cyborg geographies as a call to take these hybrids seriously, to recognize that hybridly knowing is bound up in becoming and being hybrid. At stake is our action to know – to not only recognize differences produced in techno-nature-culture worlds, but to inhabit these spaces of difference and become responsible to their vulnerabilities. Hybridly knowing is knowing-at-risk.

That the cyborg is foremost a figuration in Haraway's work, frames my insistence on close readings of geography's dabbling with the cyborg, to consider the

geographies of the cyborg and the potential for further critique in a cyborgian tone. As a figuration, the cyborg is a writing technology. By invoking the cyborg in this sense of knowing differently, we also conjure certain hybridities of knowing. These hybridities live within and through our writings. There is work to be done in the cyborg geographies of natureculture and technoscience. This is a call for cyborg geographers to,

- inhabit the spaces where the human and nonhuman are constituted, and narrate the conditions that established this entry point,
- resist even temporary stabilizations of urban study, by recognizing urbanization as an always-incompleted project of working knowledges,
- foreground the messy and risky spaces of technoscientific practice,
- articulate the moments in which self and other are known in the virtual, and
- question the knowledges made through human-technology assemblages, so as to create the possibility that they may be made differently.

To conceptualize this work, I have suggested a re-reading of the cyborg figuration, to inspire some strangeness amid the popular familiarity of the cyborg. I have found it helpful to consider Massey's re-conceptualizations of spaces as taking a similar approach. Massey seeks to disrupt our narratives about space, and poses a series of challenges to geographers: how to narrate, how to spatialize, how to mis/represent, how to situate and position, as well as how to (not) obfuscate, how to seize/cease production/representation, how to complicate, *etc.* Cyborg geographies forward this

disruption. It is a political project of knowledge-in-the-making, of knowing hybridly – of finding coeval kinship in knowledge endeavors.

The coding of community is such a knowledge endeavor. By enrolling these epistemological strategies of *hybridly knowing*, the following chapters document the ways in which discursive and material technologies are co-articulated with emerging urban political imaginaries. It is important, and perhaps commonly noted, that these community residents, equipped with handheld computers and clipboards, *are* cyborgs. However, as this chapter has argued, this analysis is not enough. Instead, what is needed is a kind of cyborgian inquiry -- to recognize (witness and situate) the imbricates of technology, culture, society, and commodity, in order to, document (diffract and acquire) how these might be imbricated differently.

Chapter 3. Objects, subjects, methods¹²

...when we find ourselves invaded by frozen embryos, expert systems, digital machines, sensor-equipped robots, hybrid corn, data banks, psychotropic drugs, whales outfitted with radar sounding devices, gene synthesizers, audience analyzers, and so on, when our daily newspapers display all these monsters on page after page, and when none of these chimera can be properly on the object side or the subject side, or even in between, something has to be done. (Latour 1993: p. 49-50)

The task ahead in cyborg geographies of the coding of community is to first recognize the practice of community mapping as a strange hybrid, following Latour. Using *strangeness* as a theoretical tool allows the reader to re-read complexity into the everyday. Latour (1993) uses hybrids; Haraway (1985) uses cyborgs; Foucault (2003) uses grotesque discourse. Within studies of geographic information technologies (GIT), John Pickles uses *denaturalization*. Pickles outlines this in his treatise on what he terms the situational pragmatics of map use:

It becomes important to trace the ways in which individuals, technological objects and institutional assemblages have functioned to naturalize one particular understanding of scientific practice. ... One task of deconstruction, then, is to write denaturalized concrete histories of multiple technological and scientific projects that on the surface appear as a unity. (Pickles 2004: p. 70)

Here, Pickles is primarily drawing on literatures within science studies -- specifically Andrew Pickering's work on *practice* and Donna Haraway's work on technoscientific critique. His point, as it applies to studies of GIT, is to interrogate and write out the connections -- historical, technological, cultural, political, economic -- that enabled

¹² A version of this chapter was presented as *Making community-nonprofit geographies visible: Knowledge-making alliances and the problematics of acquiring discourses*. Royal Geographical Society and the Institute of British Geographers, 2008 Annual International Conference, London, UK. 28 August 2008.

technologies like GIS to be read as a whole, as a unity.

The work of coding community, as Latour writes in the epigraph of this chapter, is neither about objects or subjects, but about something entirely different -- an assemblage of discourses, materialities, practices, human, and more-than-human. In this chapter, I discuss the positionalities through which I conduct this research, as well as detail the methods I enroll. In the first section, *Description of methods*, I detail the methods of data collection and analysis used in this research. In the second section, *Finding oneself in partnership*, I discuss my own relationship with Sustainable Seattle before and during the research (see also, Appendix A, for a detailed timeline of the survey program).

3.1 Description of methods

I conducted this research through qualitative interviews, participant observation, and the collection of documentation related to the community mapping program facilitated by Sustainable Seattle. These materials, including field notes and interview transcripts were analyzed for major themes, problematics, absences, or boundary concepts, elements of a discourse analysis.

Specifically, this data included:

- thirteen *in-depth interviews* with all four of the nonprofit staff members with the Sustainable Urban Neighborhoods Initiative, and, on recommendation of these staff members: four staff members from different nonprofits associated with the mapping program, two associated staff members at the City of Seattle,

and two community residents who were active throughout the mapping program,

- a *focus group* with eight community residents from six Seattle neighborhoods discussing the conclusion of the survey program,

- *participant observation* of nine neighborhood surveys, representing eight of the ten neighborhoods participating (see Table 3.1), and

- *archival records*, including:

- nearly 2,000 digital files (nearly 500MB) of nonprofit documentation, correspondence, memos, reports, and datasets and

- nearly 6,000 entries collected from the 25 community mapping surveys conducted in the ten participating Seattle neighborhoods, from 2003 to 2007.

I used an inductive, case-based research design (Babbie 2008). As my research seeks to explore the constructions of meaning and identity in these geocoding practices, this design is necessary to more fully understand the complexity, context, and connectedness of these human and nonhuman actors. This research design looks to understand and not explain the practices involved in coding community. It is inductively developing theory.

Regarding the more practical settings of these data collection procedures, I realize the importance of positionality and place for the process of interviewing, field observation, and artifact collection (Elwood and Martin 2000). My ability to move into

these organizational and artifactual spaces, to interrogate these relationships is classed and gendered in specific ways; my own performed identity as a white male academic with technical expertise in geographic information technologies enables my being in and questioning of these processes. Here, I recognize how the construction of the ‘field’ in research can serve to assume some opportunistic separation from that which is observed (Sparke 1996). Additionally, I recognize the positionalities of interviewer and interviewee, the observer and the observed (England 2002) – as well as the distance (productive and unproductive) that such ethnographic methods constitute (Brown 1995; McDowell 1992; England 1994; Herbert 2000; Benson and Nagar 2006; Valentine 2006).

Table 3.1 ComNET surveys observed

Neighborhood	Date Surveyed	Iteration
Capitol Hill	22 May 2004	1st survey
International District	29 July 2004	1st survey
North Beacon Hill	May 2005	2nd survey
East Ballard	18 November 2006	2nd survey
Lake City	10 February 2007	Report on surveying
International District	March 2007	4th survey
Uptown	26 March 2007	2nd survey
Columbia/Hillman	31 March 2007	2nd survey
Admiral	7 April 2007	2nd survey

I attended a number of street surveys as part of this research. Table 3.1 displays the neighborhoods that I attended, with their date surveyed. The ‘Iteration’ column

describes which round of surveying the meeting represented. A majority of the meetings I attended were second iterations of the original first survey. These iterations were important to the outreach of the nonprofit organization, and provided neighborhood residents with feedback about previous years.

My analysis draws on many of the familiar techniques in empirically-based qualitative methods of the social sciences, including discourse analysis and content analysis (Rose 2007). These approaches not only involve the textual analysis of the collected materials, but also interpretation, reflection, and re-evaluation of their meanings (Cope 2002), with particular attention to major themes, problematics, absences, or boundary concepts.

3.1.1 Focus group

In my interviews with staff members at Sustainable Seattle and with community members who participated in the street-level surveys, I found that there were few moments of feedback to the community members during the four-year program. The results of the surveys were often uploaded to the Sustainable Seattle website, in the form of tables and a few pie charts; however, there were no maps. There were no aggregated representations of the surveys – the nearly 6,000 records collected over four years.

Therefore, as my research was concluding, I realized that I lacked a general sense of how community members perceived the entirety of the project. It was a lack of sense shared by the community members as well. It was fortuitous, then, that an

undergraduate student from Whitman College contacted me about finding a Seattle-based sustainability organization to work with and write her senior thesis. Chris Fade helped prepare the data that was collected from the street level surveys, and we were both interested in how the community members would perceive the entirety of the survey program.

After preparing the data, we recognized that the survey data was entirely removed of its context of collection: its mutability, its translation, and fit. In order to provide this context, its metadata, we felt that it was important to talk with those who created the data, to hear how they might, given the opportunity, evaluate this practice?

We considered a focus group. We were interested in placing the map and data products of the four-year survey at the center of group of neighborhood advocates who were partly responsible for creating the data. We wanted to fashion activities and discussion prompts around those artifacts. Jon Goss and Thomas Leinbach (1996) demonstrate how the flexibility of focus groups serve purposes beyond the information-gathering premise of most focus group literature, including: sociality, reflexivity, liminality, and empowerment. Focus groups, they argue, can provide a general social event for research partners, can engage research participants in knowledge production, and can provide a space of transgression and reflection.

The focus group we were interested in convening would invoke many of these themes, by providing a social event to evaluate and reflect on the street-level surveys created by neighborhood advocates. We were curious of the kind of empowerment and

disempowerment that would inevitably be present, but were mostly just interested in hearing how these neighborhood advocates would frame and analyze the four-year project.

As it turns out, preparing for and conducting a focus group requires a thorough understanding of the artifacts used within the focus group. And while Chris and I were hoping to disrupt any notion that we were the ‘experts’ or ‘owners’ of the dataset, there was no doubt that we knew the data quite well – as we were responsible for its aggregation. We represented the data – in all the multifarious senses of the word, ‘represented’: as a technician creating its display, as in speaking for it, on its behalf, and as in embodying its generalities as well as its specificities.

While the data fields were originally generated by The Fund for the City of New York, Sustainable Seattle worked with community leaders to tailor the fields of entry throughout the four-year survey program. This complicated the process of aggregation, which speaks to why the organization avoided producing representations of the entire dataset. Firstly, the survey program started doing the ‘asset’ route two years into the program. Secondly, the features and conditions were constantly in flux, getting removed, added, and renamed throughout the four-year program. The data had to be standardized; we had to create a single set of data fields that all survey datasets shared in common.

What we found after aggregating, and were able to represent for the first time, was the relative disproportionate data footprint for each of the ten neighborhoods –

directly reflecting nonprofit and community resources, as well as the priorities of each of the neighborhoods (see Figure C.1). We were able to map in Figure C.1 the summation of the survey program – making them visible in Cartesian space. In this map, we see how neighborhoods like Greenwood/Phinney Ridge and the International District dwarf neighborhoods like Lake City to the north and Columbia/Hillman City to the south. We were curious how the disproportionality of data collected mattered to the neighborhood advocates, and furthermore, how each of the neighborhoods differed in their collective tracking of certain ‘deficits’ and certain ‘assets’.

We designed the focus group to be two hours long, with very flexible structure for how we would move the focus group forward. After introductions, we prompted the participants to participate in a sticky note activity. We placed five colors of sticky notes on the table, with five of each of the five colors. Each color, we told them, represented an ‘attention resource’ for various ‘deficits’ reflected across the neighborhood surveys. As a group, they were to decide how to allocate these limited ‘attention resources’ to the ten neighborhoods surveyed by Sustainable Seattle. This activity was to start the discussion. We also decided upon two categories of focus points and characteristic prompts that would allow us to get at the themes of our respective research projects: The first focus point was on the accuracy of the surveys in representing neighborhood priorities. The second focus point was on the process used to collect data about neighborhoods.

This focus group of eight community members represented six neighborhoods

of Seattle: Hillman City, Greenwood/Phinney Ridge, Wallingford, Lake City, Capitol Hill, and Admiral. The focus group highlighted the ways in which experiences become data, data become graphed, and graphs no longer directly reflect lived experiences (as reported in Chapters 5 and 6). This kind of reification brought about discussion of the fixation of categories and of data-views, as well as the limits of interactive mappings.

Methodologically then, a focus group presented the opportunity to review and evaluate digital rhythms created by the collective. This emerging need for a focus group underlines the importance of inductive research on the use of geographic information technologies -- that the dynamism and contingency of objects and subjects requires our availability to chart new directions of inquiry.

3.2 Finding oneself in partnership

Part of this research included looking through gigabytes of documentation, folder-structures, and datasets created by nonprofit staff members at Sustainable Seattle during the four-year project called the Sustainable Urban Neighborhoods Initiative. The following is a description from my field notes of a visit to the Sustainable Seattle office, following the completion of their survey project, involving a couple documents I happened upon, when digging, or clicking, through their digital archive.

I was surfing through digital files and folders, re-located to my laptop, copied from the archive at the organization's 12th floor office in a downtown Seattle building. While looking through the official updates that the nonprofit staff made to the board of directors of the organization, a paragraph caught my eye.

Matt Wilson, a Geography PhD candidate at the University of Washington has been approved to conduct his thesis with us. His project will focus on how technology is used to develop indicators about Seattle neighborhoods. In particular, he will be conducting interviews with our volunteers and participating in our street-level surveys to help us further understand how such tools can be useful (or not) in understanding neighborhood priorities. (18 January 2007). [Neighborhood Indicators/Reports/Board Updates/2007/07-01-18 Board Update.doc]

This was an update to the Sustainable Seattle board, given at the beginning of year four of the SUNI project. My own dissertation project had been offered up as evidence that the organization was “meeting the metrics” of their funder, the Sloan Foundation. I immediately knew I was being enrolled, somehow, and I was flooded with questions about what this meant for *my* research and *their* project.

Intrigued by the prospect that I was within the archive, both reading the archive and *of* the archive, I performed further searches looking for various iterations of my name. I found that my dissertation project was also offered as part of the report to the Sloan Foundation:

Matthew Wilson is a PhD candidate in the Department of Geography and a Fellow in the Simpson Center's Public Humanities Institute at the University of Washington and has been a volunteer for the street-level surveys since our first year. In fact, he was a member of the first GIS group that helped us with our surveys. Matt's thesis is interested in how technology (through the use of community-collected data and ComNETsm software) influences one's sense of place. He will be evaluating the overall impact of the SUNI program, specifically through the ComNETsm project by conducting interviews with Sustainable Seattle and neighborhood partners. He also received a grant from the Nancy Bell Evans Center on Nonprofits & Philanthropy, and is considering interviewing staff with The Fund for the City of New York, the organization responsible for the ComNETsm software technology. Matt has only just begun his research work so it will be some time before he has any preliminary findings. (25 July 2007: p. 15) [Neighborhood Indicators/Reports/Year 4 Report to Sloan/Final/Year_4_final_Sloan_report.doc]

From the perspective of Sustainable Seattle, my attempts to engage staff members and volunteers in a discussion about the program could be articulated as an activity that

was meeting the goals and objectives of the program (and the funders). It was offered to the board of the organization, in a kind of ‘state of the union’ report, and offered to the funder of the project, as a way to provide some assessment for the organization’s ability to meet the objectives of the original proposal. This encounter in the digital archive and my efforts to search for myself throughout the data proves a curiosity – not unlike Googling oneself. What does it mean to find oneself in the archive?

I am interested in knowledge-making alliances and the problematics of acquiring discourses. The alliances to which I refer, like the nonprofit organization’s enrolling of my dissertation project to serve their assessment purposes, are about the kinds of agreements we make with our study partners in order to produce research. However, these alliances often involve certain discursive acquisitions, a taking-up of the logics and rationalities, attitudes and dispositions, stances and motivations of those participating in the research, whether they are a doctoral student or nonprofit staff or community activist. These moments of alliance are when my positionality is most pronounced, when my role as a researcher is no longer singularly defined, but is instead better understood as a collection of relationships with the subject of the research. This leads me to ask the following questions of critical methodology:

- What kinds of agreements do we make with our study partners?
- How might we theorize these kinds of moments in research?
- How might we enroll the notion of *companion species* in the study of

knowledge-making alliances?

3.2.1 Re-figuring researcher-researched relationships

Feminist theorizations have problematized the relationship between the ‘researcher’ and the ‘researched’. Here, I find the concept of mediated objectivity in the writings of Pamela Moss useful. She notes, “Knowers can both count and talk as well as be counted and talked with” (1995: p. 448). Additionally, feminists such as Cindy Katz (1994) and Kim England (1994) have discussed this relationship in the terms of ‘in betweenness’. Gillian Rose (1997) is further curious of feminist concerns over the constructed distance between the researcher and researched and seeks to re-work notions of reflexivity along these lines.

I enter Haraway’s writings about companion species at this point, to articulate how these encounters in research happen, through what embedded, bodily productions. Continuing her line of figurations for understanding social-technical-natural relationality, Haraway introduces ‘companion species’ for exploring material-semiotic constructions of kinship, collaboration, self-training, story telling, sharing, and suffering. The companion species manifesto inherits her challenge to the ‘god trick’ and her insistence on situated knowledges. She offers a politics for being invested in subjects – an opportunity, lined with risk, for understanding knowledge-making practices. These risky alliances are those that leave either party altered, through a kind of transformation through symbiotic learning.

Haraway uses dog training to explain the importance of contact zones in these alliances. She writes:

At first, the moves seem small, insignificant; the timing too demanding, too hard; the consistency too strict, the teacher too demanding. Then, dog and human figure out, if only for a minute, how to get on together, how to move with sheer joy and skill over a hard course, how to communicate, how to be honest. The goal is the oxymoron of disciplined spontaneity. Both dog and handler have to be able to take the initiative and to respond obediently to the other. The task is to become coherent enough in an incoherent world to engage in a joint dance of being that breeds respect and response in the flesh, in the run, on the course. And then to remember how to live like that at every scale, with all the partners. (2003: p. 62)

Out of these very literal moments of training, I read an ethic for conducting participatory action research. For Haraway, these training episodes condition her, the handler, in as much as they condition her dog.

These contact zones are the spaces of interaction, but not in some sterile, contained, communication systems sense. Rather, these are interactions among entities becoming conjoined. Haraway writes:

If we appreciate the foolishness of human exceptionalism, then we know that becoming is always becoming with – in a contact zone where the outcome, where who is in the world, is at stake. (2008: p. 244)

Haraway emphasizes the ‘with’ in ‘becoming with’ throughout her stories of agility games with her Australian Sheppard dog, Cayenne. So much of their accomplishments on the agility course had to do with alliances and moments of acquisition – being able to depend upon and really *read* situations in cross-disciplinary, and in this case cross-species, entanglements. Acquisitions in dog training have to do with symbiotic learning, where the actions of handler and dog are constituted through mutual agreement. And, as Haraway likely intended, the conceptual work of alliances and acquisitions translate nicely in this participant-observer, organizational study.

3.2.2 Practicing knowledge-making alliances

Throughout my relationship with Sustainable Seattle's community-mapping program, I served various overlapping roles and had different responsibilities to the organization. As technical support, I assisted in prototyping a system for storing and displaying geographic information about neighborhood quality-of-life. As a university liaison, I supported student groups within my department to work with the organization on their mapping and data needs. As a volunteer, I helped with the implementation of the organization's street-level surveys. As a researcher, I conducted interviews with the organization's staff and community volunteers and analyzed their online documentation. As a focus group facilitator, I involved community members in a discussion of the completed street-level surveys. Each of these relationships were built of momentary alliances, as anyone familiar with participant observer or ethnographic methodologies well knows.

Knowledge-making skill sets have currency in alliance-building. For instance, my ability to operate geographic information systems and understand basic database management enabled my access to the organization. Furthermore, it potentially coded my involvement as 'technical' – a status often understood as politically benign within these alliances. Successful alliances, according to Haraway, are those that involve change in all parties participating in the alliance. This is what she means by being 'at risk'. For Haraway and Cayenne, risks included physical injury, losing the game, damaged self-worth, and embarrassment. However, a greater benefit emerged from

this risky situation, namely, a companionship where both parties were learning cross-species dialog.

In my research, the risks are of a different sort. Thankfully they did not involve pet training. As a regular volunteer, I enabled the organization in having a consistent, reliable source for technological skills during the street-level surveys. I also provided the organization with ready access to student groups in need of GIS projects, as well as providing staff members with basic technical advice along these lines. I was an investment in time and trust for the nonprofit. And while the organization might have found a more-than-adequate replacement, I would like to think that my availability to participate in their program towards their objectives made it more possible for me to gather the information I needed for my research. On the flip side, my risks were both paramount and relatively insignificant. Research projects count, in academia. Particularly so with dissertations; therefore, what I ‘risked’ is probably not yet completely aware to me.

Not unlike the relationships found between dog and handler, the participants of our participatory research are in a kind of companionship with us, the researchers. It is not a relationship marked by domination or domestication. It is a relationship entered into through our corporeality and one that alters our bodily practice – and, as Juanita Sundberg (2004) argues, requires writing our bodies into texts. We are, in this sense, companion species. And as finding myself in the digital archive suggests, we do not solely do that writing.

3.2.3 Problematizing discursive acquisitions

While Haraway articulates well the qualities of a successful alliance, she leaves open much of the practicalities and pitfalls of being engaged with ‘others’ in this way.

Perhaps this was not her project, and perhaps it is ground already treaded.

Nonetheless, I am struck by finding myself in the archive, as I discussed at the beginning of this section, and I ask, how do we problematize discursive acquisitions in our participatory research endeavors?

Moments of acquisition in the dog kennel are necessary to form the kinds of alliances that perform well in agility games. Dog and handler learn to communicate with the other. In the agility games of dissertation research however, what are the moments of acquisition? How do we recognize them and open them up to inquiry? Certainly, my acquisitions of the organization’s discourse come under scrutiny – they are called empirical chapters in dissertations. But there are more subtle ways in which we acquire our research subjects, where we take up their discourse, in order to do the work of research and writing up. Has my participation in the implementation of community mapping using handheld computers muddied my abilities for clearer thought and clearer critique?

I believe Haraway emphatically would say, ‘Well, yes, that is the point!’. As a participatory researcher, I worry about ‘action’, about what we are enabling for our research subjects. And that worry became compounded for me, upon finding my name in the archive. My volunteering efforts were no doubt of great utility for the

organization, but how curious it was to see that my own research efforts and, apparently, my *curriculum vitae* became instruments in meeting their own objectives.

My academic accomplishments, listed out for their board of directors and their funder, legitimated their practices, and – more pointedly – their ‘successes’ at meeting the objectives of their funded proposal. And, in becoming full-circle, my happening upon my name in that same document in the archive, allows me to write this chapter, and further contributes to ‘things that count’ on the CV. Acquisitions and alliances are far from finite. And they travel.

3.2.4 Remaining attentive

We have a responsibility to remain attentive to the alliances and acquisitions in which we partake, to be prepared to find ourselves in the ‘archive’, broadly understood, and to be open to the change that we partially enact or encode within it. In considering what it means to ‘remain attentive’, I am reminded of a lecture Ann Stoler (2007) gave while visiting the University of Washington, wherein she discussed how archival production might be treated more as an ethnography – an ethnography of the archive, as she puts it. For her, archives are produced through “sustained currents of anxious labor” and contain “visions of events that may never occur”, where the contexts and therefore standards of documentation are “moving targets”. An ethnography of the archive requires a kind of living within the archive, by becoming familiar with the marginalia and the practices that enabled such documentation. It is also about bearing witness to the classifications and categories; of being attentive to the ways knowledge was

crafted, in the sense of Haraway's (1985) first companion species figuration: the cyborg.

Returning to Stoler's ethnography of the archive, we should ask of ourselves, "what has conditioned this process?" It requires paying attention to social categories or etymologies, and what Stoler describes as a "thickening" that occurs around them. Problematization occurs, for her (and for Foucault 2003, see discussion of grotesque discourse; also see Ruddick 2006) at the "breach of the self-evident", or where the well-known and cemented social categorization no longer fits, or is appropriate.

Remaining attentive as a method requires our asking: how is this made possible?, what is left out?, and what is left in? Problematization begins here, where our alliances and acquisitions shock and surprise us, where we realize our necessary inadequacies as researchers, and where we recognize that for all our single-authored proclivities and *curricula vitae* mastery, we are always and still 'becoming with'. This cyborg geography proceeds by remaining attentive to the object-subject discourses circling the emergence of handheld computing devices in the mid-1990s. I have provided a method and methodology that enables this sort of consciousness, to follow the conjunction wherever it leads materially and discursively, to trace the practices of coding community.

Chapter 4. Connected mobility and the obviousness of handheld computers

This chapter is an encounter between two discourses¹³. The discourse of *citizen empowerment*, which saturates the literature of participatory GIS and community-based planning, meets what I call the discourse of *connected mobility* in the late 1990s. I discuss this encounter in the technological collaborations between the Sloan Foundation and The Fund for the City of New York. I suggest that conceptualizations of geographic information technology use in the devolution of responsibility to community-based organizations have under-theorized the role of technological futurism and fetish. By examining the histories of the handheld computing device alongside the interactions of a Seattle nonprofit and a New York foundation in implementing these technologies, this chapter shall address: What discourses motivate the use of mobile technologies for gathering geographic information? And more specifically, how did a Seattle nonprofit come to use handheld devices to gather information about their communities? Furthermore, how are these usages implicated in the histories of these devices?

This chapter imagines nonprofit community geocoding efforts as a *congerie* of logics, rationalities, and imaginations – not just of the community residents and of the

¹³ In a Foucaultian (1972) sense, this encounter is a genealogical approach, a questioning of how we are here, and how we come to know it as a distinctly different place. Unlike histories, a genealogy starts at the present and brings histories to bear on that contemporary moment. As was discussed in Chapter 3, I use the concept of the cyborg figuration (see also Wilson forthcoming) to narrate the complexes of histories, development, and implementation of mobile technologies in nonprofit-community knowledge productions.

nonprofit staff, but also of the technology, its developers and its boosters. By analyzing the motivations and directives of the Sustainable Seattle nonprofit organization and its collaborator The Fund for the City of New York, this chapter suggests that reading this mobile, neighborhood mapping project through the lens of neoliberal, community planning discourse downplays the agency of technological innovation and technological panacea. Instead, I discuss how the discourses of *connected mobility* and *citizen empowerment* become twinned in late-1990s movements towards greater citizen engagement and greater personalization of computing systems. The marketing discourses and biographical histories of the handheld computing movement intersect the mobilization of the nonprofit and foundation. By taking up the epistemology of the cyborg, this chapter considers how being ‘mobile’ enacts a source of knowledge and how ‘mobile’ knowledges further enable nonprofits to ‘mobilize’. Technological fetish and empowerment are closely related drives in this narration.

This chapter reviews the present histories of the handheld computing device, to analyze how their emergent discourses permeate an organization’s interest in using mobile technologies to gather geographic information – to map communities.¹⁴ In the section *Technological discourses*, I review computing histories which pre-figure the development of a ‘connected mobility’ discourse and then review how technologies are conceptualized in the participatory and public-participation GIS literatures. In the section *A genealogy of the handheld computing device*, I introduce the discourse of

¹⁴ I neglect any history of ArcPad, the ESRI software equivalent for using a GIS on a handheld Windows CE device, as this technology was not available during the initial evaluation by the nonprofit foundation of this study. ArcPad was introduced in March of 2000.

‘connected mobility’, setting it off from the centralized computing of the US postwar period and from the personal computing movement of the 1980s. Drawing from this discourse of the handheld computer, in the section titled *Birth of a cyborg citizen*, I then describe how The Fund decided on the use of handheld computers to do performance measurement of governments and how Sustainable Seattle localized this (connected) mobilization discourse, thereby constituting a kind of cyborgian citizenship.

4.1 Opening narrative

“That’s it!”, Ruth Olson, staff member at The Fund, remarked in her recollection of deciding upon the use of handheld devices in a citizen-led government performance measurement program (2008). While visiting local government officials in Birmingham, England, Olson hears of their intent to use handheld devices to help residents report on the effectiveness of garbage management in the area. Olson was convinced; “I just knew it was the perfect solution” (2008). It was a matter of getting citizens involved in measuring the performance of their government.

Olson and The Fund had been using focus groups with New York, NY residents to discuss how the municipal government was functioning (2008; Cohn Berman 2005). For Olson, it became a question of ‘why not?’ Why couldn’t citizens use handheld computers to *exact* their reporting on the performance of their government? This presented an opportunity to empower a citizenry’s local knowledge of their urban neighborhood through technology they could physically hold in their hand. Nearly ten

years following her excitement, handheld devices still evoke that ‘of course’ excitement. These technologies carry the strain of empowerment and local knowledge discourses, through the increasing personalization of computing services offered by these devices.

In this sense, mobile technologies are infectious. Increasingly these devices are built to be held and worn, and represent multi-billion dollar industries in entertainment, communication, education, personal management, and of course serve policing and military functions. As these technologies occupy the imaginary of popular culture and the reality of Silicon Valley bottom lines, they further entrench notions of desire and mimicry – in their (seemingly) effortless portability, flawless facades, and seamless interoperability. Not only do these devices perform the functions of their design, they performs *us*, our design, and how we want to be represented and read. It is an object of intersectionality; it marks inequality across a range of hybrid subjectivities. Likewise, it is also a kind of evocative object – in the sense that Sherry Turkle (2007) uses the word, as ‘things we think with’. Handheld computing objects enable our ability to construct *our-self-our-world*, an inseparable construction.

4.2 Technological discourses

Computing developments have long been critiqued as bound up in the military-industrial complex (Edwards 1996; Haraway 1997). This critique has been extended to technologies like GIS and global positioning systems (Smith 1992). Generally, the argument is that in order to fully understand the societal implications for computing technologies, the histories of their development must include their multiple co-

implications, funding paths, and problem-areas. These multiple positionings have bearing on their contemporary implementations. In this section, I shall briefly review the history of the computer and the two discourses that Edwards (1996) argues motivates its development, as I believe these discourses are important for situating the development of the handheld computer. By reading the histories of handheld computers with the broader histories of computing, connections and contingencies emerge in the material-discursive relationships of their capital flows, imaginations, and logics of development.

4.2.1 Critical-historical narrations

Edwards's (1996) critical history focuses on Silicon Valley, California, where venture capitalism had existed in some form, since the post-WWII period with the expanding university and a growing need for high-technology occupations. General purpose computing brought about the development of new machines – analog and digital computers, to extend (not replace) human 'computers'. Popular histories of the computer, recognize its origins as a product of military finance (see, for example, the website of the Computer History Museum, computerhistory.org). The connections between the military and the development of computing systems run deeper. Edwards complicates these origin stories, by demonstrating that computers emerged from a

collaborative effort of military agencies, civilian researchers, and war-time contexts¹⁵. This form of critical inquiry, demonstrated by Edwards and perhaps most well-known in the work of Haraway¹⁶, not only investigates how the development of computers is situated in the military-industrial complex, but it also places computing development within the larger governmental and university apparatuses – to tease out the discourses that make such endeavors possible.

Edwards's (1996) argues that the development of technology and the bolstering of Cold War ideologies were co-constitutive, reinforcing movements. Edwards identifies two discourses in play here: *closed-world* and *cyborg* discourse. Closed-world discourse, of modeling and simulating the world as a closed system and the parallel system of communication, and cyborg discourse, of the integration of humans into these systems and the experiences of connection and even intimacy afforded by such integrations, are the discourses that situate a later emergence of the handheld computer. His diagramming of these discourses (of each having techniques, technologies, practices, experiences, fictions, fantasies, ideologies, language and metaphors) reinforces the collusions between these discourses in computing development (1996: p. 15, 21).

¹⁵ Here, Edwards (1996) points to the problem of ballistics during World War II, of calculating the trajectories of artilleries in mass. Within this narrative of the problem of ballistics calculation, we learn of the collaborative efforts of professors at MIT and Princeton, of 'computers' or hundreds of people using desk calculators, and of Vannevar Bush's efforts to create an administrative system to more closely link government to science.

¹⁶ Haraway (1991, 1997) similarly complicates narratives about technological development by situating the moments of reliance and contingency, for example, in concepts of health and animal-testing. The developments of technoscience are not external to some nostalgic notion of society. Instead, technology and society are co-constitutive constructions – fictions that necessarily make the real.

The need for computers to transmit and receive information leads to a systematization of computing hardware. This is what Kittler terms the “implosion of hardware” and is followed by an “explosion of software” (1995: p. 2). Kittler argues that the distinction between software and hardware is a construction, that ‘hardware’ is necessarily software, and *vice versa*:

Not only no program, but no underlying microprocessor system could ever start without the rather incredible autobooting faculty of some elementary functions that, for safety's sake, are burned into silicon and thus form part of the hardware. (1995: p. 3)

In this sense, software retains an independent value that, for Kittler, is a strange fiction. The claims of copyright and commercial property bolster this separation of software from hardware. Furthermore, automated programming, or the transformation of coding schemes into reusable code, enabled the creation of higher-level programming languages, and as Chun writes, enabled “one to forget the machine” (2004: p. 30). Here, forget occurs through an abstraction, where the practice of coding is experienced as a machinic practice, where the machine as a matrix of voltage transistors disappears into the box, where the microprocessor is just any other interchangeable, exchangeable component of the material objects of computing. Languages of coding draw us away from the machine.

However, this abstraction and related memory loss is enacted differently when the ‘hardware’ becomes part of bodily performance. This major break in computing development occurs in the late 1980s of Silicon Valley, where computing development began to move beyond the ‘personal computer’ and towards handheld and ubiquitous

computing (Galloway 2004). Galloway writes of developers at Xerox who were interested in this new form of computing; “they were interested in ‘invisible’ computers that would allow [users] to focus on life beyond computational devices” (2004: p. 385). Hardware and software further collapse in this scheme. The body is raised to the level of hardware – of the ‘mechanics’ that underlie the practice of computing – as that which makes mobile. Computing-you-carry is about mobility and movement. It’s about bringing the power of the computer with you, of allowing your mobile self to connect beyond the self, to leave a trace or remnant, to remain connected. As de Souza e Silva (2006) writes, the phenomena of mobile computing constitutes ‘hybrid spaces’ – spaces that are both physical and virtual. A further exploration of how bodily performance constitutes the ‘hardware’ of mobile computing is needed, and section 4.3 discusses how the discourse of *connected mobility* enrolls the embodiment of technology.

4.2.2 Empowerment narrations

Within the discipline of geography, research on the role of GIS technologies in communities is a relatively recent object of study. Here, the discourse of citizen empowerment is dominant (Harris and Weiner 1998; Elwood 2002; Corbett and Keller 2005; Ghose 2001; Ramasubramanian 1999; Leitner et al. 2000; Aberley 1993). Along these lines, Elwood and Leitner (1998) have discussed the challenges in access for community organizations, as one aspect of empowerment, pointing to the need to expand the notion of access to include issues of awareness, acquisition, and

application.

Public Participation GIS (PPGIS) is one such field that invokes empowerment (see Sieber 2006). I have previously argued that the text *Community Participation and GIS* by Craig *et al.* (2002) has been enrolled, through citation, to concretize this field (Wilson 2005). I discussed how each of these themes are mobilized through the textual citations of the edited book, demonstrating the importance of this kind of collection for emerging fields of study. The fields of PPGIS and PGIS were to be concerned with how the technology acts within government to create new forms of governance, and ‘access’ was paving that path. Questions of ‘empowerment’ were afoot. The technological narratives in these literatures of public participation GIS, participatory GIS, and more broadly in community-based planning, conceptualize technology differently. Technology is often held captive in these accounts. The acronym ‘GIS’ serves to mark a technology composed of software and hardware, procedures and data, and corporations and institutions, and yet the discourses that underline this marking are not made active.

For instance, the growing interest by geographers to study the impacts of governmental ‘neoliberalization’ provided a stage in which to discuss the increasing use of GIS by non- or extra-statal organizations (Craig and Elwood 1998; Ghose 2001; Elwood and Leitner 2003; Elwood 2004). And while these ‘x-GIS’ literatures do well to describe the multiplicity of contexts (Elwood and Ghose 2004) and challenges (Elwood and Leitner 2003) that face organizations that adopt GIS practices, the

technological assemblage itself is absent from the discussion. It is important to discuss the situatedness of technological use, and doing so, I argue, requires a more complex understanding of the embrace of technology – the logics that make up the technology and the desires that mediate its use.

In returning to the previous discussion of the development of modern computing, I have discussed how *discourse* operates in the advancement and adoption of computing technologies. Therefore, in the following sections, I describe the emergence of a *connected mobility* discourse and relate how this discourse figures the adoption of mobile, geographic information technologies by a neighborhood organization. This narrative is not a replacement for the neoliberal theorization of technological use by community organizations, but works to extend the discussion to conceptualize the moment of technological encounter – to theorize the excitement around mobile technology use.

4.3 A genealogy of the handheld computing device

What does the future hold for the calculator? In the midst of more powerful computers that are being built smaller and smaller, the calculator may change somewhat. Many users feel that laptops and calculators may find some middle ground. Indeed, the line between computers and calculators may be blurring already. ... Sometime in the future, computers may evolve into calculators or calculators may turn into computers. (Kim 1990: p. 62)

The vision of a calculator-sized computer existed in the imaginations of hardware designers well into the late 1980s (Butter and Pogue 2002; Kim 1990). Like the quote above, this imagination invokes a kind of fetish of miniaturization – of the “smaller and smaller” and yet “more powerful” prospect of computing. This chapter

draws these narratives together, to make them contingent, to *place* them. This NYC foundation, focused on the measurement of government performance, and this Seattle nonprofit, whose mission is indicators for sustainable communities, were attracted to mobile computing in specific ways that involve strategic marketing and fortuitous development.

In interesting ways we are still asking evolutionary questions of computing development. That our computers have become more like calculators is far from beyond our imagination. Computing is now touted as ‘ubiquitous’, sending and receiving messages in an intricate web of hardware-as-accessory. But before computers became ubiquitous, there were great energies put into the *size* of the computer (and the sacrifices in power or functionality that were overcome, or re-prioritized). This concentration on the down-sizing of computers eventually enabled new form-factors and new applications for computers. This is a distinct break in computing-development discourse, where device development moves into the sphere of the aesthetic and the emotive.

4.3.1 Situating handheld computing

The handheld computing device is a new generation of a specific technology, marked not by closed world discourses of Cold War America, as it is not exclusively motivated by calculated inputs and outputs to produce predicted outcomes (Edwards 1996), but by connectivity – of being ‘jacked in’ – a cyberspace mantra drawn out of cyborg discourse. However, while the technological outputs of this mobile computing era are

entirely undetermined (or constructed so), the fantasies surrounding their development and implementation are not¹⁷. These visionary futures move beyond computing that you hold in your hand, or store in your pocket. Not only is it computing that you wear, but it is a system of interconnected interfaces and a milieu of *interfacing* as a cultural paradigm.

Unlike its technological kin of the post-WWII era, handheld computing did not emerge from within a problem-to-be-solved, a science-to-be-practiced (and a nation-to-be-‘saved’), but as an idea – a fantastic dream – born by Silicon Valley venture capitalism and competitive entrepreneurialism, that even portable, pen-based computers could be made for consumers. Butter and Pogue (2002: p. 8) give a historical account of this dream, an account I critically engage in this chapter.

4.3.2 A break in computing discourse: *connected mobility*

The moment of genealogical intervention, where discourse becomes *grotesque* in this study, is a matter of authorial privilege. I choose to begin this story at the ‘of course’ exclamation by a representative of The Fund in 1998, upon realizing that handhelds could be used by citizens for performance measurement. “That’s it!”, marks both the opening of an experiment in citizenry empowerment and the suturing of governmental power to computing power. The excitement with which Olson recalls her realization that, ‘of course’, handheld computers are the solution to providing government with

¹⁷ Sam Kinsley (2008), for example, is completing research that suggests ubiquitous computing technologies, specifically those harvested in the silicon fields of northern California, are guided by anticipatory logics – of technologies that anticipate the states of other objects of the collective web.

objective measurements about their performance while providing citizens with the tools to channel their “emotional” responses into proper feedback is, as this genealogy argues, a similar excitement to the finding that handheld computers are an obvious progression in computing development.

In situating computing development, to tell the story of the handheld, I therefore add a third discourse – a discourse of *connected mobility* – to the two discursive threads identified by Edwards (1996), of the closed world and of the cyborg. *Connected mobility* frames a different problematic in computing development. While computing development of the Cold War era was concerned with creating mathematics and machinations to construct closed systems for controlled simulation and to develop systems for effective information transmission, a discourse of connected mobility emerges at the dramatic ‘end’ of the Cold War.

Drawing on Edwards’s (1996) framework for diagramming computing discourses, Table 4.1 below depicts the techniques, technologies, practices, experiences, fantasies, languages, and metaphors of connected mobility discourse.

Table 4.1 The discourse of connected mobility, based on Edwards’s depictions of the discourses of the closed world and the cyborg (1996).

	Discourse of connected mobility
Techniques	Synchronization protocols and ergonomic, hand-based user-interface design
Technologies	Personal digital assistants, pen-based computing, handheld devices, connection cradles, Bluetooth and wireless synchronization
Practices	Practices of mobile computer usage

	Discourse of connected mobility
Experiences	Experiences of bringing computing with you, your computer desktop in your pocket, accessing the server farm from your hand
Fantasies	Visions of ubiquitous computing and wearable computing, of the fantasies of the smallest, most powerful, personal computer
Languages	The language of connectivity and transferability, of devices that are globally distinct
Metaphors	“The whole world in your hand”, “See the future in your hand”, “Where do you want to go today?”

The *techniques* of connected mobility involve synchronization protocols, which allow for the mobility of workstation-based databases and documentation, and for design requirements for handheld user interfaces. These techniques were realized and supported through *technologies* like the ‘cradle’ for the PalmPilot and its requisite HotSync software. Pen-based interactions required software to recognize a new form of handwriting called “Graffiti” by Palm. Together these techniques and technologies are *experienced* as *practices* of mobile computer usage – of bringing the computer in your pocket – and lead to the *fantasies* of wearable, ubiquitous computing. The languages that permeate this discourse are the languages of connectivity and transferability, as well as the (global) positioning language of the device that is distinct in its ‘signature’. ‘You’ve got the whole world in your hand’, as the chorus goes, is the flip side of the world *knowing* your hand, no longer a needle-in-the-haystack. These *metaphors* tie together world and hand, where the hand becomes the point of vision towards new futures and new spaces (“see the future...” as response to “where do you want to go today?”).

Connected mobility discourse enrolls and adapts the discourse of the closed world and the cyborg. Connected mobility draws upon the efforts of the closed-world, to further build systems of communication that participate in a flattening of the globe. The discourse of the cyborg is also nestled within connected mobility. The fantasies of particular human-technological interaction become realized in the handheld, creating new practices that motivate an affectual connection between self and device and other. It is this manifestation of a discourse of connected mobility that the following section takes up, to further situate the kind of excitement that handheld technologies evoke in late-1990s nonprofit work.

4.3.3 Computing for your hand

The stories we tell ourselves about the technologies we use are often the most interesting. These stories and practices of storytelling about technological achievement permeate our daily encounters with technology. Central to the argument of this chapter is the possibility that in order to understand *why* or *how* organizations make use of mobile technologies, there must be an analysis of the discursive regimes that condition the possibility of that technology's use. Here, I discuss the history of the personal digital assistant, or PDA. By drawing on "the inside story" of Palm Computing, the corporation largely responsible for major strides in handheld computing development, I shall relate the "that's it!" exclamation by the NYC foundation member's realization of the possibility of mobile technologies in citizen engagement to a discourse of connected mobility, which I introduced in the previous section.

Emerging computing technologies, such as the handheld computer, have been read through Bijker's concept of 'technological frames' (Allen 2004: p. 176-177).

Technological frames, developed by Bijker (1995), is a way of analyzing the formation of a social group around:

goals for a technology; key problems to be solved by a technology; problem solving strategies; requirements to be met by solutions; and an exemplary artifact – a physical role model for what the technology should be. (Allen 2004: p. 173)

This schema for identifying and analyzing the development of technologies, for Allen (2004), demonstrates key groupings of development around personal digital assistants. He identifies four technological frames: palmtops, pen-based computing, personal communicators, and connected organizers. These technological frames are moments of stabilization around a particular technological ideal or artifact, and becomes for Allen a conceptual framework for analyzing *how* this stabilization occurred in the development of personal digital assistants.

In *Piloting Palm*, a book by Andrea Butter and David Pogue about the history of Palm Computing, we get a sense for the tribulations and trepidations of those developers who were beginning to bring about a different way of computing¹⁸. This history documents the evolving technological passions of Jeff Hawkins, the founder of Palm Computing credited with the major developments in handheld computing, of his earliest interests in the human brain, of his early employment at GRiD computing, and

¹⁸ The chapter titles themselves demonstrate the perception of the authors (one of which was an executive at Palm during the early years) that this corporation was chartering new territories in computing development, including: *In the Valley of Dreams*, *The Zen of Palm*, *Crossing the Desert*, *The Fight for Independence*, *Sea Change*, and *Uncharted Waters*.

of his eventual success in the industry of handheld devices and the software that makes them run.

Butter and Pogue (2002) trace Hawkins throughout the earliest years of Palm, including the years leading up to the creation of Palm. Hawkins's work at GRiD Systems, a computer company in the San Francisco Bay area, extended his earlier studies on the human brain at University of California at Berkeley. Hawkins oversaw the development of the GRiDPad, which was released in 1989. This was a pen-based computer, and Hawkins wrote the software that recognized handwriting (iterations of this software later becomes the savior of his small company). By 1991, the GRiDPad was the only commercially 'available' pen-based computer (at \$2,500 each), and nearly \$100 million dollars had been poured into pen-based computing start-ups.

However, the GRiDPad was too big, too heavy (at 4.5 pounds), and too expensive for Hawkins vision of a mini computer that everyone could own. His thinking was somewhere under \$1,000 per unit and small enough to conveniently fit it in your hand. His decision to break away from GRiD Systems, with rights to the handwriting recognition software, would mark the beginning of a company forged on sheer excitement – and the venture capitalism of Silicon Valley. Calculators formed the comparison in his vision for the ubiquity of handheld computing. Documented by Butter and Pogue, Hawkins wrote in his overview of the technology targeted at potential investors in 1991:

Palmtop computing devices will be as ubiquitous as calculators by the end of the decade... (Butter and Pogue 2002: p. 9)

Butter and Pogue highlight Hawkins's vision of a consumer-based handheld computer. The calculator was the closest thing to that consumer model. However, in addition to this excitement about 'consumer-available' computing, there was also anticipation about the form-factor of the device, and, more specifically, a vision that these devices should be held in one hand – something that wasn't possible with the GRiDPad. This excitement about something 'hand-held' is further described by Butter and Pogue in their narration of how Jeff Hawkins decided upon the name of his newly-formed company:

All he [Jeff Hawkins] needed was a name for his new venture. Over the Christmas holiday, Jeff spent days thinking of company names, brainstorming with his wife, friends, and two prospective employees. A name related to the hand was logical. (Butter and Pogue 2002: p. 18)

In February of 1992, Hawkins kicked off the development of a device called the Zoomer (after *consumer*), with four companies present: Tandy, GeoWorks, Casio, and Palm Computing.

The trajectory of Palm Computing included a number of hurdles. It seemed that the excitement about pen-based computing was spreading; John Sculley, then CEO of Apple Computer, had recently announced that something he termed a *personal digital assistant* would be a \$3.5 trillion market. Hawkins and his small team at Palm believed that the Zoomer was just the device that would take part in that market. However, just a few months later, in May of 1992, Apple announced, with a glitzy PR campaign, the Newton – a device that could recognize handwriting, including cursive handwriting. Casio, a partner of Palm, put impossible deadlines on the team, and

required that the software for the Zoomer had to be burned permanently into the device's ROM, which made updated software releases impossible – and added pressure to the software engineers to create flawless code. Additionally, GeoWorks, the partner responsible for developing the operating system of the Zoomer, had never worked with 'electronic ink', or pen-based computing systems. Disaster was always around the corner for Palm, and for pen-based computing. By 1994, the Newton had proved a complete failure, and, according to Butter and Pogue (2002), had poisoned the market for handheld computing. The Zoomer emerged without much fanfare, and Casio wanted to stall development of the Zoomer II.

Handheld devices would *train* their users to write in particular ways that the computer could understand. Recognizing this, Hawkins returned to software, and Palm Computing attempted to write code that could make other handheld devices like the Newton work better. Two pieces of software, according to Butter and Pogue, charted a new future for the company: PalmConnect and Graffiti. PalmConnect changed the discourse about handheld development. It was no longer about providing consumers with mini-computers. Instead, it was about *accessorizing* the computers they already owned. PalmConnect allowed consumers with computers to bring data with them – to extend their computer's desktop. Graffiti also signaled a change in handheld computing development. These devices needed their own shorthand – a sophisticated way of communicating with the handheld computer that was not about handwriting, and more about glyphs, or symbology. Instead of attempting to decipher various

handwriting styles, Graffiti was a new alphabet.

With this new focus on software, Palm set to engineer a new handheld device, without the help of their partners at Casio. Butter and Pogue cite the confidential document that circulated amongst the engineers:

Palm envisions a product that is smaller than today's PDAs or even most of today's electronic organizers. The device target design would be shirt pocket-sized... Code name for the product is Touchdown. It is a direct extension, it could be even called an accessory, to your desktop PC... (Butter and Pogue 2002: p. 80-81)

By 1995, Palm had realized the design vision of Hawkins. The device would retail for under \$300 and had a more simplified user interface (the Zoomer provided the critical lesson here). From this concern about the form factor of the device and its connectivity to the desktop computer I draw out a discourse of connected mobility in computing development. By making a device that was “shirt pocket-sized” as an “accessory” to a desktop computer, the user could be both connected to their information and be mobile.

The discourse of *connected mobility* enrolls the body as an extension of the computing experience. As developers sought to fit computing technologies to the human hand (to reach the form factor of a shirt-pocket-sized computer), software solutions were designed to make sense for the hand. The very name of the visionary company in the field of handheld computing, Palm Computing, was chosen to evoke the body – to be of the hand – and in doing so constituted a new way of thinking about computing. Bodily enhancement through handheld technologies meant new ways of producing local knowledges and new ways of interacting with these knowledges. The concept of the handheld as a computing accessory – an accessory of your body – lends

a notion of connectivity to this discourse of mobility, that while you are ‘over there’, moving around, you are always also ‘here’, interfacing with your desktop computer. As an aspect of a discourse of mobility, connectivity linked up these moving bodily technologies to the computer, linking the pocket to the desktop. Mastering the design of these devices involved a mastering of bodily appendage. The result was a kind of computing that became ‘life’. It was “The Whole World in Your Hand”, your “life in a box”, as one *Wired* writer penned, on his relationship with his handheld computer (Peraino 1999).

4.3.4 Marketing the hand

Connected mobility is manifested in the advertisements of the late 1990s. The issues of *Wired* during this time period, from 1997 through 1999, depict the computing industry’s attempt to re-invent itself (see Figures 4.1-5). In the advertisement for the Newton MessagePad 2000, mobility is in tension with usage, touting “the only handheld computer you can actually use” (see Figure 4.1). Many handheld devices during this time period had real usability problems, particularly the Windows CE devices which were found to require too many steps to complete simple tasks (Butter and Pogue 2002).

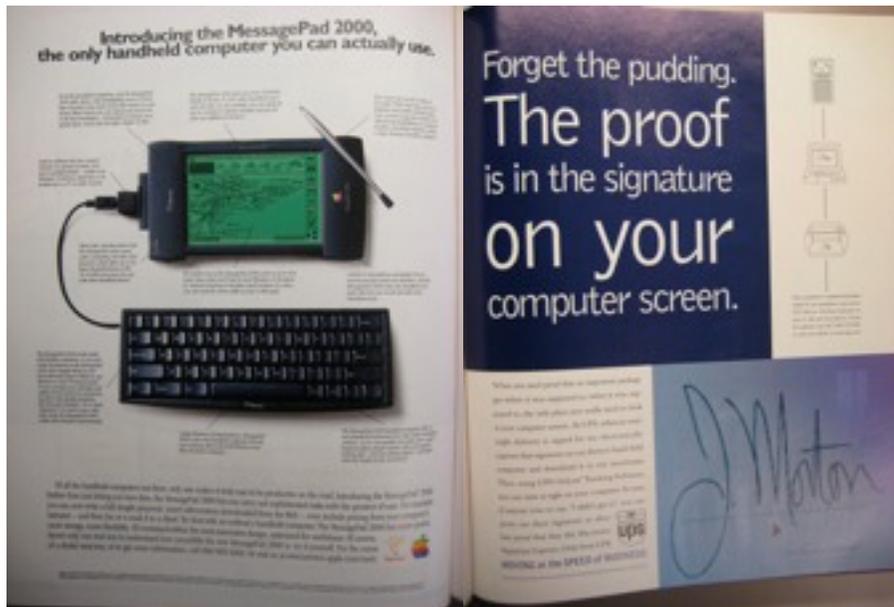


Figure 4.1 Apple announces the Newton MessagePad 2000 (left), “the only handheld computer you can actually use”, in this advertisement from Wired in May of 1997. Handheld computing technology was being touted by UPS (right) as a device that captures the ‘proof’ of product delivery.

However, connected mobility allowed tasks to travel, while maintaining connection and stability to a centralized computer (ie. the desktop computer). In the advertisement for United Parcel Service (see Figure 4.1), this connectivity is showcased; customers can obtain “proof” of a signed-for delivery, by downloading the signature captured by the delivery personnel’s handheld device. “Moving at the speed of business” requires this connected mobility. The speed of business involved a quite different imagination of ‘data’ even at this time, only 10 years ago. Portable data storage systems for consumers were just barely crossing the gigabyte threshold. For instance, the digital camera created by Sony (announced in late 1997), used 3.5-inch floppy disks for storage. According to the advertisement in Figure 4.2, nearly 20 images of ‘high’ resolution could be stored on a floppy disk.



Figure 4.2 Sony announces the Digital Mavica, a digital camera that uses the 3.5" floppy disk for storage, in this *Wired* advertisement in September of 1997.



Figure 4.3 In a special feature of *Wired* in December of 1997, the 'post-pc' universe is mapped in a concentric, galactic rings. Moving out from the center the feature depicts the 'mobility' of technology at that time, from the desktop, to the backpack, to the pocket, to "all over the planet". The PalmPilot is conspicuous as the only pocket-based personal computer that doesn't operate as a clam-shell (typical of competing Windows CE devices at that time).



Figure 4.4 In these two advertisements of Wired in November of 1998, the concept of ‘personalized’ computing is being crafted. In the Compaq ad (left), the image of computing at home, with the cup of coffee, house plants, and natural-lighting situation softens the computer on the mahogany desk. By comparison, the compact handheld advertised by Casio (right) is also personal, and depicts the iconic hand behind the device.

According to *Wired*, the ‘post-pc’ era had been reached by late 1997 (see Figure 4.3). This is a curious marker as it seems these devices are ever more personal – to be carried in your backpack or to be placed inside your pocket. The phrase ‘personal computer’ demarcated desktop-based computing. In Figure 4.4, we see these two movements juxtaposed. On the left, we see a personal computer advertised by Compaq. The machine and its requisite peripherals seem to dominate the entire desk. By today’s standards for minimalist footprints, it’s hard not to feel overwhelmed by this image. Compaq attempts to showcase the personal touch of this machine; by having your cup of coffee, favorite desk lamp, natural lighting, and a houseplant. Ironically, these ‘personal’ touches are nearly pushed off the desk. On the right,

however, we see the Cassiopeia E-11 (with a boastful 8 mebabytes of memory).

Superimposed over the sketch of a hand, this device marks the ‘post-pc’ era.

The imagery of the hand, as in the advertisement for the Cassiopeia in Figure 4.4 becomes an iterative image, reappearing in other handheld advertisements by Palm, Microsoft, and later, Handspring. These technologies were being marketed as bodily technologies, as technologies that act as an extension of the body. In a move that garnered much public attention, 3Com’s ad campaign for the Palm V, “Simply Palm”, epitomizes this marketing of the body. In Figure 4.5, we see the flip sides of a page in *Wired* of April 1999. On one side, the picture of a faceless, nude female body (Kate Hunter, a dancer) holding the handheld device emphasizes the simplicity of the technology, paralleling the minimalist and simplistic form of the presented nude, white female body.



Figure 4.5 Palm Computing, then owned by 3Com, announces their “Simply Palm” ad campaign with this advertisement in Wired (April of 1999). These

two advertisements are on the reverse of each other, giving the illusion of complete visibility of the female dancer's body (Kate Hunter). Simplicity in mobile computing is highlighted here; "with just one touch" marks the bodily engagement with the technology.

On the reverse of the page, we see the other side of the nude 'Kate Hunter'. However, in a ploy for some modesty, the placement of the Palm V covers her rear. This presentation of the female form uses the slippery slope of soft-core pornography to entice a market of handheld enthusiasts, who were typically male¹⁹.

The discourse of connected mobility is already then a bodily one, as it creates a suturing of technology to bodied form. In order for our bodies to be mobile, our technologies must be mobile, and in order to move, our handheld technologies need a body – a hand to hold them. The product's footprint and the device's marketing both mimic the design of the user interface. A connectivity that was once stationary is now mobile. Mobility and connectivity, traditionally diametrically opposed, come together in the handheld device.

Ten years later, the handheld computer still operates in the register of connected mobility. The pen has largely disappeared, however, leaving the body as the premier interfacing instrument (if there were any doubt). In Figure 4.6, we see an advertisement from 2007 that depicts a hand with annotation for each finger.

¹⁹ Following this advertisement, a series of parodies emerged titled "Simply Porn", created by Jason Kottke, who was attempting to critique the advertising campaign as blatantly using sexy images to sell devices. (Quistgaard 1999)

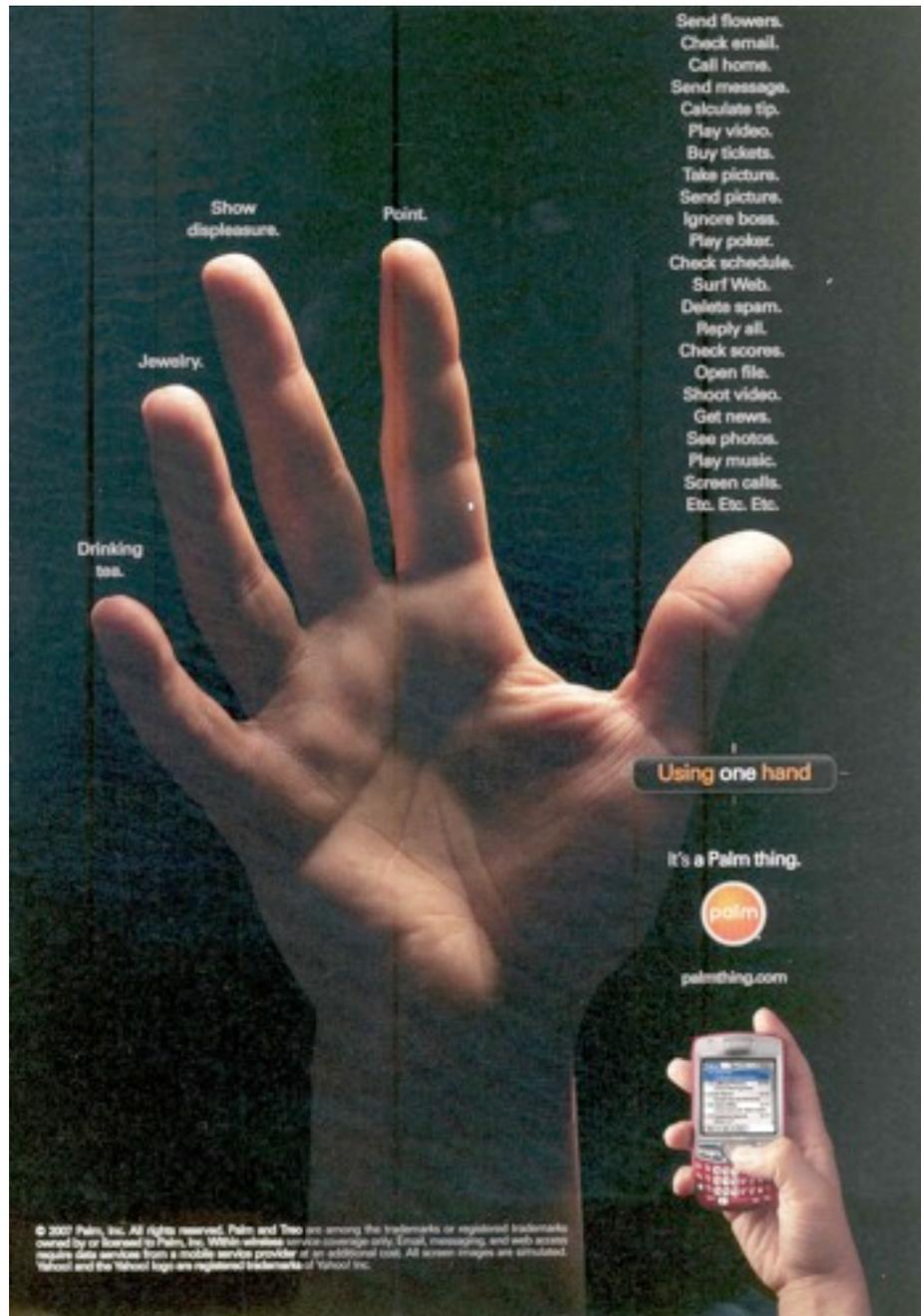


Figure 4.6. This 2007 magazine advertisement for Palm anticipates all the tasks that can be completed ‘using one hand’, and specifically the thumb, marking the bodily practices that give rise to this form of mobile computing as being ‘a Palm thing’.

While the index finger is to “Point” and the middle finger is to “Show displeasure”, the thumb has a seemingly endless field of operations, including “Call home”, “Play

video”, “Surf Web”, “Etc. Etc. Etc.”. This is the fantasy of connected mobility being played out. You are never just you. You are connected, *always*, to the broader ‘world’ – which you hold in your hand. In this connected, mobile world of the palm-based computer, the thumb is all-powerful, providing *the* opposable digit to control a device held in your hand.

4.4 Birth of a cyborg citizen

As I entered the offices at The Fund for the City of New York, located near Tribeca in lower Manhattan, I confirmed my appointment with a staff member. This was an important meeting, for my research. After hearing about The Fund’s support of Sustainable Seattle and about the ‘technical’ decisions that were out of the Seattle nonprofit’s control, I needed this meeting to address a series of questions about motivations, technological development, and collaborative practices. As I stepped out of the elevator into their sixth-floor office, I noticed numerous pictures on the wall, representing community groups and neighborhood leaders throughout the metropolitan area. It was clearly an organization that supported other organizations or, at least represented themselves this way. I took my seat in the waiting area, as the front desk receptionist paged Ruth Olson. Promptly, a tall, slender young man with a phone head set appeared, and offered me coffee and a copy of Olson’s most recent publication, *Listening to the Public*. I showed him my own paged version of the book. He shrugged and let me know that Olson would be a few more minutes.

Olson eventually greeted me in the waiting room, and then escorted me to a

conference room, overlooking the Avenue of the Americas. After getting past the usual formalities, Olson plunged into the story of her organization's work to create technologies that supported citizen-based measurement of government performance. Her narrative involved the creation of a new organization within The Fund brand: Center on Municipal Government Performance. However, it became immediately apparent that there was another actor central to The Fund's connection with Sustainable Seattle: the Sloan Foundation.

Both The Fund and Sustainable Seattle received funding support through the Sloan Foundation's program titled "Making Municipal Governments More Responsive to their Citizens", as part of a larger initiative on Standards of Living and Economic Performance. Within this program, the Sloan Foundation defined a typology of performance measurement: citizen-informed and citizen-based. Their directive was encapsulated in this statement on the Sloan Foundation website:

This goal ... is to make performance measurement and reporting that is citizen-informed or citizen-based widespread, normal and expected. Performance measurement and reporting is citizen-informed when it is done by the government but involves the public in developing measures that citizens care about and in deciding how performance will be reported and obtains and takes seriously feedback from the public on performance reports. Performance measurement and reporting is citizen-based when it is done from outside the government, normally by a non-government organization but preferably with the cooperation of the government. (Sloan Foundation)

The logics of this directive percolate throughout the Seattle nonprofit and in their dealings with the NYC foundation. This program was to create a new movement in governance: of "management by results" (Greenwood 2008b, 2008a; Holzer and Kloby 2005). Ted Greenwood (2008a), the director of this program at Sloan, describes this as

a shift toward the “ordinary citizen”, away from the “interests” of politicians and bureaucrats. Sustainable Seattle was certainly engaging in what Sloan would call ‘citizen-based performance measurement and reporting’; the success of which will come into focus in later chapters. Indeed, foundational support through financial backing allows the foundation to serve a decision-making role in local nonprofits (Martin 2004).

This Sloan Foundation directive only partially narrates the complexities of a localized community-mapping protocol. The logics of the handheld technology itself and the panacea it represents also colludes with the means and outcomes of this local initiative, as was discussed in the previous section. It is not just about new forms of governance. Therefore, this narrative is also about technology, in the narrow sense of the word that indicates an actual piece of hardware running software. It is about the late 1990s -- now nearly a decade ago -- and the excitement around mobile technologies, that would come to be called PalmPilots, regards of whether or not they were actually built or designed by Palm Computing. This section further discusses the multiplicities that intersect in the community mapping body on the streets of Seattle, as this program enacts new forms of vision and representation, embodiment and partiality, fetish and futurism.

4.4.1 ‘That’s it!’, a method emerges

The Fund for the City of New York in 1995 had completed their rounds of focus groups with NYC residents about how they felt their government was performing – focus

groups that unsurprisingly drew directly upon methods in market research (Hochstein 2008). During the fifteen focus groups, The Fund asked participants about the importance of governmental functions, their familiarity of these functions, and about their performance. According to Olson, emerging from these focus groups was a sense that residents knew well their streets, but were in the dark about various government bodies responsible for them. Through the use of these focus groups, The Fund and Olson observed the importance of the street as an assemblage of various indicators about the performance of government:

For example, when they are on the street, people observe the whole panoply of street level conditions, and if the street looks clean, feels safe, the lights work, the road is smooth, etc., they feel that government is working well. They do not say as they walk on the street that the environmental agency is doing a good job or the public works department is not performing well, and so on. Indeed, from the public's point of view, street level conditions, as a whole, are important indicators for judging local government performance. (Cohn Berman 2005: p. 32)

The conditions of the street become the objects of emphasis in The Fund's crystallization of the focus group meetings. Specifically, issues around safety and cleanliness get drawn into association, as one of the "significant observations" reported in The Fund's *Listening to the Public* (Cohn Berman 2005) – a relationship further discussed in Chapter 5.

The focus groups held in 1995 further demonstrated to The Fund that there was a lack of a feedback system for citizens to respond to government performance. However, governments would be less interested in a complaint logging system²⁰.

²⁰ The City of New York would later implement a 311 telephone service, that would allow residents to phone in complaints and gain information about city services.

Olson and The Fund had a different idea, based on their reading of the focus group interactions. The residents' complaints about litter, graffiti, and the pavement were, as Olson explained, 'cues' or proxies for various government functions. A mechanism was needed to gather citizen input about these 'cues', such that they could be later organized into formal measurements of government performance, assigned to particular governmental agencies.

By 1998, The Fund was no stranger to the mechanization of input about government performance. Through the Center on Municipal Government Performance, the foundation had supported the development of technology to measure the smoothness of NYC streets. Using accelerometers (and profilometry techniques developed by the World Bank) and resident-ride-alongs, a series of reports were developed that measured the improvement (or decay) of city streets (see Figures 4.7 and 4.8).



Figure 4.7. This vehicle carried equipment and residents in a measurement of the smoothness of NYC streets, measuring the degree of smoothness and the number of sudden “jolts”. (Cohn Berman 2005: p. 87)

This equipment provided The Fund with a steady stream of “accurate, replicable, objective measurements of the city’s streets that would reflect the public’s point of view” (Cohn Berman 2005: p. 87). Development of handheld technologies to support citizen-based measurements followed this smoothness survey, and would draw upon the same discourse of reliability-replicability, accuracy-precision, and objectivity. It would be later noted that one of the greatest drawbacks to the handheld-based citizen engagement was its lack in each of these. This smoothness program produced a series of high-profile reports comparing data collected in 1997 and 1999, and formed a core of the Center for Municipal Government Performance.

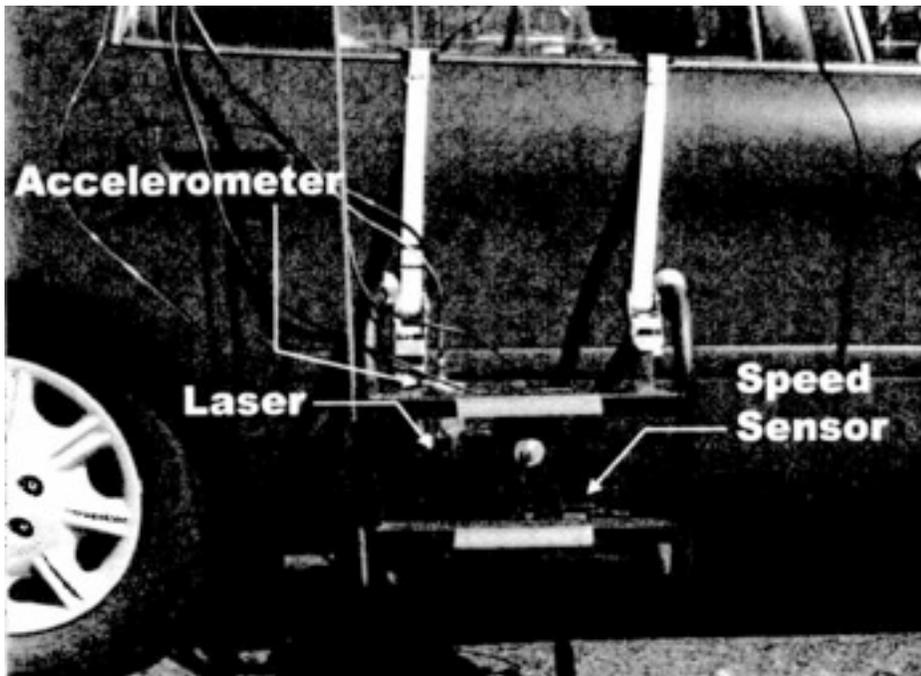


Figure 4.8. The technology in The Fund's street smoothness program includes an accelerometer, laser, and speed sensor for measuring the degree of smoothness and the number of jolts on NYC streets. (Cohn Berman 2005: p. 88)

A couple years after the focus groups and in between the two street smoothness surveys, Olson received word that planners in Birmingham, England were preparing to engage in citizen-based performance measurement. Olson, interested primarily in the cost and the mechanism for measuring, traveled to Birmingham and happened upon a discussion to give residents handheld computers to help track garbage management.

Olson remembers immediately recognizing this as the solution. "That's it!", she exclaimed, "I just knew it was the perfect solution". She recalled that she was using a PalmPilot herself at the time. Olson became animated at retelling this to me. Ten years had surely given her clarity of thought about the importance of this recognition. It's at this moment that the discourse of connected mobility motivates this

reaction – the recognition that this sort of technological adaptation was the solution to providing the same kind of reliability-replicability, accuracy-precision, and objectivity that the profilometry demonstrated. Citizens just needed to have mobile devices.

It was 1998. The Pilot (as it was originally called, before a pen company's cease-and-desist order) had only been a product for about 18 months (see Figure 4.9), in the wake of the Apple Newton (which coined the phrase, personal digital assistant or PDA). 56 Kilobytes per second modems were just being introduced by US Robotics. AirWalk sneakers and Furbies were all the rage. Microsoft had introduced the 'Natural' Keyboard, an ergonomic input device. Apple had just announced their 'Think Different' campaign, with the messianic Steve Jobs back in command. Biometric devices were becoming actualized, and computers were now 'wearable'. Microsoft had announced Windows CE, a version of Windows 95 that worked on a handheld, clam-shaped computer. Sony introduced the Digital Versatile Disc, or DVD, followed shortly by the Playstation. Y2K was on the horizon. Norelco developed the first electric razor that dispensed lotion. The Pentium III was being hyped. Desktop computers were clocking in at just over 300 Mhz and Star Wars fans were getting glimpses of the digitally-mastered Episode 1: The Phantom Menace.

8 a.m. Bob's number in Milan. You got it.

Whatever's important to you — appointments, contacts, e-mail, expense tracking — the pocket-sized PalmPilot™ connected organizer makes it easy to stay on top of things. It lets you enter, access, and update the information you need, whenever you need it. You only have to enter data once —

HotSync™ technology lets you synchronize data with your PC with just the touch of a button. And when you're on the road, use Network HotSync™ software to synchronize with your PC over the company network. For a PalmPilot retailer near you, visit our web site at www.palmpilot.com or call 1-800-881-7256, ext. 53. Now that's a number you'll want to remember.

PalmPilot™
The connected organizer.

PalmPilot Personal™ 250

- Synchronizes with your PC
- Color thousands of entries
- New capabilities in Professional Edition

PalmPilot Professional™ 250

- Includes Personal Edition app
- 6.5 inch screen
- Includes easy-to-use support
- Full file history

Optional software:

- 3Com Organizer Pocket Kit
- Data Organizer
- Expense Kit
- Expense Kit 2.0
- Expense Kit 3.0
- Expense Kit 4.0
- Expense Kit 5.0

Optional add-ons:

- Expense Kit 6.0
- Expense Kit 7.0
- Expense Kit 8.0
- Expense Kit 9.0
- Expense Kit 10.0

3Com™

Figure 4.9. This 1997 magazine advertisement for the PalmPilot touts the technology that allows the user to access their information anywhere, whenever: confidently, “You got it.”. “The connected organizer” is a slogan of the connected mobility discourse of personal computing development of the late 1990s.

Technology was creating (again) new ways of living in a world increasingly mediated by software and hardware. Geographers interested in the productions of the coded world discuss how technology begets new spaces of interaction (Dodge and

Kitchin 2005b, 2005a; Thrift and French 2002; Graham 2005; Crang, Crosbie, and Graham 2007). Dodge and Kitchin (2005a) draw on the concepts of technicity and transduction (Mackenzie 2002) to discuss the embeddedness of software code in everyday life. Technicity refers to the effect of code, of its fundamental importance to “make things happen *in conjunction* with people” (Dodge and Kitchin 2005a: p. 169, emphasis original). Transduction through code is about the reformulation of a domain (in this case, space) through the reiterations of coding effects. Graham (2005: p. 562) argues that certain applications of code serve to contribute to inequality, by separating “privileged and marginalized groups” in what he terms “software-sorted geographies”. Furthermore, these spaces of interaction are not only produced through actual coding practices, but also through technological fantasies (Crang and Graham 2007). Through the fantastic images of new technologies and the coding practices of actually-existing technicities, spaces are produced in which organizations and individuals imagine new applications of possibility in their everyday milieu.

In the case of The Fund’s developing interest in handheld technologies, these devices were the focal point for an entire program in citizen engagement. Certainly, the organization had a long history of providing opportunities for governmental partnerships, documented by the photos in their waiting area, but this was intensified by the excitement surrounding mobile technology. This excitement was in anticipation of the new spaces of interaction that would be produced. Spaces of interaction are constituted through connected mobility discourses. Everything was becoming ‘linked

in' and organization practice was being reimagined. At The Fund, this began with a trip to the local RadioShack equivalent.

4.4.2 Cyborgs need geodatabases-to-go

Olson sent a staff member to purchase every small handheld computer at the local electronic store to be evaluated (and eventually returned if it was found to be unsatisfactory). The mobile technology market was rapidly expanding, easily a multi-billion dollar industry, with corporations like 3Com, Compaq, Microsoft, and Casio (Butter and Pogue 2002). Olson chose the Cassiopeia (developed by Casio), due to the fact that it had a built-in camera. What better way to document the condition of the street than by taking a quick picture? PhotoVoice, as a method for community-knowledge development had been an established technique in community nonprofit work. PhotoVoice is a technique whereby photography is used to enhance the efficacy of community members. PhotoVoice is about qualitative inquiry, about expression, and alternative interpretation. This software was to be a twist on PhotoVoice. Qualitative inquiry could not have been reliably used in the measurement of government performance. As The Fund had learned in the street smoothness program, community-collected data was only immediately useful to governmental organizations if the data carried an air of scientific objectivity – and an image could surely be objective.

Upon deciding on a device, Olson set out to find software that would connect the photos into a broader data collection and management process. Due to the wave of devices and handheld developments by both Palm Computing and Microsoft, a number

of third party applications were becoming available – numbering in the thousands. Olson selected a data management software called Visual CE, created by SYWARE, which at that time was largely being used at hospitals for mobile maintenance of medical records. Visual CE had just been launched a year earlier, in 1997 (SYWARE Inc. 2001). Visual CE, the “Go Anywhere” database system, was designed to allow organizations to be mobile with their data, allowing the input of data from the ‘field’, and freeing up the in-office staff “for more important tasks”, as seen in Figure 4.10 (SYWARE Inc. 2008a). The Fund could now design a database management system that would allow handheld devices to become data collectors, and according to SYWARE, could “eliminate paperwork and improve data accuracy, [and] even centralize data” (SYWARE Inc. 2008b).

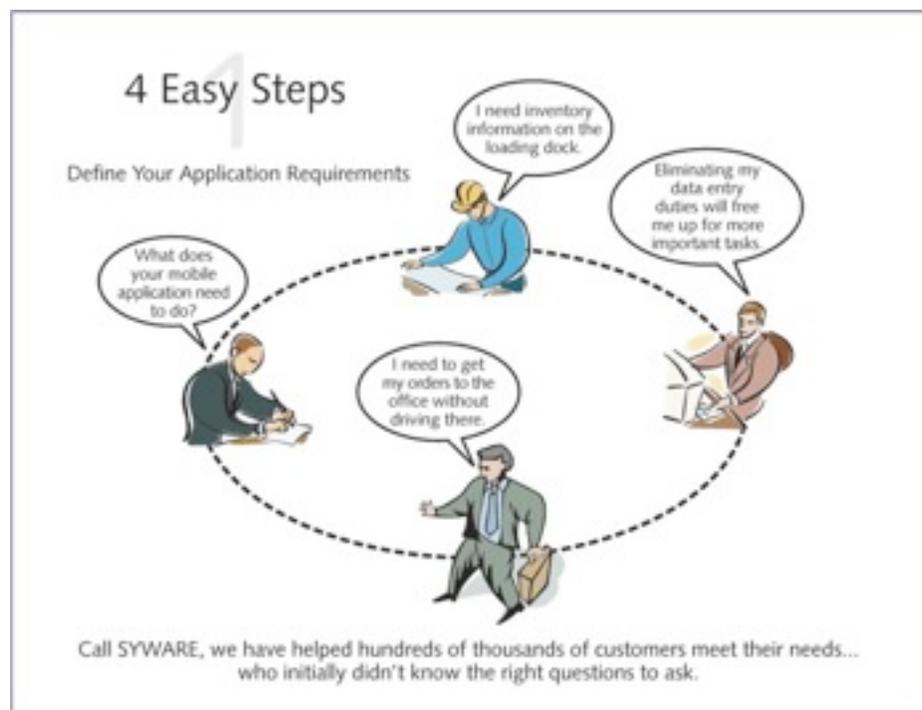


Figure 4.10. *The Four Easy Steps to Mobility, according to SYWARE, Inc. (2008a), include first defining your application requirements. Visual CE®, the*

program used by The Fund to create a mobile database system, allowed mobile members of an organization to access data, collect data, and submit data to a centrally-controlled database system.

With a few customizations (step 4 of SYWARE's "four easy steps to mobility"), the Computerized Neighborhood Environment Tracking system was born. Its shortened name was ComNET (Olson 2008).

4.4.3 Mobilizing a nonprofit

Around this time in 1998, Sustainable Seattle published their third (and final) regional indicator report. The organization had reached international acclaim in less than a decade for their innovative approach to localizing the concept of sustainability, in a way that allowed measurement and accountability (Holden 2006a, 2006b). The organization was in the process of becoming an official nonprofit, with their first executive director, Ray Victurean, and had just achieved 501c(3) status. For a few years, the organization struggled to define itself and its changing mission, and was grappling with a newly-created board of directors. They felt that while their reports were far reaching, they lacked grounded action. Without a new interpretation of their mission, the organization would not be able to attract funders.

Upon hearing of the success of the ComNET system in NYC, the executive director at Sustainable Seattle immediately scheduled a series of meetings to discuss the possibility of using these technologies to ground their indicators at the neighborhood level, to link these measurements up to action. This would require some flexibility in how the mission of the organization would be interpreted. In 2003, a pilot

project in Seattle was organized with help from The Fund. Three neighborhoods were surveyed using pen and paper methods: North Beacon Hill, Greenwood-Phinney Ridge, and Capitol Hill. In the spring of 2004, the first street-level surveys were conducted using handheld devices in four Seattle neighborhoods: North Beacon Hill, the International District, Capitol Hill, and Greenwood-Phinney Ridge.

The Sustainable Urban Neighborhoods Initiative (or SUNI) was originally called SNIP, short for Sloan Neighborhood Indicators Project. With the beginning of SNIP, Sustainable Seattle had a growth in staff, with a full-time employee, Jennifer Roberts, brought on to run the program. Roberts had previously completed a Master of City Planning degree at the Massachusetts Institute of Technology. Her thesis described a project that developed a “neighborhood information system” and examined the empowerment potential for community residents (as reported in Caulfield 2003). Roberts hired Martha Pitzen to assist her in SNIP. After several meetings with The Fund, the team purchased their first handheld devices, and purchased the rights from The Fund to run the ComNET software. A training protocol was developed, the topic of Chapter 6. Together, Roberts and Pitzen would be responsible for facilitating the SNIP surveys as described in the original proposal to Sloan, which was to complete surveys in ten Seattle neighborhoods in four years.

The Sloan Foundation grant gave Sustainable Seattle considerable steam. The original grant was for \$622,000. Of this original grant \$245,000 was allocated for operations and staff during the first year. The second year, only \$90,000 was allocated.

For the third year, \$125,000 was allocated to the organization, and the fourth and final year only gave the organization \$52,000 (Nelson 2008). During the four years, the organization continued fundraising to continue the project, which was quite expensive for the organization to run, at nearly \$200,000 a year. The grant allowed the organization to bring a certain level of activity into the office. However, as Nelson later discussed with me, “it is a lot of money to fundraise, [particularly] for something that is not totally at the core of the mission” (2008).

Concerns about connecting the SUNI program to the broader Sustainable Seattle mission haunted the organization. Sustainable Seattle’s mission was largely about the development of indicators, and they had really only worked in the area of regional indicators. The SUNI program represented a move toward indicators at the neighborhood level. The mission of Sustainable Seattle, as reported on their website, is to advance “an integrated vision of urban sustainability by *measuring progress*, building diverse coalitions, and undertaking key initiatives” (Sustainable Seattle 2008, emphasis mine). The measurement of progress was to be through community indicators. This mission was described in another way by Pitzen, who played off the three themes of Sustainable Seattle: ecology, economy, and community.

It's sort of both looking at social, economic, and environment, as well as, the future. So, it's all of those things and... Really bringing all the actors together. That's sort of where we're moving towards... a civic agenda. Bringing all the different actors in all these different areas together to help share information so that people can make, quote un-quote, sustainable choices. Without the information, essentially people can't always... they don't always know how to make the right choices... that are the best choices. So we're helping sort of bring all the players together to help allow people to make those choices. (Pitzen 2007)

This was the mission of Sustainable Seattle, as seen through the lens of the SUNI project. The mission, through this interpretation, was about *information*. Making the “right” choices was dependent upon shared information. This sharing of information was also about building community.

Even though [SUNI] was about services, municipal services, to the citizens, it was also about building a sense of place in a community, and that was aligning much better with the mission. (Nelson 2008)

Nelson, the executive director of the organization, recognizes the disconnect initially created by the SUNI program, but describes how this kind of citizen engagement in the sharing of information contributed to the organization’s mission.

However, the mission of The Fund’s ComNET software, as funded by the Sloan Foundation, also saw this project as one of government performance measurement. Greenwood, director of the program overseeing the funding for the SUNI project, discusses the meeting between these two missions:

The value of bridging the gap between performance measurement and community indicators is only beginning to be appreciated. But it is starting to catch on, especially in the Pacific Northwest of the United States. King County, Washington, and Sustainable Seattle; and Washoe County, Nevada, and Truckee Meadows Tomorrow are pairs of governments and non-government organizations that are working to bridge the gap between performance measurement and community indicators. (Greenwood 2008b: p. 59)

The linking up of community indicators and performance measurement was the kind of convergence that the Sloan Foundation was looking to foster.

These two perspectives, of governmental performance measurement (which the ComNET software was really fined-tuned for) and of community indicator development caused some friction within the organization, as well as some confusion

among community members:

So there are these two sort of similar but different fields: community indicators and performance measurements. Our funder, the Sloan Foundation, is much more aligned with performance measurement. But we, as an organization, were always [about] community indicators. But we needed the funding to support our work, [so] we sort of did that. And that's what happens with non-profits. (Pitzen 2007)

As Pitzen describes, the tension created by the perspective of performance measurement by the Sloan Foundation (archetyped by The Fund) was counterbalanced by the funding that supported the organization during that time.

This funding greatly enabled the nonprofit. As a catalyst, ComNET and SUNI was supposed to connect community involvement in government accountability to the City of Seattle's comprehensive neighborhood plans. Notes from an 2004 meeting between Greenwood, Nelson, Pitzen, and two board of directors at the organization describes the methodology of the SUNI project:

1. *Leaders of the community (CDCs, business leaders, organizations, politicians, the beat cops, etc.) will be identified and interviewed to find out what they consider a major concern/priority/problem in the neighborhood*
2. *The community would then be convened to validate the problem and brainstorm to identify a solution and resources.*
3. *Sustainable Seattle would play a convening/facilitating role among the different stakeholder to help the project move along.*

(Neighborhood Indicators/Meetings & Presentations/City Quarterly Meetings/04-07-19 Sloan Meeting Minutes.doc 2004)

These minutes demonstrate how community leaders were imagined as politicians, business leaders, and the police, and how, from an early stage in the SUNI project, the role of the community was to both “validate” the condition of the street and “identify” resolutions for that street condition. Sustainable Seattle was to serve the role of a

facilitator. Also within these minutes, the ComNET system of helping community members to identify indicators of street conditions would help marry funding bodies to specific “problems”. The data itself becomes a iterative object for fundraising, at least in the perspective of those leading the SUNI program.

Ideally then, the data collected by the SUNI program would ‘mobilize’ the organization in at least four ways. First, and most obviously literal, it provided the nonprofit with access to mobile technology and, particularly, the software and situation in which this mobility seemed necessary. Second, it would provide community members (actually, ‘leaders’) with the ability to bring a legitimating voice to the question of government performance. Third, it would provide Sustainable Seattle with a further opportunity to fundraise, by using the data objects themselves as triggers for identifying funding bodies willing to address the particular indicator. Fourth, it would provide the organization with the ability to address the City of Seattle’s comprehensive neighborhood plan (and ideally, the Department of Neighborhoods), as the technology itself had this unmistakable air of legitimacy.

This latter point was really one of connectivity. The connected mobility discourse is important to an analysis of this SUNI project. This discourse does not end at the edge of an advertisement. It permeates ways of thinking about interactions in the social. And for this organization, the issue of providing connectivity was paramount to the success of the project, as defined by the organization and the communities it served.

4.4.4 Pushing connectivity

Unfortunately, connectivity between the organization and the City of Seattle was a struggle. While the development of Sustainable Seattle's feature-problems database was done in parallel with a discussion about linking these to City of Seattle departments, the organization was unable to fully stream the data collected by the street surveys to the appropriate department in city government. Roberts characterizes this connectivity (or lack thereof), following the SUNI project:

So there's the whole, how do you get community people to buy into using this tool, how do you get the city to buy into using this tool, and then how do you kind of bring those two together? And, I mean, I feel like we... I feel like the city connection... yeah... was even weaker than the community one, to some degree. (Roberts 2008)

In a document describing an upcoming meeting with the city just as the SUNI project was beginning, Roberts points to the 3-1-1 system that was being discussed in NYC, which would allow ComNET projects in NYC to directly link up to city departments. This proposed NYC system (which is currently in place) would have allowed the ComNET system to directly link to city government services, grounding the ultimate fantasy of connected mobility, from the citizen handheld device to government service provision. Roberts potentially foregrounds the difficulty of connecting the citizen-based data collection using handhelds to the municipality – a connectivity that many community members originally felt was the motivating factor for participating. Technology is certainly a driver in governmental innovation²¹.

²¹ According to a 2004 memo, Roberts even dangles her conversation with the Motorola corporation about putting this sort of technology in place in Seattle (Neighborhood Indicators/Meetings & Presentations/City Quarterly Meetings/Outcomes City Coordination 04-01-27.doc).

The ComNET technology itself, composed of handheld devices that are both connected and mobile, symbolized for the community a broader connectivity to the municipality. The technological marvel of the devices were often the selling factor for getting neighborhood residents and organizations involved. As Pitzen explains,

*ComNET was really our entre into those neighborhoods. We talked about ComNET and this tool to survey their look and feel of the neighborhood and people really were excited about it. They thought, “Oh this is a way to get what we need from the city.” It was really looking at that. It was aligned with, trying to figure out, OK, which city department was aligned with which condition and then they would get those things fixed. **Sort of.** We didn’t sell them that way, but we basically said, that that sort of... the tool could do that. **Maybe.** (Pitzen 2007, emphasis mine)*

Pitzen, who later became the program manager for the SUNI project, is very aware of the mixed signals that the ComNET brand sent, both that the technology was about empowering neighborhoods to act and that the technology was providing a critical connectivity to the municipality which would hold the city government responsible. Her emphasis of “sort of” and “maybe” marks this tension, and it is a struggle that defines the organization in their efforts to mobilize.

4.4.5 Telling stories of cyborgean success

As with any discourse, connected mobility requires self-told stories of success that reinforce the language, fantasies, and metaphors that permeate the practices around handheld computing technologies. Mobilizing a nonprofit necessitates these cyborgean success stories to remain on the move (mobile). As was discussed previously, the mobilization of the Sustainable Seattle organization, through the years of the SUNI project, was always through a period of struggles, both internally, within the

organization and between the organization and the community and municipal government. One tactic to mediate this struggle has been through discourse, of attracting neighborhood partners in ComNET surveying through stories of success in previous partnerships.

Due to the cost of providing street level surveys in the later years of the SUNI project, the organization took to partnering with other organizations to help offset cost. One such organization was the International District Housing Alliance. The IDHA's youth organization, WILD, was interested in using the ComNET surveys as a project for the youth to get community service. Providing the early-teen age youth with access to technologies like the handheld also made the survey work innovative. To make this partnership effective, Sustainable Seattle needed to itemize the work. For one survey, IDHA was billed \$1200 (in June of 2006). This was the work of going mobile at \$30/hr:

Planning for trainings and surveys, setting routes and walking to verify routes, preparing base maps, making changes to Access database for new routes, upload handhelds, prepare training materials, train youth, survey the neighborhoods, clean-up data and match photos, follow-up with community. (Neighborhood Indicators/Street-Level Surveys/Invoices/Invoice to IDHA 001.doc 2006)

The work of conducting street-level surveys was *real* work – work that contained value. These kinds of partnerships – successful partnerships – drove the organization and demonstrated to other community groups how this might work for them.

Sustaining the work of mobile, neighborhood indicator development was clearly a concern of the organization, finding ways to describe the work of SUNI. In

marketing the project, the organization attempted to show how they were facilitating a series of connections. In Figure 4.11 below, these connections included citizens, community organizations, and government. Sustainable Seattle is at the center of the circular flow of data, information, and action – figured as the facilitator in a process of neighborhood improvement. Mobilization for this organization requires the message that it “Tracks, Connects, Builds Bridges, [and] Partners”. Flora Muñoz was brought on in the third year of the SUNI project (in 2005), largely to assist Martha Pitzen who had replaced Jennifer Roberts as the program manager (Roberts had moved on to work at another nonprofit in Seattle). Muñoz’s primary responsibility was to develop connections to local community organizations, which now included Greenwood-Phinney Ridge, Capitol Hill, the International District, North Beacon Hill, Uptown, Admiral District, East Ballard, Lake City, Wallingford, and Columbia-Hillman City. This connectivity, she discusses, was the at heart of the struggle for Sustainable Seattle:

I would say that's [relationships with communities] a big piece that was missing, and why, I think, you know in terms of evaluating the effectiveness, that's a big chunk that's missing, that you can't... I mean... if no one's using it [the data], if no one's doing anything with it, then it's almost pointless... and so, I think that that's kind of how it was looked at. (Muñoz 2007)

For Muñoz and Pitzen, there were model community-nonprofit relationships that, according to them, really demonstrate the kind of connectivity that the SUNI project was striving for. These were communities that made use of the data collected in the street-level surveys.

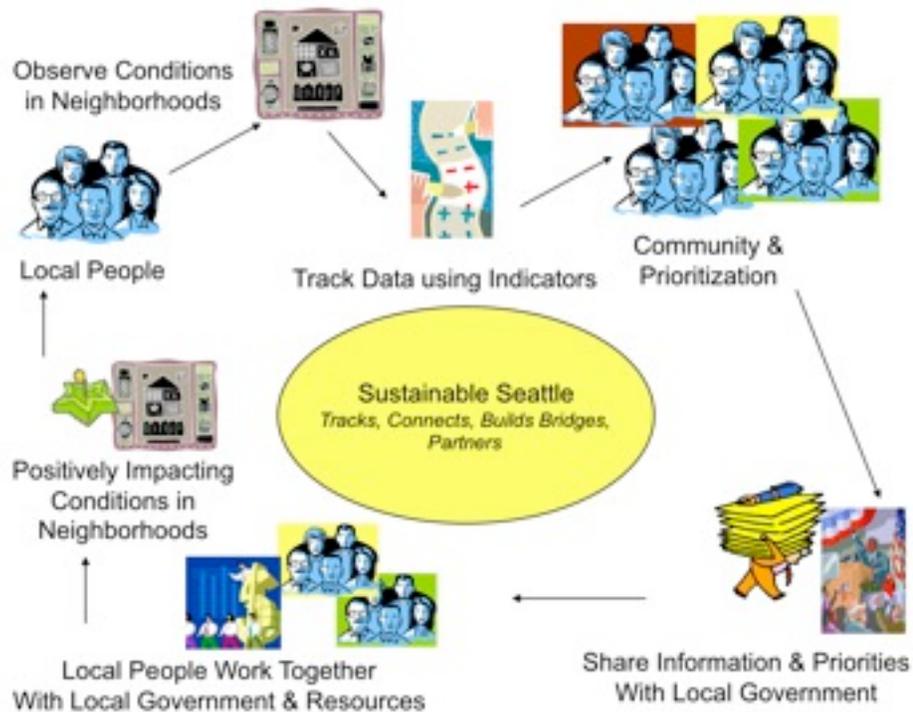


Figure 4.11 Sustainable Seattle's success in the SUNI project depended on the degree to which the fantasy of connected mobility could be realized. This marketing material (from 2005) depicts Sustainable Seattle as the facilitator in a series of key flows of data, between "local people", communities, and government. (Neighborhood Indicators/Marketing Materials/SUNI Approach Handout.ppt 2005)

The communities of Greenwood-Phinney Ridge and the International District were continually referred to in discussions about the effectiveness of the SUNI project. These were the exemplars of technology-aided community revitalization, and they highlight the sharing of the information, placing importance on the path of information. In the case of the International District, the IDHA and WILD staff were able to demonstrate, using the ComNET technology, a need for particular kinds of improvements and investments in the neighborhood. The objectivity, replicability, and precision of the data enabled the IDHA to secure a grant from the EPA to do street improvements and continue educational programs in waste management. As Muñoz

discusses, there was a need for the information to come along particular, legitimized paths, and the ComNET devices met that need:

So they were able to use... you know, they were able to collect specific data that they wanted, to... kind of, um... back up, you know, their... the kind of funding that they were looking for. (Muñoz 2007)

The legitimacy of this path of the data is inextricably tied to The Fund's excitement for using the handheld devices, an excitement that was characteristic of the late 1990s fascination with mobile technologies (as discussed in the previous section). The success of ComNET for the IDHA becomes this self-told story that was used by Sustainable Seattle to approach other communities to gain their participation and support.

The 'free-the-trees' project in Greenwood-Phinney Ridge is another example of these kinds of success mantras, about how ComNET *should* work. The community members of this neighborhood used the ComNET system to document the need for fixing the tree pits that were damaging the aging trees in the neighborhood. Muñoz continues to describe the use of this cyborgian success story:

We used the Greenwood example a lot, just cause that's something that you could see, and that's something that you could take pictures and these communities could visually see what, um... what could be done with this data. And so that kind of helped explain a little bit of that aspect of it. And I think that a lot of... See usually when communities, especially when like new people came... or you know came to the trainings and saw that... that was their first [question]... its like, 'how do we get'... its like a 20 thousand dollar grant... you know, 'how do we get that grant for our business district?'. (Muñoz 2007)

The visuality of success stories – the actual pictures of fixed tree pits – only adds to their potential use in furthering the mobility of the nonprofit. As Muñoz indicates, the fact that communities could “see” the results of working with data, grounded the

possibilities for venturing into a partnership with Sustainable Seattle – a risky partnership, in terms of volunteer time, cost of the use of the technology, and the possibility for inactive results.

Furthermore, the application of the data itself and the success of using that data as evidence to the need for a solution was part of the ‘free-the-trees’ success story. Data used as evidence secured funding from the city government, a phenomena discussed by Elwood and Leitner (2003). Martha Pitzen discusses with me the success story of data use and it’s mutability to match the specific needs of the Greenwood-Phinney Ridge neighborhood:

Matt: How do you see that data being used by these community councils and neighborhoods that conducted the data survey?

*Martha: Well, they’ve used it in different ways. I mean, there’s the example of the Free the Trees project in Greenwood-Phinney. Which was, was really a great... a really positive outcome. Of large, and several groups coming together to make an improvement in the community. So you’re really using indicators... **Using the information to apply for a grant to get them funding from the city, to support tree-pit improvements and tree improvements and sidewalk improvements in the business district, and it’s still ongoing. And you can actually walk on the sidewalk and see the proof that that happened.***

Matt: And you feel like the data played a central part in that process?

*Martha: Yeah. The **data actually showed**, the evidence had shown that the tree pits... These beautiful mature trees had overgrown their tree pits and nobody had taken notice of it, or been able to really like number all the trees to see how many trees had actually gotten too mature... Uneven sidewalks. The tiny little tree pits, so there was a lot of trip hazards, or uneven pavement along the sidewalks. (Pitzen 2007, emphasis mine)*

Here, Pitzen discusses how the information collected through the use of the ComNET system enabled the community group to apply for funding from the city. She highlights the importance of the data, of the numeracy of the mature trees, the uneven

sidewalks, and location of trip hazards. These data sets, given the precision of their location, could be used to demonstrate/evidence the connection between trip hazards (the removal of which were prioritized by the city) and the protection of these mature trees. Data, collected by these handheld devices by citizens, mobilized the nonprofit in supporting the community group in securing the attention (and resources) of the city government.

4.5 Conclusions

The excitement around mobile technologies continue to inspire fantasies at the Sustainable Seattle nonprofit. The discourse of *connected mobility* permeates this excitement, as seen in the fantasies of Muñoz, in her imagination of improved handheld devices that enabled a higher level of mobile connectivity:

*And it'd be good to like... You know, I mean, our little PDAs were good, but just in terms of the technology aspect of it... You know, I feel like there are leaps and bounds that have been made... And I don't know if they're furthering that along... You know, cause I think I've heard **that some groups have GPS in their handheld.** The other thing is... I want to say the group in the bay area, they actually made it so that... **anyone can use any device that they had... and... people could like download it from their home computers.** ... That means like you, as a community member, near this park, or whatever... **So you at any point,** could be like, 'Oh, there's this, this, and this, here.' And then you send it off to them, and so it's like... you know, **it kind of has more that grassrootsy feel,** like everyone is taking ownership of this kind of thing. (Muñoz 2007, emphasis mine)*

These kinds of narratives teeming with technological fantasies inform the governmental imagination. Funding organizations like the Sloan Foundation have an interest in the use of mobile technologies to support government performance measurement. Here, Muñoz links the “grassrootsy” feel of citizen empowerment to technologies with higher degrees of connectivity: the use of global positions systems

(GPS), the connectivity of multiple devices (“any device”), the personalization of data output (“their home computers”), “at any point” (and, presumably, time). Connected mobility, as springing from the development of mobile technologies, continues to figure the ways in which nonprofit-community organizations attempt to empower local knowledges.

By analyzing the discourse of connected mobility, this chapter has attempted to foreground the agency of technological innovation and technological panacea as a contributing force in nonprofit mobilization. By using ‘mobilization’, I am drawing on two readings: the emerging technologies of electronic mobility and the enabled movement of the nonprofit organization itself. In producing this narrative, I have addressed three questions: 1) What discourses advocate mobile technologies for gathering geographic information?; 2) How did a Seattle-based nonprofit come to use handheld technologies to gather information about their constituent communities?; and 3) How are these usages implicated in the histories of these devices?

I have argued in this chapter that technological empowerment and local knowledges have become twinned in late 1990s movements towards greater citizen engagement and greater personalization of computing systems. I have proposed *connected mobility* as a discourse that produces this twinning, and the figuration of the handheld-appendaged cyborg as the figuration marking this inquiry. By insisting on the multiple discursive-materialities that permeate the use of handheld technologies by nonprofits, I intend to supplant narratives of the devolution of governance that

dominate the literatures about geographic information technology use in community revitalization politics. However, this is a careful displacement and not an overhaul. The discourse of *connected mobility* draws in the narratives of the history of computing, the embodiment of the technology, and its fantastic imaginations of actual use. This discourse creates a space where nonprofits, foundations, community groups, and individuals inhabit in order to *do* work in communities using mobile technologies. The logics of the technologies themselves, and specifically their histories, are important agents in community-mapping exercises.

• • •

As this chapter has begun to articulate, objects become subjects. These technologies are agents in the narrative of neighborhood assessment, government performance, and citizen empowerment. I continue this cyborg geography of the coding of community, to witness the various enactings of the socio-technological, to situate their affordances, and glimpse moments of diffraction. In the following chapters, I shall extend this discussion of the intersections of technological histories and the mobilization of nonprofits to two particular technologies that make up the Sustainable Urban Neighborhoods Initiative: the quality-of-life indicator (Chapter 5) and the protocol used by Sustainable Seattle to train residents to conduct street-level surveys (Chapter 6).

Chapter 5.

Measuring performance and indicator work: quality-of-life as qualifying life

As concerns about urban quality-of-life are conceptualized as indicators and these indicators are measured through citizen-based data collection, a series of relationships are created which ultimately link data about declining built environments to the management of social disorder. This chapter investigates how these relationships are constituted through the interaction of the quality-of-life mission of the Sustainable Seattle nonprofit and the mission of government-performance measurement at The Fund for the City of New York. Here, I discuss how quality-of-life indicators and government-performance measurement actively constitute subjects by *qualifying* life – to abnormalize certain lives, especially through motifs of crime, homelessness, and graffiti. Furthermore, this chapter argues that this process is enabled by the way in which cities are imagined as information flows, wherein data reformulates urban space.

5.1 Returning to Uptown

To illustrate these relationships, I return to the field notes I used to introduce Chapter 1. Sitting in the converted City Light control room of the Uptown neighborhood center building, I listen as one local business owner rallies the community surveyors to be vigilant of litter on the sidewalks. Uptown, a neighborhood that rebranded itself from being called ‘Lower Queen Anne’ in 1998, includes the mainly commercial community surrounding Seattle Center – the location of the Space Needle. The discussion in the room turns to the problem of outsiders, to those that enter into the neighborhood adding

to the problem of littering and loitering. Another long-time resident becomes incensed by the public telephone booth in the neighborhood. He declares that it needs to be removed, “Who uses that anyways?” He gestures that the phone booth acts as a magnet for particular undesirables in the community – insinuating that those bodies that use the public phone do so to engage in illegal drug activity or prostitution. A number of his neighbors agreed; the phone booth attracts urban decay: graffiti, litter, and loitering youth.

In this brief narrative, we see a common practice where objects of the built environment connote a bodily imaginary, but one that displaces the bodies themselves. The presence of litter and the public telephone booth instead become the entry point for discussion – a discussion that avoids the messiness about what to do with ‘outsiders’. This object-centered discussion – a discussion of indicators and data – enacts a narrowing of the field of politics (of depoliticization), where residents focus on talking about indicators, not about the peopling of these measures. This chapter discusses the implications of coding, when data become the object of concentration, the focal point for foundations, organizations, community residents, and further, when data reformulate urban space and those that live within it.

In the first section, *A genealogy of the indicator*, I review the ‘indicator’ as an object of urban governance, and discuss how this object can be traced through a Giuliani New York City (and Broken Windows theory) to The Fund for the City of New York’s program on government-performance measurement and finally onto

Sustainable Seattle's development of neighborhood indicators. In the second section, *Flows of information*, I draw in writings about the flows of the city to discuss how objects of the street are imagined to be digitally connected to municipal agencies. In the third section, *Producing datascapes*, I discuss the data collected during the street-level surveys to ask how these data practices reconstituted spaces through quality-of-life concerns. In a discussion section, I place my own data practices in these questions about quality, to ask how they are implicated, and what this implication might mean for GIS in community-based research.

5.2 A genealogy of the indicator

In 1980, The Fund conducted a study examining street conditions as they relate to police patrol in the Time Square area of NYC. In their report, published a year later, The Fund discusses the relationship between street conditions and crime:

*Police and other enforcement officials believe that certain types of street conditions such as the number, type, and frequency of **street solicitations**, the number of **individuals loitering in doorways**, and storefront uses and their hours of operations do contribute to, or have the potential to contribute to, serious crime. At the very least, offensive street conditions are perceived as dangerous and threatening to the public and are a major reason for avoidance of an area, especially in the evening hours. They are a primary contributor to the negative image of Times Square held by most New York area residents and tourists, and are part of a **self-perpetuating cycle of decay**, well documented in the City University of New York's West 42nd Street study. (Fund for the City of New York 1981, p. 7, as cited in Silverman and Della-Giustina 2001: p. 949, emphasis mine)*

Here, as Silverman and Della-Giustina (2001) point out, The Fund places the conditions of the street in a direct relationship with crime, over a year before Wilson and Kelling (1982) would publish their *Atlantic Monthly* article, "Broken Windows". Wilson and Kelling's (1982) well-known argument was that deteriorating street

conditions would invite further destruction and violence into neighborhoods – that is to say, by particular ‘criminal’ bodies. This study by The Fund for the City of New York demonstrates how this particular theory was well-saturated in (non)governmental discourse in the early 1980s of New York City. Concerns about crime became articulated through coding the conditions of the street. The indicator as a practice of visualizing the urban must be recognized as being linked in to these debates about what is meant by and what to do about ‘broken windows’.

As Greene (1999) discusses, Rudy Giuliani’s bid to be mayor of New York City in 1993 was largely founded on a platform to reduce crime in the city – through “zero tolerance” policing. During Giuliani’s term as mayor, violent crime in NYC (as in many US cities at that time) experienced major decline. Giuliani linked this directly to the NY Police Department’s CompStat system (short for ‘computer statistics’ or ‘comprehensive statistics’), lead by Police Commissioner William Bratton. The CompStat system, operationalized by Bratton, gave the police unprecedented access to “accurate and timely intelligence” as well as techniques of assessment and evaluation (Greene 1999: 172). Bratton describes the importance of this data:

...we developed a system so that I could get crime statistics every day and, more important, every week to share with the rest of the department. It was timely, accurate intelligence. Imagine trying to run a business without timely, accurate information on where your customers are and where your markets are; it is not an efficient or profitable way to operate. (Bratton 1996: p. 12)

This use of data, to treat crime as a matter of information processing and retrieval, likened to the management of a profitable business, enabled a whole series of policing tactics. As Greene (1999) argues, it places major emphasis on quality-of-life issues.

Giuliani's 1993 campaign figured certain bodies as targets that countered a general quality-of-life (applied not so generally to the population on NYC streets). Bodies like the "squeegee men..., petty drug dealers, the graffiti scribblers, and the prostitutes", as described by Greene (1999: p. 172) became the figures of disorder and the resulting habitation of a city in decay.

Data about quality-of-life becomes then a central focus for the NYPD (as in had been in the study by The Fund in 1980 referenced above). Bratton (1996), who refers to the 'squeegee men' as "pests", describes his 1990 trip from NYC's LaGuardia Airport to Manhattan. The landscape he describes is "riddled with potholes, dirty, with graffiti everywhere, and with abandoned cars, litter, and rubber tires" (p. 4). This deterioration of the city street invites "pests", as Bratton sees it (see also Silverman 1997). What was needed was swift control of these kinds of 'broken windows', such that crime could be *prevented*. The 'success' of NYC to control crime, according to Bratton, was this emphasis on preventative policing, as opposed to reactive policing. The management of quality-of-life becomes this preventative measure – both in the sense of action (an approach) and in the sense of perpetual evaluation (measurement).

Critiques of this approach have come on a few fronts. Greene (1999) questions that this drop in crime in NYC happened solely due to 'zero tolerance' policing under Broken Windows theory, and she points to similar drops in San Diego at that time – which was involved in less aggressive policing strategies. Harcourt and Ludwig (2006) argue that Broken Windows policing is ineffective on the grounds of research design –

that there is simply no evidence to suggest that Broken Windows policing is effective at reducing crime. While these critiques do well to call into question the ‘success’ of Broken Windows theory as it is practiced, other forms of critique challenge the theory on the grounds of social justice. Don Mitchell (1995a) has argued that these kinds of police practice represent shifts in understandings of public space, and while this is important, I focus on how these practices represent shifts in understandings of space itself. For instance, Herbert and Brown (2006) suggest that the logic of Broken Windows theory is flawed in its conceptualization of space, and that these flaws enable the practice of this theory to the exclusion of specific individuals by space. Broken Windows theory, they argue, assumes four things about urban space: 1) disorderly landscapes emit messages to criminals, 2) ‘healthy’ neighborhoods lead to ‘healthy’ behaviors, 3) the decline of a neighborhood is attributed to the presence of outsiders, and 4) the local is the scale in which the problem resides, and therefore requires local solutions. Accordingly, Herbert and Brown (2006) argue that while landscapes are communicative, their signals are not naturally intended for criminals and therefore the equation of environment to behavior needs to be problematized. They also argue for a wider theorization of the social-political dynamics and global economic-political relationships that constitute the insider-outsider divisions at the local.

Missing from these critiques of Broken Windows theory is a sense of how data about quality-of-life motivates the disciplining of spaces. If, as Herbert and Brown point out (reading the logics of Bratton, Wilson, and Kelling), that Broken Windows

theory is inherently concerned with the messages sent by the landscape and how those messages of decay lead to criminal behavior, then the question becomes how are these messages assembled and sent? Here, it is important to understand how the ‘indicator’ as a device for accessing quality-of-life motivates this community-mapping exercise in Seattle. I begin by discussing the emergence of indicators to measure quality-of-life more broadly in the fields of social indicators research. I then relate how The Fund and Sustainable Seattle have approached the use of indicators individually and then together in ComNET surveys of Seattle neighborhoods.

5.2.1 Emergence of indicators for quality-of-life

As a device, the indicator has been used to describe and assess the relationship between humans and their urban environments²². For Pacione (1982), indicators for quality-of-life are either objective or subjective. The concern for geographers, he writes in 1982, is the geographical scale of the indicator and the areas of concern to be measured. Here, the difference between objective indicators and subjective indicators is the mattering of Fact. Objective indicators are the ‘hard’, empirically obtained, evidence while subjective indicators are ‘soft’, based in internal perception.

Indicators for the measurement of quality-of-life became widely developed in the late 1960s and early 1970s²³, notably by John O. Wilson, who in 1967 developed quality-of-life indicators to assess each U.S. state on the “status of individual, equality,

²² See Babbie (2008) on how indicators are used in sociological research.

²³ Note that the scholarly journal, *Social Indicators Research*, has its first volume of publication in 1974.

democratic process, education, economic growth, technological change, agriculture, living conditions, and health and welfare” (Pacione 1982: p. 499; Perloff 1969b; Liu 1974). These nine components were drawn out by Wilson in accordance with President Eisenhower’s *Commission on National Goals* (Pacione 1982). Quality-of-life indicator work was the work of the state, to evaluate, as Liu (1974) states, the “health” of the nation. Pacione (1982) describes the research agenda in this kind of indicator work:

- 1 Production of some baseline measures of wellbeing against which we can compare subsequent measures and trends of change.*
- 2 Knowledge of how satisfactions and dissatisfactions are distributed through society.*
- 3 Understanding the structure and independence or interrelationship of various life concerns.*
- 4 Understanding how people combine their feelings about individual life concerns into an overall evaluation of QOL.*
- 5 To achieve better understanding of the causes and conditions which lead to individuals’ feelings of wellbeing, and of the effects of such feelings on their behaviour.*
- 6 To identify problems meriting attention and possibly social action. (Pacione 1982: p. 505, as paraphrasing Andrews and Withey 1976)*

This agenda marks indicator-work as a science, concerned with the creation of measures, knowledges, and understandings about perception – to create practices that would make these perceptions tractable to create social change. Indicator work is centrally concerned with ‘life’. Measures were to be developed that would ascertain the quality-of-life in a manner that could be repeatable, comparable, and aggregable.

The emergence of indicators can be read within the context of *closed-world* discourse, where interactions are defined systematically and expressed computationally (Edwards 1996, also see Chapter 4). The interaction of humans with the urban was considered a closed system – the urban environment being formalized as a particular

subsystem (see Perloff 1969a). While Perloff (1969a) represents one of the earliest discussions of the urban environment as a subsystem or a system defined by interrelated natural and human elements, he is careful to delineate what he sees to be the open and closed aspects of such a system. In his words,

Damage one part of [the urban environmental subsystem] and other parts are immediately or soon affected; improve one part and other parts may be improved as a result. (Perloff 1969a: p. 10)

This way of thinking about the urban emphasizes the interconnectivity among elements like air pollution, commuter travel times, fresh water delivery, sewage treatment, service provision, and industrial output. Furthermore, this conceptualization of the urban reinforces the state system, or the “national scheme of things”, as Perloff (1969b: p. 10) writes. Study of the interconnectivity among the elements of the urban is within the purview of the state.

As the urban becomes theorized as a system of interrelated elements, each of which contribute to the success of the nation, a parallel interest is to articulate each of these elements with the intent to develop measures for them. Indicators become such measures – crucial to the development of empiricist decision-making practices. The trick to developing indicators, as Perloff suggests, is to create measures that express the interrelated status of the elements they are developed to indicate.

However, the problem with indicators as flagged by Pacione (1982) is the relationship between reliability and validity. And while Perloff did not use this language, he was certainly curious of the ultimately social status of these indicators, that “the whole system [of indicators] is built on a recognition of the fact that the

quality of the environment is judged by the values of the society” (1962a: p. 24). Subjective indicators, become for Pacione (1982), the kinds of indicators that make explicit the recognition of the social status of these measures. Subjective indicators, unlike the objective indicators that fascinated an earlier generation of indicator research, tend to take up the more perceptual (or what Perloff might describe as ‘value-laden’) elements of the urban environment. Indicators that rely on the perceptions of individuals are more valid, Pacione (1982) argues, while being less reliable than objective measures. Validity and reliability are the turning points around which debates are waged in indicators research – particularly so, as these indicators become focused on ‘quality-of-life’, or urban ‘liveability’.

A key issue of *Urban Geography* that focused on concepts of ‘quality-of-life’ and urban ‘liveability’ emphasized the need for more subjective-qualitative research (Pacione 1990), the recognition that ‘liveability’ is a middle-class concept with different groundings in inner-cities (Ley 1990), that understanding urbanization requires a consideration of urbanity as a culture (Bunkse 1990), and the complexity of human experience demands a fuller understanding of ‘perception’ (Couclelis 1990). These ‘liveability’ metrics developed in journals like *Social Indicators Research* lended themselves to comparisons among cities, thereby constituting a form of urban governance dedicated to the “(re)creation of urban conditions sufficiently attractive to lure potential capital” (Rogerson 1999: p. 971). During the 1990s, researchers began to interrogate the implications for urban indicators. Perhaps this is consistent with the

‘cultural turn’ in disciplines like geography that became more concerned with the implications of ‘progress’.

Measures that get at the quality-of-life of an urban area have fueled the competitiveness among cities, as well as competitiveness among ranking systems (Stover and Leven 1992). Making urban areas attractive for investment and development therefore contributes to the mobility of capital in a global economy (Rogerson 1999). McCann (2004: p. 1911) discusses this use of quality-of-life indicators as “an object of consumption for mobile residents” and its importance in the hype generated by the media around ‘best places to live’²⁴. Quality-of-life indicators are the objects around which multiple actors build cases for neighborhood investment and development. And these objects belie issues of inequality, as McCann (2007) points out.

Indicators constitute the urban in as a space of calculability. Governing cities becomes a question of data in the 1990s municipal strategies of NYC. And this move toward indicator-supported governance is furthered by the need for cities to remain competitive – what Harvey (1989a) has called ‘urban entrepreneurialism’. The indicator, as it comes to shape a Seattle nonprofit’s community mapping program, emerges as a technique from these contexts – around policing and city competition, as well as around questions of national and neighborhood ‘health’. The practices that surround the indicator are, however, not just the practices of state actors, like the street-

²⁴ However, Rogerson (1999) notes, following Harvey (1989b), how quality-of-life indicators have also worked to support community organizations in gaining investment from the state to counter particularly poor results in liveability assessments (see also Derickson 2009).

level bureaucrats of Proudfoot and McCann's (forthcoming) study. The indicator, as a practice in neighborhood planning, is taken up by governmental and nongovernmental bodies. It is the pivot point for neighborhood action in this study of a community-mapping program.

5.2.2 The Fund and measuring performance

The Fund for the City of New York enters this narrative of indicator research through government-performance measurement. In 1995, The Fund conducted fifteen focus groups with residents of NYC to gain an understanding of how residents perceived the functions of their municipal government. From these focus groups, the foundation made a critical (if obvious) finding – that *how* these residents measured the performance of their government differed greatly from the performance measures used by the government itself (Cohn-Berman 2005). Cohn-Berman (2005) argues that the measurement of government performance lacked the experiences of the citizenry as the primary beneficiaries of improvements in performance²⁵. The effectiveness of the Seattle-based community-mapping program, as will be discussed later in this chapter, hinges on this understanding of performance measurement, and how this understanding is grounded in discussions of quality-of-life and sustainability.

The measurement of government performance is conceptually akin to 'total quality management'; it is the recording of how well government performs a specified

²⁵ Given the neoliberalization of community organizations which makes them more susceptible to measurement by the government, it is notable that this program conducts a reversal -- to have citizens measure their government. However, my analysis shows the ways in which this reversal enforces a governmentalized practice of measurement.

function, motivated by the belief that a first step toward efficient and effective government is better measurement and better reporting of performance. Holzer and Kloby (2005) draw a distinction between two types of government-performance measurement work: first, those that use performance measurement techniques to increase productivity (efficiency); and second, those that encourage citizen involvement in the measuring performance to better inform policy decisions (effectiveness). The Fund represents a hybrid of these two types, as they are certainly interested in increasing productivity and residents are, in one sense, the most convenient observer for measuring performance. Granted, The Fund also finds citizen involvement important. However, this foundation has the particular belief that success in involving the citizenry in performance measurement should not mean the forfeit of success in increasing productivity.

The key factor in this kind of performance measurement was the measure itself. Objectivity was important. The data had to be reliable *and* valid. Its accuracy needed to be known. In order to affect the performance of government, citizens would need to set aside their personal bias, their ‘emotion’, as Olson (2008) would call it. Their concerns needed to be turned into data such that the government could create benchmarks. Matters of ‘progress’ would become an arithmetic operation and the citizenry merely an input into an empty variable. The population populates a data table. Citizens would be involved and government productivity would increase.

When The Fund conducted their series of focus groups in 1995, they discovered

that how citizens measure government performance differed from how governments measure their performance. Specifically the object being measured was notably different. For example, while the municipal government was interested in the time tables of garbage pickup, and measured performance based on the recorded times of pickup, residents were far more interested in the general condition of the area surrounding the garbage bins. Was there garbage that didn't make it into the bins? Was there garbage left by the garbage trucks? Furthermore, Cohn-Berman (2005) discusses that these residents generally did not know what agencies were responsible for particular services on the street. However, these focus groups point out that these residents drew relationships between these agencies' jurisdictions:

...people see connections among other functions that cut across agencies, such as: The full range of social services offered; Crime, correction, probation, employment, homelessness, mental health; Education, parks, out of school programs, child health, domestic violence, child protection; Homelessness, health, mental health, public safety. (Cohn Berman 2005: p. 32)

These focus groups, which later informed the creation of the ComNET program, draw together themes of urban decay and social problems. Crime was linked to employment opportunities, homelessness, and presence of mental health issues. The provision of education, availability of public parks, and domestic violence were thematically linked. Homelessness was linked with public safety.

In their follow-up focus groups in 2001, nearly six years after the first round, The Fund reports that participants generally felt that government performance had improved in three areas:

Public safety, noting that the city feels much safer; Public transportation, especially the subways that are 'cleaner, brighter, more reliable and safer;' [and] The extent of homelessness, which they assess by observing fewer homeless people on the streets. (Cohn Berman 2005: p. 32-33)

Across these three observations from the members of the focus group, the association of safety to cleanliness and to a decrease of homelessness is made. With these observations, the participants in the focus group note that government performance is improving. For Olson (2008, also see Cohn Berman 2005), the way in which residents were talking about governmental performance was directed directly at the objects of the streets themselves – presence of litter, homeless persons, and graffiti. These were “cues”, according to Olson (2008), and the best proxy available to these residents for grading the performance of their municipal government.

For The Fund, the indicator has its beginning as a way of thinking through ‘cues’. Around this time of the completion of the second round of focus groups, gathering information about how citizens think about the measurement of government performance, The Fund was also working to develop a system of scoring the streets of NYC for their cleanliness. From the perspective of the literature on social indicators, subjective indicators would be inadequate measures of government performance. The argument goes, that since subjective indicators draw so heavily on perception that they are less reliable (consistent) measures. However, The Fund (in cooperation with the Program for Urban and Policy Science at SUNY-Stony Brook and with the Vera Institute of Justice’s Wildcat Service Corporation) developed a scoring system for surveying the cleanliness of NYC streets (Van Ryzin, Immerwahr, and Altman 2008).

Indicators emerge as a way to standardize the observations of the street. For instance, in the case of the scoring system for street cleanliness, a seven-level system of cleanliness was developed (along with a photographic standard) (Van Ryzin, Immerwahr, and Altman 2008). The object of observation was the presence of litter and the patterns of concentration it would form along the side of the street. Indicators, as these standardizations of observation, enter as the formalization of the visual cue.

At the moment the ComNET system was born, The Fund, who had participated in several studies of NYC streets and the relationship between cleanliness and crime, had participated in the development of indicators for measuring the condition of the street – which they found to be the key way that citizens understood government performance. It is impossible to separate the development of these kinds of indicators about ‘quality-of-life’ from the efforts of the NYC mayor and police commissioner to connect urban decay to social disorder. Indicators become the object of traction for the municipal government and its policing apparatus, the local foundation, and the city residents, in order to create change at the street-level.

5.2.3 Sustainable Seattle’s regional indicators

At Sustainable Seattle, indicators have a slightly different lineage. The indicator was indeed an important mechanism for measurement. However, Sustainable Seattle’s vision was at the regional scale. In order to create change in the environment, to improve the habitat of the salmon, data was needed at the regional scale. Sustainable Seattle was known internationally for their three reports on “sustainable community” in

1993, 1995 and 1998 (Sustainable Seattle 2008). Recognized as one of the first organizations to create indicators for sustainability, Sustainable Seattle also implemented these metrics to measure the costs of urban development for the natural environment. As Holden (2006a) points out, the impacts of these three reports were greater in areas outside of Seattle, and the general perception of these reports in Seattle was, ‘so what do we do?’. This lack of perceived impact in the region, made it difficult for the organization to market their mission. The perception of many on the board was that these indicators needed to lead to some sort of grounded action.

The need for ‘grounded action’ led some on the board, including Executive Director Ray Victurean, to inquire about neighborhood-level sustainability indicators, specifically the ComNET system in NYC. Although ComNET was originally designed to implement citizen-driven performance measurement (see Chapter 4), this technology was imagined by Sustainable Seattle to be used to engage citizens in a discussion about local indicators, bridging citizens’ interest in improving neighborhood quality-of-life with Sustainable Seattle’s mission of improving the sustainability of the region.

The use of neighborhood indicators in Seattle inherits in the bits and bytes the data-based thinking about quality-of-life and liveability, urban decay and social disorder of city streets, the measurement of government performance, and the dead-ends experienced in regional approaches to measuring sustainability. The use of indicators to measure quality-of-life in the city constitutes an imaginary of the city of information flows. In order for citizen-driven measurements of neighborhood

indicators of quality-of-life to work, to *do* certain work for the citizen-measurers, a series of flows of information are necessary between the handheld device and, eventually, the responsible agencies of the municipal government.

5.3 Flows of information

During the ComNET surveys of Seattle neighborhoods, objects of the street are digitally encoded, such that they are connected to municipal agencies. This was to create new forms of governance, where the actions of the city government were to be directed by neighborhood residents. These practices feed an imagination of the city as a series of information inputs and outputs. The ‘city of flows’ is not new to urban theorists. As Sennett (1994) suggests, conceptualizing the city as composed of flows parallels the circulatory system of the body²⁶. Sennett juxtaposes William Harvey’s 1628 discovery of the circulation of blood in the body to the emergence of city planning as concerned with the movement of people. This secularization of the living body (no longer guided by ancient understanding of ‘the soul’ as the source of life) led to a revolution, Sennett writes, that brought Enlightened city planners to be more concerned with the health of the population.

Planners sought to make the city a place in which people could move and breathe freely, a city of flowing arteries and veins through which people streamed like healthy blood corpuscles. (Sennett 1994: p. 256)

Sennett continues by pointing to eighteenth-century designs for cities as evidence to this new way of understanding the healthy body and its needs for a healthy urban

²⁶ I note the importance and limits of thinking the body as a spatial metaphor, following Rasmussen and Brown (2005). Here, I draw on Sennett’s work to think the city as composed of flows. While I recognize that flowing bodies are often marked as feminine (Longhurst 2001), in this section I explore the limits of imagining municipal services as information flows.

environment. These flows, of moving bodies, constitute the urban body.

Leading from this metaphor of the ‘urban body’, other discussions of the flows of the city are grounded in the particular relationship that the urban has with the natural (Swyngedouw 1996, 2006; Kaika 2005; Kaika and Swyngedouw 2000; Swyngedouw and Kaika 2000; Gandy 2005, 2002). Following Latour (1993), these authors insist that while the urban and the natural have been formulated as a binary, they have always existed in hybridity. Geographers like Swyngedouw and Kaika interrogate this through political ecologies of water-city relations, on how the flows of water in a city demonstrate new ‘quasi-objects’ of hybridity in urban-nature studies. They document the histories and spatialities of the circulation of water (although see Chapter 2 for a critique of their use of the cyborg concept).

While this circulation metaphor seems particularly appropriate at the scale of city-wide processes, as demonstrated by Swyngedouw’s (1996, 1999) study of water systems in the city, circulations also exist in the more ‘immaterial’ realm of information transfer in the technological city. As a quasi-object of hybridity, data are relatively meaningless if not imagined in terms of flow, connectivity, and network (as the literature on transfer, interoperability, and integration attests). After WWII, information was likened to trade. As Mattelart (2003) writes²⁷, the free flow of information was opposed to the USSR model of information protection and scarcity.

²⁷ Mattelart (2003) traces the emergence of the computer out of, more generally, the industrial and scientific age, where a reliance on numeracy, and more specifically, statistics creates a path for the production of intellectual work – of a systematization of documentation and publication and, with WWII, the ‘think-tank’.

In this section, I explore the ways in which the practices of surveying Seattle neighborhoods were problematized as issues of ‘information flow’. By designing technological protocols which link street objects to municipal government, this nonprofit and foundation demonstrate the limits to transforming questions of living into indicators for governmental consumption. I first discuss how The Fund imagined ‘good’ information flow in the use of the ComNET system. I then describe how this imagination met the grounded practices in Seattle with some resistance.

5.3.1 The Fund’s conceptualization of ‘good’ flow

According to the ComNET process imagined by The Fund²⁸, the flow of information begins in the street. Residents with handheld computers move through their neighborhood, visually inspecting the streets that they live on, walk on, meet friends on, consume on, and now survey on. The acts of gathering information, of uploads and captures, occur on the street, electronic device in hand. These acts are embodied. They require the dexterity of fingers and the faculties of vision and affect. However, the flow of information does not originate here, as its source is located further upstream in the computer-brain of quality-of-life indicators for performance measurement that pours forth in terminological apparatuses and broken windows worries. Rather, the flow of information is channeled here, at the practicing of indicator measurement and the geocoding of *new* community maps.

²⁸ This question of ‘flow’ was endemic to other Sloan Foundation supported projects for citizen-driven and citizen-based performance measurement. Holzer and Kloby (2005) articulate six factors that contribute to the problem of flow: 1) a lack of cooperation from public partners with the project, 2) the persistence of integrity, 3) a lack of marketability, 4) the complexities of organizational (inter- and intra-) politics, 5) the specificities of partnerships, and 6) personnel commitments.

Objects become the focus point in these surveys. Residents walking down their neighborhood streets enter into their handheld devices the conditions of things in/on the street. As Ruth Olson at The Fund describes this process to me,

It's all about the stuff that you see. Your feeling is that the city is not working right. It's a cue! (Olson 2008)

Cues, for Olson, are those objects of the street that signify a lack of attention by the municipal government. Residents, unaware of the multiple agencies that govern street conditions, can focus their energies instead on the objects or cues. They enter the object and describe its condition, and then fix the object in digital space with a reference to its geographic location. The street object is digitized, or in other words: geocoded.

From here, the newly formed data flows into the central storage of The Fund's ComNET system. The central concern garnered from The Fund's 1995 focus groups was that citizens largely did not understand what agencies were responsible for which objects and conditions of their neighborhood streets. Furthermore, as Olson notes, "Agencies don't talk to one another." The ComNET system therefore takes these data records and sorts them to be delivered to the responsible municipal agency.

Information that flowed into agencies of the municipal government needed to be in the 'proper' format. The Fund and Olson anticipated this problem. For Olson (2008) the issue was clear, "We needed to create data that communities and government could trust." This element of trust was a condition of the data itself. Its validity and reliability mediated its trustworthiness for both community members and

government agencies, according to Olson. Her initial presentation of the ComNET system to NYC agencies caused some immediate concern among those in city government. The imagination of receiving thousands of these kinds of digital complaints was worrisome. “The last thing I wanted to do was bring government to a halt,” Olson (2008) discussed with me.

Olson and The Fund had to demonstrate that the flow of information was channeled, organized into electronic records, as distinguished from random complaints. The flow of information would enable concerns-data-action transformations. These transformations were partially built into the ComNET system, made explicit in its Visual CE code. The language of the street-survey instrument – its terminological apparatus – was developed based not only on the focus group meetings held by The Fund in 1995, but by also studying the technical language of the government. Therefore, information that would be flowing into the city agencies would be pre-coded, articulated in the information framework that the NYC government could use²⁹.

This channeling of information flow was not only for the municipal government. ComNET would also provide neighborhood organizations with a different view of their community streets. Presented with the data collected from their neighborhoods, residents would be engaged in a process of prioritization, to calm “the

²⁹ ComNET in NYC has an immediate link to the municipal government, due to their 3-1-1 system. The 3-1-1 phone system was a dream of The Fund and its ComNET approach, finally implemented in 2002. The system is part of DoITT, the New York City Department of Information Technology and Telecommunications. The system is a sophisticated complaint registry, that enables NYC residents to voice their concerns and track how these concerns have been linked to the appropriate government agency. The system turns complaints into data – data that is in the ‘proper’ format for governmental action.

anxiety of every little thing”, as Olson described. This process of prioritizing lead Olson and The Fund to believe that ComNET was a particularly valuable tool, as it provided community organizations with the ability to avoid tackling problems, department by department, serially. Instead, Olson (2008) noted to me, communities would be *enabled* to develop a task force to address the problems from a broad perspective, to “diffuse the emotion” – the anxiety – of every individual problem.

5.3.2 Problems in information flow in Seattle

The Fund for the City of New York was able to develop ComNET to address the particularities of information flow in the municipal government of NYC. It was important to gather the nuances from the focus groups, tailor their concerns to fit governmental discourse, and then provide tools to turn these concerns into data. However, a comparable approach did not happen in Seattle, and presented the local nonprofit with problems of information flow. Unlike the 80-plus communities that have made use of the ComNET system, its adoption in Seattle was met with three problems, that emerged from my study of the Sustainable Seattle program: 1) the lack of tracking of the concerns-data-action transformations, 2) the lack of connectivity between communities and the city, and 3) the lack of goal-directed approaches towards the ComNET process within the community organizations themselves.

In my interviews with staff members at Sustainable Seattle and with community members who participated in the street-level surveys, I found that there were few moments of feedback to the community members during the four-year survey program.

The results of the surveys were often uploaded to the Sustainable Seattle website, in the form of tables and a few pie charts; however, there were no maps. Also, there were no aggregated representations of the surveys, which included the nearly 6,000 records collected over four years. While concerns were being turned into data and these data were being batched to particular agencies in the Seattle municipal government, there was no tracking mechanism to trace this transformation and flow.

Traces of concerns-data-action transformations are not only important for organization oversight and community perceptions of legitimacy, but they are also important for purposes of research. My research lacked a general sense of how community members perceived the entirety of the project, largely due to the fact that community members did not have the tools to trace and track. Their concerns were lost in the flow. In order to explore the frustrations surrounding this problem, as well as potentially provide neighborhood advocates with some traceability about the survey program itself, I helped to organize a focus group in early 2008 to showcase, with maps, the data collected from the four-year survey. In an interview with a community leader from Hillman City, following this focus group, I found that this lack of traceability greatly impacted certain community members' perceptions about the utility and legitimacy of the Sustainable Seattle indicator program:

*As far as I know, **they [Sustainable Seattle] aren't doing anything.** I mean they haven't told me they're doing anything. Alls I know, is what they told me initially that they were going to do with it. And then I had that little clue, from the lady that attended your [focus group] session, that she worked for the City, and that she didn't understand the data. That's what it sounded like! ... I think that she meant that, that whatever way they have compiled it... um, is not comprehensible. They're **not sure what they're supposed to do with it** or what*

it means. ... If there is something actually happening from that data, it would make sense for us to know... all of us. You know, I think it's kind of silly, for Sustainable Seattle to get grant money to do a project that nothing comes out of. (Bloomfield 2008, emphasis mine)

This neighborhood advocate, Vicky Bloomfield, from Hillman City was clearly frustrated by the lack of any report from Sustainable Seattle regarding the outcomes of the street-level surveys in her neighborhood. One of the neighborhood residents at the focus group, Christi Burns, also worked for the City of Seattle (referenced in the above quote). Bloomfield was eager to hear how this data was used by the City. Burns gave a series of shrugs, and was unable to voice how the data was taken up by the City, and further placed the responsibility back on community organizations – that they are ultimately responsible for providing the City with direction and prioritization of improvements.

For many of these neighborhood advocates there was a need to fill the communication gap between neighborhood organizations and city government, and they originally felt that Sustainable Seattle was going to help fill that void. However, the problem of tracking the data was certainly related to another problem Sustainable Seattle was having with connecting the concerns of the community organizations up with the responsible city agency. And this struggle forced the organization to change its discourse of connectivity during the four-year program. At the beginning of the survey program (2003 to 2004), community groups were motivated by the prospect that ComNET would directly link into the city government and provide a platform from which community organizations could directly affect improvement on their streets. My

observations, as a participant at these surveys, noted a shift in the discourse of Sustainable Seattle's pitch to community groups – that ComNET would not directly affect change from the city government, but would instead stage a *conversation* whereby community groups *partner* with city government to create improvements in their neighborhoods.

The connectivity between the city and community groups was a source of stress for Sustainable Seattle staff members. Martha Pitzen, program manager for the SUNI program, discusses the problem of information flow:

*Yeah, with ComNET... I think it was really successful in cities, where they have a system that feeds the indicators right into the city's system... So that, for example, if you send a bunch of graffiti to the city, they'll give you a tracking number... And so you can actually go on and see what has happened with that graffiti, whether it's been painted out. Whether they sent a letter to the business to clean it up. What's happened? Whereas our city doesn't have any kind of system that tells you back, once you've sent... either made a phone call, or sent the data, through the web... through, uh... the email, or however you sent it. That's because, they don't just don't have the resources to do it either. I mean, there might be an individual taking all of this... you know, all the potholes, all the graffiti, all the litter complaints... All the various complaints of the city, and they're sending it out to all the different departments... All their different contacts, but that person, on the end of cleaning it up is not told... spends half their day logging in what they've done with that information. So there's no tracking device. And this is where performance measurement comes in... **It's like, well, if you don't know what's happened with that, then there's no accountability. Really. So nobody can be accountable for whether it's taken care of or not.** (Pitzen 2007, emphasis mine)*

Pitzen's frustrations re-iterate the concerns of some of the community residents who participated in the surveys. Accountability, Pitzen states, is lost in the information flow. Without the explicit connections between community resident concerns and the city (through a system like ComNET), the survey program loses its accountability and Sustainable Seattle's legitimacy comes into question.

This second problem of information flow – of the lack of connectivity between communities and city government – is grounded in the differently-situated context of ComNET in Seattle versus ComNET in NYC. As Pitzen points out above, in other cities like NYC, ComNET data could be directly linked into the city government system, demonstrating the ‘good’ flow that Olsen and The Fund perfected. As this study demonstrates, this ‘good’ flow is contextually dependent and cannot be exported to every municipality. Nelson, the executive director of Sustainable Seattle, underlines that lack of flow:

If the city itself had been able to identify for itself, how to handle citizen complaints, we would have linked directly with that system. But it didn't exist, so we had to kind of create our own outside call system for the city that was not necessarily institutionalized within the government. (Nelson 2008)

Furthermore, the City of Seattle lacked an internal, comprehensive tracking system, as Patrick Coffey at the City's Department of Planning and Development discusses:

The city does have a good set of tracking to understand its own, like how much of different things are being used, but each department has a different system for doing that, based on service areas. ... Each department is responsible for a very specific task and it often makes sense for them to group things on a different scale, and those things are never neighborhood-level scales, because that's not a city-level directive to measure things on a neighborhood scale, I guess. (Coffey 2008)

Coffey, who had participated in the ComNET street level surveys before working at the City of Seattle, sources many of the frustrations around information flow in the institutional information structures of the City itself. The City of Seattle was also working through its own issues of interoperability. Seattle's bureaucracy therefore required a different approach. Sustainable Seattle's shift in discourse toward community-based *conversations* and community-city *partnerships*, highlights a third

problem in information flow in the Seattle ComNET program.

Due to the lack of an established connectivity between community ComNET surveys and the city government, Sustainable Seattle worked to foster a goal-directed approach in community organizations that adopted the ComNET technology. A goal-directed approach meant that community organizations were not just collecting data about any and all concerns about the city streets, but they were channeling their energies to address specific concerns. In other words, their survey had a goal. Those community organizations that followed a goal-directed approach were considered ‘successful’; those who did not created problems in ‘information flow’. Those organizations marked as successful were likely those organizations that had paid staff at them to help move the results of the ComNET surveys forward.

Flora Muñoz, staff member at Sustainable Seattle who was responsible for contacting organizations and coordinating the surveys, describes the challenge of working with organizations:

And I think a lot of them had expectations that we were going to be the ones doing a lot of the work... and so... you know we tried to say “its our job to help you collect and analyze this or whatever you need to help you”. Like it’s just one piece... and I think the other piece of that [prioritization] was, for whatever reason, missing from a lot of those communities. ... It makes a difference between a community who has a ... paid staff and the resources, versus an organization where everyone’s a volunteer and they are also trying to do a lot of their other work. (Muñoz 2007)

Muñoz points to the International District Housing Alliance as an example organization that worked with the community to complete the ComNET surveys and then followed through with using the data derived from the surveys to apply for grants to work on the street conditions of the neighborhoods. These kinds of success stories were examples

of ‘good’ information flow – where the surveys were driven by broad-based goals for the neighborhood. These ‘goals’ mostly took the shape of grant applications, as community organizations felt that these studies bolstered applications for funding support. The data enabled a way for some organizations to strategically tackle the issues that mattered most to their active community volunteers.

The flows of information that make possible urban practices, from garbage maintenance to the policing of city streets, are flows that nongovernment organizations in this study have attempted to emulate. It is an imagination for an ideal urban governance -- whereby citizen concerns are tracked as discrete packets of data throughout a system of connected municipal agencies. This section has shown how ComNET fed this imagination, to create new forms of governance where the actions of the City were to be directed by the community organizations. However, regardless of this imagination, this process was far from seamless in Seattle. Sustainable Seattle’s efforts to bridge performance-measurement technologies with a mission founded on building sustainable communities through quality-of-life indicators, resisted this information flow. Regardless of this dissonance, the surveys and the information flow imaginaries that motivated them enacted a particular way of visioning the urban that brought to the foreground specific questions about knowledge-making practices and the kinds of living that they afford.

5.4 Producing datascares

By bringing data to bear on the concerns of neighborhood residents, the space of the

city street was reformulated into *datascares*. Conceptually, *datascares* are landscapes figured through data³⁰. These surveys and the coding practices they entail formulate the space of the database *as* the space of the street. *Datascares* are thus one way of examining data as it represents specific spaces, as a recognition that code work constitutes the space of everyday life, following Dodge and Kitchin (2005a). Dodge and Kitchin enroll the concept of *transduction* in the work of Mackenzie (2002) to describe the practices of coding through which space is iteratively formed. Here, I argue that data transduce space³¹; the spaces surveyed are iteratively created through every record that is coded into the handheld computer. I discuss the implications for such transduction, to ask: what happens with questions of living, and of the qualifying of living?

By way of illustrating, consider the following discussion with the SUNI program manager, Martha Pitzen. Pitzen describes the connection between indicators, data, the built environment, and crime:

*...they knew there was crime happening in front of... (This is like bringing neighborhood scale indicators, but using GIS to do it.) So there was abandoned buildings, and there was crime, and... They basically overlaid the crime and the properties, and they found that there were... they knew that crime was happening in [and] around those buildings... **But when they combined the police data, with the fact that they were abandoned buildings, they proved it.** And they showed the maps to the community, and it brought people together to **see visually what they already knew**, and people started to want to talk to the property owners, and eventually bought those buildings, and*

³⁰ By enrolling the concept of *datascares*, I draw upon research that emphasizes the performance of objects (Walenta 2008; Barnes 2002; Buck-Morss 1995).

³¹ According to Mackenzie (2002), the concept of transduction “tries to show how technologies are both difficult to access in terms of subjects and societies, yet indissociably folded through collectivities and cultures” (p. xi). He considers transduction a “middle domain” for inquiry; “technology is within us, whether we thought we were getting into *or* out of it” (p. xi, emphasis original).

*created community centers out of them. **So they revived their community based on the data and the maps.** So... This was really cool about the whole GIS thing, is that, you need that method... you need that... um... that technology to be able to do this work. You know, they're like... There's no other... because GIS has been available and it's cheap. And it's not all that technical to use, that it's created this whole field... neighborhood indicators. (Pitzen 2007)*

Here, the importance of the visual and its concrete expression in computerized data is apparent. Pitzen discusses how crime data was combined with survey data about abandoned buildings, to provide ‘proof’ that a relationship exists between crime and broken windows. The *visuality* of the map convinces community residents of “what they already know”, of possibly what they have already seen. Data works to transduct spaces of community revitalization, and constitutes the politics to justify them. This transduction occurs because the objects of the street become data in a city imagined as composed of information flows³². In what follows, I discuss how street objects become categorized, how the ‘suspicious activity’ category transducts space, and how this coding mattered to neighborhood residents.

5.4.1 Categories make space

The transduction of space by data, figured by the datascape, began before the surveys were started, in the development of the data categories themselves. The importance of categorical development cannot be understated, as Bowker and Star (1999) argue.

Categories re-make the world by constituting the ways in which that world is expressed, interpreted, and accessed. The classification system used by the ComNET program works to render the space of the urban street into a particular computational

³² For a representation of these datascares in table and map form, see Appendix C.

space.

The categories of the ComNET system were developed and refined throughout the SUNI program. Many of the original terms were drawn from the focus groups held in 1995 by The Fund. And as was discussed in the previous section, these terminological developments emerged out of clean-up-the-streets movements in NYC as applications of Broken Windows theory. The categorical system was not only a way of constituting a computational space of the urban street. It was also a way of visioning the street. Residents, participating in the street survey, would describe the street through the classifications of the ComNET system. For instance, upon seeing a graffiti tag on a signpost at a street intersection, the resident would enter into their handheld device the *feature* (the object of their gaze): a ‘signpost’. Then they would enter the *condition* of the feature: ‘graffiti’.

The visioning of the street was abstracted in at least two dimensions. First, the technology itself internalizes the act of seeing an object out-of-place, and enables a forgetting of the visual event, through storage in computer memory. Second, the act of surveying a street for objects abstracts any discussion about the bodies on and the social conditions of the street. Discussions about deteriorating social conditions and related social pariah are tabled permanently, through actual data tables that are uploaded to the organization’s server and readied for processing. Data transduces the space of the street, by making reformulating those lives lived on the street as objects.

When this terminological apparatus was introduced into the context of the

SUNI program in 2003, certain changes took place, including in 2005 the addition of the ‘assets’ category. Figure 5.1 displays the categorical system of features and conditions, as used by Sustainable Seattle in their 2004 surveys of the International District. This one-page handout was given to resident-surveyors, as a lexical mapping of the ComNET data model. With each neighborhood that was surveyed, during the first year, Sustainable Seattle would allow the community organization leaders to tailor this data model to fit their particular concerns. For instance, neighborhood partners in the International District were concerned about what became called ‘suspicious activity’ (see Figure 5.1), which was triggered by certain objects on the street (Caruthers 2008). These objects included things like abandoned shopping carts, alcoholic beverage containers, and needles. Each of these objects function as abstractions, in two dimensions, to abstract any discussion of the actual bodies of the streets and to enable a forgetting of the visual event through storage in computer memory. It is clear from my participant observations of these surveys, particularly in the question-and-answer period associated with the data model, that abandoned shopping carts *indicate* homelessness, alcoholic beverage containers *indicate* public drunkenness, and needles *indicate* public drug use. However, homelessness, public drunkenness, and public drug use could not be discussed during the training of these surveyors.

categorization of objects enabled neighborhood residents to code and mark activities without the visual presence of the activity – perhaps these were activities from memory, hardened with ‘evidence’ and resolved through tabulation. These are the practices of building quality-of-life indicators, and these practices ‘see’ the urban in ways that draw participants away from the social and bodily aspects of ‘urban decay’ and instead isolate and objectify the urban experience as discrete sets of data – a transduction of space by data.

In these street-level surveying practices, urban space was remade through the categorical lens developed by The Fund in NYC, drawn out of indicator for quality-of-life and broken-windows discourses, and the permutations of these categories as they were enrolled in Seattle. This is a form of transduction of space by data, where space is reconstituted through iterative practices. The resident-surveyor on the street (re)enacts this categorical coding built into the handheld computing device, by recording the objects of the street. These objects produce the street in computer memory. How this encoded street-space was to be used was a question that mattered for those participating in the surveys.

5.4.2 Categorizing life: *suspicious activity*

‘Suspicious activity’, the ‘feature’ identified in the ComNET data model as it was developed by Sustainable Seattle, included the following ‘conditions’: abandoned shopping carts, alcoholic beverage containers, condoms, drug paraphernalia, and urine or feces (see Figure 5.1). During my participant observation of these surveys, not a

single resident questioned the existence of the ‘suspicious activity’ category. When pressed about the presence of the category, there was disagreement about where it originated. Some at Sustainable Seattle believed it was a carry-over from The Fund, although a spokesperson at The Fund denies the phrase ‘suspicious activity’ originating in their databases. Clearly the data model underwent changes as it was adopted to the priorities of Sustainable Seattle neighborhood partners, many of which had to do with how to capture data relating to ‘public safety’, whether that was about issues of prostitution in North Beacon Hill (Roberts 2008) or with abandoned buildings and graffiti (Caruthers 2008).

Tonya Oriega, an intern at Sustainable Seattle and staff member at the International District Housing Alliance (IDHA), discussed with me what was meant by ‘suspicious activity’.

Oriega: An example of a suspicious activity, is um, if you see an abandoned shopping cart. So that’s one of the features... Was that one of the features? Or, that would be a condition. Or like beer cans, and let’s say, on a tree. We’ve had that happen before, where someone saw a beer can on a tree.

Matt: Why is the shopping cart, suspicious activity? Like, if I abandoned a Starbucks cup on the street. It wouldn’t be ‘suspicious’.

Oriega: That would be littering!

Matt: It’d be litter, right? But I guess like with the beer can, it’s suspicious because it’s assumed that people are drinking. But what about the shopping cart?

*Oriega: [timidly] Well... I’m not sure if this would be, like, the ‘right’ answer. I just don’t want to sound wrong. But, I think it’s probably because you’ll see some people, **some of the homeless put their stuff in carts**. I’m not sure if that’s right or not. (2007, emphasis mine)*

The presence of this category became an uneasy topic of discussion. Oriega carefully

answers my question, in much the same way that residents responded during the survey training. It was as if everyone knew what that category signified, even if they were unable to comfortably discuss the implications for that kind of measurement. This form of abstraction works in the transduction of space by data to dissolve any discussion of what this category signified.

As to the origins of this category, staff members at Sustainable Seattle held that it was a relic of the NYC ComNET effort. That it could mean *anything* and thereby signify *anything* further displaces (through abstraction) the real social implications of that kind of accounting practice. Its presence in the data model affected a response that furthers the transductive work of this data collection practice. Muñoz describes the ‘suspicious activity’ category:

*I don't think anyone ever made a motion to remove it... And that was something I think was generated out of New York, and um... and so I have no idea why it was kept on there... I don't think it ever got... or I think if it did, people were like, "oh, let's track that cause there's an abandoned shopping cart", you know, **for just like the novelty of it versus because it really means anything...** (Muñoz 2007, emphasis mine)*

Here, Muñoz explains to me that ‘suspicious activity’ could really mean “anything”, and it is that open-ended signification that causes survey participants to treat the collection of these objects as a game. The novelty of the survey activity is further underlined by the way the survey process was treated in the International District as an after-school activity for middle-school and high-school children. These children would file in, pick up their handhelds and, at least initially, admire the technology, using the stylus to take pictures of each other. After three years of surveying, however, the

surveys became more of a chore. In order to maintain involvement and dedication to the task, the leaders of the after-school activity used competition to get the children excited to conduct street surveys in their neighborhood. The groups would race to record the most number of ‘feature-conditions’ in the least amount of time.

Olson at The Fund denies that the category ‘suspicious activity’ was a NYC category. Instead, she traces this kind of category to the initial focus groups hosted by the organization in 1995, where there was concerns about ‘persons in need’. Indeed, in the original feature-conditions data model used in the 2003 pilot survey of Capitol Hill, a quite different category captured this condition. It was called ‘persons in need’. This ‘feature’ contained the following ‘conditions’ stored in the handheld: homelessness, panhandling, and other. While these ‘conditions’ did originate with The Fund, it appears that ‘suspicious activity’ replaced ‘persons in need’, and conditions like ‘abandoned shopping carts’ replaced ‘homelessness’ as the survey developed in Seattle.

This re-coding was believed by Olson to increase the objectivity of the survey practice, to avoid speaking about *specific bodies*. During the focus groups held in NYC, residents said that if they had seen broken glass in the street, they would have assumed that a car window had been broken. While this was indeed a question of public safety, those at The Fund felt that the appearance of broken glass was “too subjective”, according to Olson. Other things of the street were better indicators of ‘suspicious activity’ and specifically homelessness, like abandoned shopping carts,

condoms, alcoholic beverages, drug paraphernalia, “to measure what is seen” (Olson 2008).

5.4.3 Data ‘matters’

Hard data, where it may or may not be as important to the community members, is extremely important to policy makers and funders, who would then give resources towards the particular issues that came up. (Weng 2008)

That data matters to those participating in the street-level surveys was an understatement. For many of the residents I spoke with, including Sandy Weng at the Department of Neighborhoods, the data was the actionable object – the crucial move in gaining the attention of the municipal government in the concerns of their neighborhood. However, there were certain matters to attend to in the collection and manipulation of the data as well. This section draws on my interviews and discussions with community residents to illustrate the concerns that emerge when quality-of-life indicators begin to qualify life.

Graffiti is figured prominently in the data model of the ComNET (see Figure 5.1). Both the feature-condition sheets from The Fund in NYC and those adopted by Sustainable Seattle included ‘graffiti’ as a condition of nearly every feature of the street. Graffiti could be observed and recorded as it was seen on lampposts, buildings, benches, garbage receptacles, street signs, and the sidewalk itself. Graffiti emerged as one of the top conditions reported in many neighborhoods. Timothy Cresswell (1996) has written on the phenomena of urban graffiti and how its occurrence marks a place-based politics in neighborhoods. In his research, the marking of graffiti works to

signify a series of norms for in place/out of place bodies.

The coding of graffiti tags effectively prioritized this activity within the neighborhoods -- a prioritization devoid of the context of the actual practice of counting. In a discussion with survey participants, fatigue over what the instance of graffiti indicates emerges:

Graves: I have a question about the data collection on the graffiti. I'm interested in knowing how exactly that was quantified and qualified, because I know it's a hot button for people emotionally, and as soon as I look at this I think 'here we go again', just everything's going to be graffiti-oriented, and I'm kind of worried about how that projects, and we have all of these [other] things. And so, I just want to get reminded on like, was it every tag on a signpole, that became an event, and now it makes it so that graffiti is this very large thing. And its not for me personally a large thing, but it is for a lot of people, and so I am just thinking, oh god, you know, how did we, how did that get to be—how is that qualified and quantified, ...?

Burns: If a tagger went up the street and tagged 15 things, is that 15 items and if one wall has 15 tags on it, is that 15 items?

Matt: Well for those of you that participated in the surveys, how do you remember that process going?

*Sunders: I remember a person on our group was so compulsive, and would count everything! And I was getting really tired, it was cold, rainy, and they kept **counting every little thing**, absolutely. And so it was very subjective about how compulsive the person was. It's a little hard to compare, because it wasn't like a general sense of how much graffiti there is, there was a counting of every little piece of it.*

*Graves: Yeah and I mean, data is always interesting in that way, and [I'm] just reiterating that my projected concern is that **that particular item is going to get a lot of attention**, and there are so many other street-level components that are, you know, [important], and you know, maybe, some graffiti rangers program could have developed out of this, beyond the one we already have, and we could get more money. So I'm just super worried about that deal...*

Burns: That there's more than graffiti. (group ruckus)

*Graves: And there are a lot of people who **would like to see all of our money go to that...** (2008, emphasis mine)*

This discussion between three women, from two different neighborhoods (Phinney

Ridge and Capitol Hill), highlights the importance of data in figuring the concerns of community residents, and transducing the space of the street. Lisa Graves initiates the discussion after looking at a printed table displaying the frequency of recorded feature-conditions. Graves, who resides in the Phinney Ridge/Greenwood neighborhood, has a son active in the skateboard community. For her, the panic surrounding graffiti has to do with a disposition toward youth (Graves 2008). In this discussion, Graves is careful to recognize the importance of this form of data in municipal decision-making. For her, it's a matter of clarifying the relative importance. Catherine Sanders, a long-time resident of the Capitol Hill neighborhood, points to the subjective nature of this kind of measurement, of “counting every little thing”.

Counting as a technology fixates on the occurrence, while displacing the conditions of that occurrence. Later in our discussion, Lisa Graves and John Griffin point to this displacement.

*Graves: One of my theories is that graffiti, and occurrence of graffiti, is directly proportional to youth habitat and whether there is youth habitat or not, and so somehow I want to be able to pull this graffiti thing out of you... **and use it as, as a tool to get youth habitat and provisions...***

*Griffin: ... So if you can't—if you don't articulate that kind of concept ... then the standard practice is this is a sign of disorder, this is a sign of a problem, as opposed to this is a habitat for teens. It's a different problem, **this [graffiti] is a symptom of a problem.** (2008, emphasis mine)*

Here, Lisa Graves and John Griffin discuss how graffiti indicates a need requiring a subtly different approach. Graves crafts an association between the lack of environments for youth activity, what she calls “youth habitat”, and the presence of graffiti. For her, the ‘problem’ of graffiti, as it gets counted during these street level

surveys, can only be resolved by looking at the needs of youth in that neighborhood. John Griffin helps to finish her thought, that things like graffiti must be treated, he says, as “a symptom of a problem”. For these two, the act of counting graffiti forecloses a discussion of the underlying, structural problems that cause graffiti to surface.

What the survey participants were responding to was a mapping of the aggregated survey results. These mappings and the practices of counting that they entailed foreclosed the possibility of other forms of explanation. This representation fixated on problems in the neighborhoods of these participants, without thinking more relationally about what Griffin described as the “symptom of a problem”. The process of mapping these fixations masked other maps. Other categories or modes of explanation became invisible. The powerful image of the map and the database query sutured the codings of the survey onto lived experience. For these participants, seeing the results of their survey practices demonstrated for them how this mapping enacted a one-dimensional accounting of their neighborhoods. Counting objectified the acts of graffiti.

The Fund’s development of the ComNET system drew upon a discourse of objectivity – of distancing the concerns of individuals from their ‘emotions’, to constitute geocoding practices that were quantitative. However, during the surveys held in Seattle, staff members at the local nonprofit discussed with me the issues of maintaining that discourse of objectivity. For Flora Muñoz, it was a question of

perception:

*Muñoz: You know from a research perspective, [the survey is] not very... you know, **there's a lot of room for error, or room for differences**, because... I mean, you've been on these before... And, you know a lot of it is like... if you have one person, who like... every single, tiny, little thing... they like to record, then than can definitely skew the data... or if you have... um, graffiti, or whatever... this big hole on the ground, or whatever the issue may be... like, **'eh... it's not that big of a deal'**. So, the fact that everyone does not have the same idea about... or the same, I guess, um... **just that it's subjective**, I guess... um... and there's **a lot of variability**, and that, I think, can lead to it not... [becoming] a good measure of how things are progressing... (Muñoz 2008, emphasis mine)*

Muñoz's slippage between “error” and “difference” highlights the problematic of objectivity for the SUNI community mapping program. For her, the subjective qualities of this form of data collection, what she describes as having “variability”, is in competition with this program’s ability to create successful measures. Recognizing this as a concern for the organization, and its abilities to create data flow between the neighborhood and the municipal government, Muñoz further describes to me how she and those at Sustainable Seattle framed this subjective quality of data.

*Muñoz: I mean, I think we tried, in our... like when we did the little training... but you can only [do] as much as possible. But, it's not easy to do, because there's such **huge differences between peoples' perceptions and ideas**. You know?*

Matt: Can you give an example of differences?

*Muñoz: Well, so, you know, I would go out with the different community people. And um... And like literally, there's just those people... You know, you come back from doing [the surveys]... 100s of things that they found, where it was like one little piece of trash, or whatever, and **like marking everything**. The other thing that adds to that is the routes. When you're getting towards the end, **people start to get tired** of [surveying], and like... you know, if it's a whole day... I mean, ideally, I think, like if the city would want to adopt something like this, then you would have one team that is trained, and that's always the same people, and um... and then that way, the results are at least constant, and the training is more involved, than the little one and a half hour long training... you know, something that was more... **normalized what people are collecting**. (Muñoz 2008, emphasis mine)*

Here, Muñoz describes how survey participants approached the act of surveying, highlighting how the differences between participants contributed to the subjective quality of the data. Participants who marked “everything” and those that felt certain problems were “not that big of a deal”, along with general fatigue as participants reached the end of their assigned routes, were non-normalized training subjects. Muñoz underlines the importance of training to develop normalized surveyors.

However, these surveys were situated differently by some participants. Recognizing the qualitative or subjective nature of this mapping practice, John Griffin, a participant from the Admiral neighborhood, discusses with other survey participants his expectations of the program.

*You know the way that I was trying to look at this, I was, I participated in a Saturday thing with Sustainable Seattle moons ago, and it was to, their big goal is kind of indicators of quality-of-life, at least that's a big chunk of what they do... So when I approached this project, I think my expectations were much more, much broader, and I wasn't, I wasn't thinking that... Because you had to understand that there was going to be **consistency issues**, and there was going to be **perception issues**, and there was going to be **lots of qualitative differences**, even the way things were described or whatever else, so I was approaching this that, relatively speaking, you would kind of come to understand kind of a watermark, **a high or low watermark kind of kind of quality-of-life in each neighborhood**, and through the process you would be able to understand what contributors were kind of pulling that mark down, and which other ones are pushing it up and I think it would be different for different neighborhoods, and different in a not only a qualitative way but also a quantitative way. So the consistency thing is a great point. (Griffin 2008, emphasis mine)*

While Griffin’s expectations of the survey program is in subtle contrast to Muñoz, the staff member at Sustainable Seattle who felt that these qualitative or subjective issues lessened the impact of the surveys, his comments point to the importance of this work as a quality-of-life indicator – to mark what is contributing to certain perceptions in the

quality-of-life of a given neighborhood. He continues, recognizing that these indicators would be implemented differently in different neighborhoods of Seattle.

*Griffin: I think my expectation—I didn't have the expectation coming into it that there was going to be this kind of ultimate, sort of, you know, equality between all the different neighborhoods. Because, you know, in Admiral, if you look at the data, if you at the way we dealt with our assets and our deficits, **the situation is pretty good there**. And I'm certain that anyone who deals with mountains of graffiti in Capital Hill and other areas would look at a place like Admiral and think 'oh, well, yea, this is close to...*

Graves: [interjecting] A neighborhood! [group ruckus]

*Griffin: Well, yea. This is as close to a little sort of a neighborhood that Seattle has. So our deficits, really sometimes, are like 'wow, ok I think I've entered enough assets for this block, I'm really going to need to focus on some deficits and kind of get into it. But, you know so there are things—**there are relative things in Admiral that would be necessary to kind of raise the quality-of-life**, but, you know, there's are obviously some stuff that overlaps, a number of conditions (that match across the tops) of neighborhoods including the fact that those are easy, those are the easy ones and some of these features and conditions were, (kind of) of a bigger nature, and some of them were very specific, the ones like graffiti, obviously you see it and write it down, and there are other places in the neighborhood that you would have to, sort of, engender this feeling that you got in this particular area, its like 'well I'm in front of a park and it feels nice.' And I was, and we could talk the next two hours about the specifics on the quantitative results; my expectation, like I said, was coming in and understanding this sort of general quality-of-life thing and figuring out what contributes to the little stuff in general stuff. (2008, emphasis mine)*

For Griffin, this sort of evaluative measure was always contextualized by the key points of difference between the neighborhoods of the city. Different neighborhoods -- here he cites Capitol Hill and Admiral -- will ultimately have different priorities and different criteria for what constitutes a 'deficit' or 'asset'. This tool, for him, is a way to make visible these priorities and relative criteria. As he discusses, the utility of the ComNET system is in the realm of qualitative inquiry – of assessment of the urban – albeit an assessment confronted with issues of consistency and perception (issues that Muñoz at Sustainable Seattle had identified to me).

5.5 Discussion

But, it would make sense if [the surveys included] people from within that community, so just... Just cause they have ownership of it, and on top of that, they know their neighborhood, they know what the expectations are, and what um... you know, what they feel comfortable with, and what they don't... so in terms of when you collect sidewalk cracks or graffiti or things that are a little bit more subjective... (Muñoz 2007)

Indicators for quality-of-life hinge on the issue of qualitiveness, or things that are “more subjective” as Muñoz discusses in the above quote. That residents code “what they feel comfortable with” marks a tension in this kind of indicator work, and directly confronts The Fund’s imagination of ‘good’ information flow -- which is steeped in language of objectivity and neutrality. This is consistent with indicator development since the 1970s, which has sought to isolate issues of subjective-ness from social indicators. The effort to sweep the subjective (read ‘emotional’) from indicator work is demonstrated by The Fund’s work to hold government accountable through performance measurement and, earlier, in the clean-up-the-streets movements of the 1980s and 1990s. This chapter has argued that the energies focused upon the collection of data about quality-of-life have, as a result, displaced the bodies figured by this data -- namely, those bodies of the homeless and the youth. The objects belonging to these bodies become the concern of urban revitalization: the shopping cart and the graffiti tag.

As concerns about the quality-of-life of city streets are distilled into data, these practices motivate an imagination of the urban as composed of information flows. This understanding of the urban leads residents and nongovernmental organizations to think their concerns in terms of discrete data objects, which can, given their computation,

affect change on the street. This section further discusses the implications for this way of standardizing and visioning the urban.

5.5.1 Standardizations and flow

Through the standardizations of resident observations of the street, The Fund sought to create indicators that were not susceptible to deficiencies in reliability and validity.

This standardization was to contribute to the ease of flow of information. The visual cue that originally excited Olson at The Fund had to be formalized as part of this process of standardization. The formalization of the visual cue meant that objects on the street that prompted residents to phenomena like violence, property damage, loitering, drug and alcohol abuse, and homelessness needed to be encoded in a language of abstraction. As a result, the language of the ComNET system is saturated with the benefit/cost logics of livability metrics. The marking of street objects as ‘deficits’ and ‘assets’ is the most obvious example of the economic rationality that permeated the ComNET system in Seattle. Economic rationality entails the mobilization of the logic of benefits and costs in the assessment of social environments (see Elkin 1985). This form of rationality focuses on the particular outcomes or ends that are to be met, and attempts to meet those outcomes or ends in the most efficient way possible. According to Olson (2008) and Cohn-Berman (2005), these observations were to be objectified in order to avoid the biases and the “emotions” that pervaded neighborhood revitalization work. Furthermore, this objectification, through the taking up of government language, enabled, they believed, an easier transfer of information

from community residents to municipal agencies.

Indicators allow the construction of associations between social phenomena. Because data sets are treated in isolation (namely, the separation of street objects from their broader contexts), linkages can be made between homelessness and crime, graffiti and youth hangouts, abandoned buildings and loitering. However, what is interesting about this street-survey program is the way in which these associations were carefully avoided during the training of the resident surveyors. My participant observation notes resident and staff member uneasiness around coding objects as indicative of ‘suspicious activity’. This data-based perspective enables the solidification of these associations. In the case of graffiti and youth, this association troubled community residents when I presented the aggregation of the survey data to them in map form.

5.5.2 Data and visioning

The visioning of the urban street and its capture in the form of data highlights the importance of studying mapping practices as they confront community quality-of-life concerns. When the ‘quality life’ becomes encoded into databases, mediated by indicators, the possibility for discussion of the implications for this kind of urban imagination becomes tabled. The ComNET data model demonstrates this tabling; in its effort to create an efficient process for turning community concerns into objectified data, ComNET constitutes the fields that communities can be concerned about and then molds their diverse concerns to fit that model.

The focus group I conducted highlighted the ways in which experiences

become data, data become graphed, and graphs no longer directly reflect lived experiences. My participants believed that the protocol for collecting the data influenced this over-prioritization of graffiti as a condition of their neighborhoods (Burns 2008; Graves 2008; Griffin 2008). For example, the pre-determined categories of features and conditions directed neighborhood residents to code things in particular ways. The question of what constitutes data collecting events, drew out the ways in which concentrating on data transduced space. Residents began to ask, “Did every graffiti tag on the lamp-post get counted?” When space is reformulated by data in the form of pie charts and graduated symbols, counting matters.

The slipperiness of this transduction needs underlined. While objectified data are indeed important for gaining access to municipal government resources, data (even locational data) under-represents the situatedness of community concerns³³. And at its worst, these geocoding practices depoliticize those lives lived on the streets that can only be coded as ‘deficits’. These bodies are treated as broken windows to be fixed, where the first step is not to recognize the situatedness of their condition, but is to code the objects of their life as suspicious and potentially criminal.

³³ Along these lines, it is important to recognize that the absence of data is not a better solution, and not one that I am advocating. Instead, I *problematize* the objectification of street life, and its composition as data.

5.6 Conclusions

Uptown resident 1: A shopping cart would go under, well, suspicious activity.

Uptown resident 2: If it's stolen?

Muñoz: If it's full of stuff. (2007)

This chapter has addressed questions of how data about quality-of-life is assembled into indicators and then data, how these data constitute a field of objectivity around the mattering of Fact, and how this program further enables quality-of-life indicators to qualify life. I have suggested that the practices of urban revitalization politics involve the acts of 'seeing', surveying, coding, and classifying, and that these acts are inseparable from their resident-surveyor-handheld-computer assemblage. This chapter witnesses this assemblage, by situating it within Broken Windows theory, quality-of-life indicator development, The Fund's development of ComNET, Sustainable Seattle's experiences in regional indicator work, and the handheld devices themselves.

Underlying the concerns of urban environmental livability, of subjective indicator development, and of the connectivity among urban elements is the question of the quality life. Community quality-of-life mapping practices work to qualify life. I enroll *transduction* to conceptualize these practices as those that reformulate space -- by producing *datascares* that normalize the city street. To mark certain objects of the street as 'suspicious' and as 'deficits' enables the exclusion of certain bodies, namely

the homeless and the deviant³⁴. This marking effectively dissolves discussion about this exclusion. Observations of the street, which cue residents to urban disorder and decay, are formalized into a database. This formalization abstracts any discussion of the affected bodies on the street into a discussion of indicators: features, conditions, deficits, and assets. This categorical system becomes the lens through which the urban street is viewed.

I have employed the quality-of-life indicator as a pivot object in this chapter – to discuss its importance in broken windows policing, in ascertaining the ‘health’ of the urban, in the measurement of government performance, and in the agenda of regional sustainability. By exploring the ways in which quality-of-life indicators motivate urban neighborhood revitalization programs, I have demonstrated the importance that data serves in these practices. Furthermore, I have opened up these data practices to inspection, to argue, following work in software studies (c.f. Chun 2004; Kittler 1995), that databases and data models are far from politically neutral objects. Rather, they encode fundamentally political questions about who (what bodies) are considered normal on the urban street and whose bodies are deemed ‘deficits’ to the collective urban imagination.

This research has emphasized the role of the technological in the determination of the quality-of-life of Seattle neighborhoods. This work has demonstrated the importance of *data-based imaginings* in neighborhood revitalization projects and has

³⁴ Notably, I have spent the bulk of this dissertation in discussion of the coding of deficits of the city street, as these coding practices dominated my observations. However, a critical study in the inventorying of community ‘assets’ is ripe for analysis.

suggested that these imaginings constitute the elements of the urban street in specified ways that mask the broader, structural shifts in neighborhood service provision (lack of services for the homeless and the lack of youth facilities). Data are powerful objects that result from messy knowledge-making endeavors. Remaining attentive to their cyborg geographies is the initial step in imagining how data-based action can be made more responsible to the focal points of their creation. The following chapter explores the training protocol for this street survey program, in order to further discuss the importance of visibility in the data-based perspective. Observing and recording are indeed politically motivated.

Chapter 6. **‘Training the eye’:** **formation of the geocoding subject**

6.1 Introduction

Communities have to learn the language of government.
(Ruth Olson, The Fund for the City of New York, 2008)

Language is action. As such it is both material and discursive, and it provides one mechanism through which we can come to understand its effects, as the expression of power-knowledge (Foucault 1977). Training is a particularly explicit way in which language is learned. Governmental language is a specific form of language as practiced. In the above quote, Ruth Olson recognizes the importance of the language of government in advancing neighborhood agendas, whether that be to crack down on litter and graffiti, or to target and halt the presence of homelessness and the drug trade on city streets. She recognizes the need for tools which will help community groups to “learn the language of government”. The use of the ComNET system, as discussed in the previous chapters, required the training of residents to use a systematized approach to spatial language: geocoding. Their training constitutes what I call ‘geocoding subjects’.

In the previous chapter, I discussed how the practice of surveying constituted specific understandings of the ‘quality life’ and described the ways in which these understandings were manifest in the technology itself. In this chapter, I address the training procedure, ‘Training the Eye’, used to constitute these geocoding subjects, in an inquiry that bears on the broader question of geographic or cartographic training. I

argue that these practices of geocoding, of assessing place in space, are intensely bodily, both in their messy enactment of digitally-extended vision and in their data-based imaginings of bodies at the margins. I situate this argument in the critical cartography literature, to further extend discussions emphasizing the *practices* of mapping.

Therefore, this chapter shall consider: how are these geocoding practices and the training protocol embodied and how does this technological embodiment enable constructions of difference, of bodies at the margins? I discuss the mapping body not as that which has reached or exceeded its limit, but as the body that maps the limit at which an *other* body can be recognized as embodied. In other words, I am interested in the moments of mapping when the concept of ‘the body’ enters in, and the other moments in mapping, when the body cannot be coded, as is marked. I address this in four sections. In the first section, *Becoming trained*, I discuss from my field notes one survey that I attended in the International District, where young surveyors demonstrate how this training protocol worked as a training of the body. In the second section, *Mapping bodies*, I draw back from these field notes to review how cartographic practice is embodied and produces subjects. In the third section, *Geocoding subjects*, I discuss this literature as it can be grounded in the actual survey practice -- in the data created and in the relationship between seeing and owning. In the fourth section, *Training the eye*, I more deeply explore the training protocol used by Sustainable Seattle and The Fund for the City of New York, to analyze the specific visioning

practice instilled and the ways in which certain bodies are made marginal.

6.2 *Becoming trained*

Trainings, at their successful completion, become transparent, so inherent to the subjects' actions that they become invisible. Were anyone to observe the mapping subjects at the International District Housing Alliance, in the fourth year of their survey program, they might not notice the subtlety of language and terminology (and discourse) that situates their focus and vision. Having witnessed the training of these youth at the IDHA in their first year of surveying, I was struck by the degree to which this survey program and the terminological apparatus had become naturalized.

Drawing on my field notes, I discuss one such training exercise.

I arrived a few moments early, as I had to travel to the International District from my home in the University District. I had been to the offices a number of times before, for previous Sustainable Seattle ComNET surveys, so I walked right into the IDHA office, which was near the WILD (Wilderness Inner-city Leadership Development) youth office. I knew I was in the right place, as there were youth already gathered. I recognized Ron Wu, who I had met at the East Ballard surveys. Ron was a paid intern with Sustainable Seattle, and once was a WILD youth.

Ron immediately recognized me, and invited me in. The WILD program manager called the attention of the youth and began with introductions. After introductions, each youth was handed a handheld device and camera, and a route clipboard, either marked as 'deficit' or 'asset'. The youth, having obviously done this

before, did not require further instruction or training. They immediately tested their handhelds and inspected their routes. One group, realizing they had quite a long route (Little Saigon), even exclaimed that they would still be done in the shortest amount of time. Others laughed, and the program manager announced, “This is not a race to finish, but a race to get the most data records.”

I joined a couple youth in a group surveying Maynard Avenue from Charles Street to Main Street. These surveyors had previously participated in four surveys; one of them had only been in WILD for six months. Surveys provided a needed after-school activity for the WILD organization, and the WILD supervisors believed the activity of using these handheld devices to survey their neighborhood streets provided the youth with valuable job skills. The two youth explained to me that they usually partner with the elders of the community when conducting these surveys.

Elders make us use the handhelds. They don't know how to use them. They just tell us what to type in. Plus, they don't speak English. (WILD youth 1)

These multi-generational partnerships require work, the youth explain to me, as the elders have particular and deep-seated concerns about the neighborhood, while the youth's understanding of the deficits of the neighborhood are more superficial and grounded in the terminologies of the handheld device. However, these youth recognize the importance of such surveying: “It's important. The government came in and cleaned the streets.” For them, the connection between what they do with these handhelds and their neighborhood environment is clear.

During the survey of Maynard Avenue, I asked the youth to discuss their

understanding of certain categories within the handheld device. When I asked about the feature ‘suspicious activity’, the youth discussed that this was primarily about the presence of drugs and alcohol use. Then one of the surveyors excitedly turned to me and said, “and shopping carts!” I acted puzzled, and yet there was no further explanation needed, apparently. The ‘shopping cart’ condition of the ‘suspicious activity’ feature was something already assumed for them. Their knowledge of the devices was apparent. They knew well the data categories, almost by memory, and read the street in the terms of these features (like sidewalks, signs, utility poles) and their conditions (such as graffiti, broken, damaged, litter).

Upon returning to the WILD office, my group was ridiculed for being slow to finish the survey. Other youth were seated around a table playing with the handhelds and cameras, taking pictures of themselves, while eating popcorn chicken and slurping bubble tea. For these youth, the training exercise that they had taken part in numerous times before had become secondhand. The terminologies of the ComNET system and the handheld device became an extension of their vision of the city street.

My interactions with these young surveyors pressed upon me, more than other survey teams I had accompanied, that these mappings are learned and practiced. These youth, many of whom had only been in the US for a couple years, were mapping and engaged in the production of new forms of urban governance. Their understanding of what government provides and what citizens are responsible for was refigured through their training and survey practices. And like the many residents who took part in these

surveys, their understanding of the condition of their city streets were actively tied/connected to their survey training.

6.3 Mapping bodies

A central aspect of the critical cartography and critical GIS literature is the recognition that maps are *made*, and that these *makings* are fundamentally important for reading the products created by these practices. Therefore maps have been analyzed both from the perspective of representation and the approach of nonrepresentation³⁵, a distinction I enroll, between emphasizing the map as a visual *product* (as both a sign and a symbol) and emphasizing the *practices* that permeate the map in its production and in its reading (or re-production). In this section, I review work in geography that emphasizes the latter, to discuss the bodies and subjects that engage in mapping practices, as a way to foreground *mapping bodies*, both as the bodies that are mapped and the bodies that map.

6.3.1 Embodied cartography

J.B. Harley wrote in his now classic essay *Deconstructing the Map*, that “it is better for us to begin from the premise that cartography is seldom what cartographers say it is” (1989: p. 1). In the context of the late 1980s, literature within geography on the topic of cartography looked objective and method-driven and Harley wanted to argue that histories of cartography need not appear so scientific. Instead, he writes, foreshadowing the emergence of critical cartography and critical GIS as scholarly

³⁵ Alternatively, more-than-representational approaches, as suggested by Lorimer (2005), might better describe this approach which focuses on the *practices* of representation.

pursuits, that continued work should “search for the social forces that have structured cartography and to locate the presence of power -- and its effects -- in all map knowledge” (1989: p. 2). Cartographic work, for Harley, is therefore imbued with external and internal forms of power (see also Chrisman 1987). However, while Harley draws a distinction between Derridian approaches to deconstruct the textuality of the map document and Foucaultian approaches to contextualize the social and political relations that intersect mapping, he does not further extend these analyses into the contemporary practice -- the *makings* -- of cartography³⁶.

Additionally, Harley’s agenda in the study of cartography does not explicate the bodies involved in map making. As feminist and queer geography has shown more recently in critical cartographic research, the practice of map-making is a bodily practice (Kwan 2002c, 2002a; Schuurman and Pratt 2002; McLafferty 2002, 2005; Brown and Knopp 2008). Therefore, recent work in critical cartography emphasizes the bodily and subjective formations that condition map making. For instance, Brown and Knopp (2008) discuss the epistemological collisions that occur when a project about queer oral histories becomes mapped. The constitutive politics of queer oral history -- as a politics of visibility through action -- collided with what the authors describe as:

³⁶ Although, Jeremy Crampton (2001: p. 241) has distilled an emphasis on ‘practice’ as part of the Harleian agenda from this essay. Crampton rightly argues that Harley does not offer a clear sense of how an emphasis on the external and internal power of maps might be endeavored. Nor, does Harley grasp the incommensurability of the notion of external versus internal power with the understanding of power that Foucault (1990 [1978]) forwards, namely, in *History of Sexuality*, vol. I.

life-like forms of positivism, realism, pragmatism, and Cartesian rationality that insinuated themselves into the algorithms, hardware, and ongoing interpretation of [their] map production (2008: p. 48).

What began as a routine geocoding of these historical sites easily slipped into metanarratives about spatial form, correlation, and causation. Furthermore, Brown and Knopp discuss the material ways that power operated in this map production process, that for all the effort to make this a distributed process of knowledge production, the authors' status as 'geographers' and 'GIS technicians' mediated this distributed process, as the authority or expert. How knowledge was mapped, regardless of the level of devolved authority to those orating these narratives, was under the purview of those wielding the instrument for carto-graphing.

The mapping of these queer narratives encountered 'the epistemology of the grid', as conceptualized by Dixon and Jones (1998). The grid epistemology permeates cartographic practice and specifically spatial analysis. Dixon and Jones continue,

*Though the use of the term 'grid' implies procedures for organizing observations and variables and a methodological heuristic for their rigorous, orderly, and systematic investigation, it should also be regarded more generally as **a way of knowing** that imposes itself upon and eventually becomes inseparable from these processes it helps to understand. The grid epistemology's powers of segmentation fashion borders and supervise interrelations among objects and events in space and time. (1998: p. 251, emphasis mine)*

As Dixon and Jones develop the concept of the grid epistemology as a specifically spatial epistemology, they emphasize its workings as a way of knowing that is inexplicably bound to the processes it seeks to understand. Brown and Knopp encounter this sort of grid epistemology (although they do not describe it as such) in their work to produce data and maps. The grid epistemology, therefore, should be

limited to spatial analysis, but should also describe cartographic practice more generally.

Furthermore, the *ontological presence* of mapping practices intersect these ways of knowing, as the literature in critical cartography has suggested (Brown and Knopp 2008; Del Casino Jr. and Hanna 2005; Kwan 2002c; McLafferty 2002). When the grid epistemology becomes embodied in the practice of mapping, can the map produced have a radical impact or produce spatial knowledges of difference³⁷? Sara McLafferty (2002) writes that the use of mapping technologies to connect women's "personal experiences about health and illness to a wider social and political agenda" was pivotal in the creation of new spatial knowledges. Likewise, Kwan (2002c, 2002a, 2002b, 2007) demonstrates in her research a decoupling of epistemology from method, as a response to critique that GIS evokes logical positivism. And her asking of the question, "Is GIS for women?" (2002c), is emblematic of a move within critical GIS to allow for the *openness* of the technology, to insist that it is not deterministic. Instead, it is a question of mapping technology use and the *being with* that the technology enables. Cartography's embodiment therefore reworks the reduction of mapping technology to *an* epistemology. However, the cartographic gaze is not so open, as the following section explores.

³⁷ Instead, I have advocated that hybrid epistemologies enact diffractive moments of knowledge production (see Chapter 2, Wilson forthcoming). The grid epistemology is antithetical to the hybrid epistemologies of cyborg geographies.

6.3.2 Eye and visuality

Before discussing the cartographic gaze, a further distinction needs made for the gaze of the cartographer -- as a bodily experience or perspective. The body is a mapping instrument. The 'eye' is the organizing organ of this instrument, directing a gaze and receiving signals to make the mental map that is either being read or being produced. This mode of visuality assembles the mapping subject as foremost a gazing subject. The cartographic impulse is to treat that which is visible as that which is mappable. However, this impulse extends, as Haraway (1991: p. 188-196) writes, into the view from nowhere -- the god trick. That which is visible is viewed from the mobile eye, at a distance, an extension of fleshly seeing. Here Haraway considers visualizing technologies as extending embodied vision:

...the eye of any ordinary primate like us can be endlessly enhanced by sonography systems, magnetic resonance imaging, artificial intelligence-linked graphic manipulation systems, scanning electron microscopes, computer-aided tomography scanners, colour enhancement techniques, satellite surveillance systems, home and office VDTs... Vision in this technological feast becomes unregulated gluttony; all perspective gives way to infinitely mobile vision, which no longer seems just mythically about the god-trick of seeing everything from nowhere, but to have put the myth into ordinary practice. (1991: p. 189)

To this list of vision technologies, I might add virtual reality systems, video gaming systems, handheld global positioning systems, and desktop geographic information systems. These visioning systems construct a transcendence of the body as that which achieves objectivity³⁸. These are *personal* visioning systems, where the functioning eye is prosthetically extended into further visual registers.

³⁸ Haraway (1991) calls feminists to reclaim vision (and, in doing so, objectivity) to insist on the necessarily embodied vision; "so, not so perversely, objectivity turns out to be about particular and specific embodiment, and definitely not about the false vision promising transcendence of all limits and responsibility" (p. 190). This is her claim to *situated knowledges*.

Hillis (1996) similarly argues, in his study of virtual reality systems, that transcendence through cyberspace enables discussion of a “virtual social organization”, in which the individualized, jacked-in user enters a collectivity of other individuals, surrendering their subjectivities for a singular “hive-mind planetary soul” (p. 94). Technologies of vision and visibility enable this sort of separation, between mind and body, objective and subjective. The eye of the virtual machine enables one to leave the body, to experience at a distance, to map other worlds (see also Herst 2002). However, posthumanist writers like Hayles (1999, 2005), Halberstam (with Livingstone 1995a; 2005), and Haraway (1991, 1997) continue to question and caution against this narrative of surrender, to insist on the embodiments of even the virtual eye.

While Haraway conceptualizes many *technologies* of cartographic pursuit as particularly masculine, the bodily gaze of the *cartographer* cannot be assumed to be masculine nor feminine. This is inline with Nash (1996: p. 156), who argues following Rose (1993) that “the power relations of pleasures in landscape and looking can only be addressed through specific images and contexts”³⁹. Therefore the gaze of the cartographer is potentially open. This is consistent with work by McLafferty (2002) who argues that mapping (specifically using GIS technologies) connected women’s “personal experiences of health and illness to a wider and social political agenda” (p. 266). Furthermore, the general field of critical GIS, as constituted by Schuurman (1999) and extended by writers such as Elwood, F. Harvey, Pavlovskaya, and

³⁹ Furthermore, Nash (1996) cites Susan Ford’s research, which posits a “transvestite gaze” as a movement between a distant, masculinist gaze and an intimate, feminist gaze. For Nash (1996) this also represents too fixed a notion of gendered visioning.

Sheppard, acts upon precisely this assumption: that the *practice* of mapping can intervene in the destructive and oppressive potentialities of the mapping technology⁴⁰.

However, the cartographer's gaze, as an instrument of the map, must not be conceptualized as something preeminent to the cartographic technology itself. Instead it is always already in relation with the technology and the context of its use. This, I suggest, is consistent with Wylie's (2006) re-reading of the gaze in studies of landscape. Wylie argues, in reading across the incommensurabilities of the depth of the visible in Merleau-Ponty and the immanence of the fold in Deleuze, that "the emergence of the gaze is, rather, the establishment of a relation both distant and intimate between observer and observed" (2006: p. 531). The gaze of the cartographer is not, phenomenologically, centralized to an embodied position within the world, where the world exists only through the 'naturalized' abilities of vision. It is also not, Cartesianly, from a position distanced from the pre-existent world, seen in three dimensions. Instead, the gaze of the cartographer is in relation with the immanence of the world, which is both distant and intimate. This gazing subject therefore includes the world just as the world includes the gazing subject (Wylie 2006). The gaze of the cartographer becomes cartographic in specific ways, that the next section shall consider. As Brown and Knopp (2008) correctly point out, the slippages that enable the gaze to become cartographic are embedded in particular mapping practices.

⁴⁰ Important to this assumption is that the possibilities of destruction and oppression are not inherent to the technology. This is considered a non-deterministic account of geographic information technologies.

6.3.3 Cartographic subjects

The literature on subjectification is expansive. Subjectivities, subject formations, subjectification, and subjectivation have been studied from feminist (see Butler 1993, 1997), cultural studies (Lave et al. 1992), and poststructuralist approaches (see McGushin 2005; Foucault 1990 [1978]), as well as permutations within science studies (Stone 1995; Hayles 1999, 2005; Gray 2000; Haraway 1992). The primary problematic is how to theorize the individual among the whole. Subjects are formed in relation to and in connection with other *things*, and, as such, theories of subjectivity typically invoke discursive regimes as that which constitutes *the subject*. However, subjects are also formed through practices, and in this section, I shall review the ways in which cartographic subjects have been conceptualized.

The gaze is central to the construction of the cartographic subject. Kathleen Kirby recognizes this gaze as the setting in which subjects are crafted, that the act of carto-graphing “institutes a particular kind of boundary between the subject and space, but is also itself a site of interface, mediating the relationship between space and the subject and constructing each in its own particularly ossified way” (1996: p. 47). Additionally, this construction is historicized by John Pickles. He writes, “To map was to think.” (2004: p. 77) Cartographic expression and reason permeates western forms of thought since the sixteenth century. Pickles suggests that three aspects of the cartographic gaze motivates western notions of vision, more specifically:

1. *the role of perspective,*
2. *the importance of projection and*
3. *the issue of the construction of accuracy (2004: p. 77)*

Here, then, is a distinction between the cartographic gaze and the cartographer's gaze. As the previous section emphasized the visibility of mapping practices -- as open within conceptualizations of the gaze and the gazed upon -- this section discusses the *technical* elements of the cartographic gaze.

The cartographic gaze, as Pickles defines it, is "the particular constellation of ways of seeing with its particular practices and institutions of mapping that emerged in the modern era" (2004: p. 80). Putting aside debates about the era of emergence that makes Pickles's argument a technical one, the concept of the cartographic gaze being an assemblage of practices and institutions is of import to this analysis. Mapping has been increasingly understood as a set of practices (Kitchin 2008; Kitchin and Dodge 2007). These practices include "locating, positioning, individuating, identifying and bounding" and are key to subject formation (Harvey 2001 [2000]: p. 221). The cartographic gaze organizes these practices in specific ways. The cartographic perspective makes space in three dimensions: x-y-z. Objects in space are definable in x-y-z space. This dimensionality is preeminent to space as it is understood cartographically. Projection enables the cartographic perspective to vision something from some-where-else. It is the placement of these sightings into the metanarrative: the world understood as a system of locations. Furthermore, the cartographic gaze projects the mind's eye from the grounded body, to project a vision from nowhere. Finally, accuracy is constructed such that the cartographic gaze is universally applied. The creation of spatial knowledge was thus a project in generating a map accuracy, that was

definable within the context of a scientific cartography.

Taken together, these three aspects of the cartographic gaze entailed the inscription of Cartesian spatial logics onto the surface of the Earth. Pickles (2004) and Rose-Redwood (2006) argue that this inscription marks the emergence of the ‘geocoded world’ in the 18th century. Rose-Redwood (2006) places this geocoding as the geographic precept of biopolitical governance -- in the constitution of the population analytic⁴¹. Geocoding invokes the cartographic gaze -- constituting subjects through perspective, projection, and accuracy.

The formation of mapping subjects is simultaneously the formation of mapping bodies. As Olsson (1991: p. 138) writes, “To form subjects is consequently to form bodies, especially to redraw the boundaries of the body.” For Olsson, this redrawing of the body happens through language, specifically through a language of distancing -- of the action that language creates in practices of identifying and naming. He continues,

*And thus it is that the tremulous body is a means of meaning. The eye and the index finger **become metaphors for grasping the distancing inherent in all subject formation.** Our only contact with the world is through the holes of our bodies. It is through them that individuals are penetrated by society and its accepted norms of thought-and-action. It is by such bodily means that you and I become obedient and predictable. But it is also through these same organs that you and I penetrate others and thereby the world. It is through them that we breathe and survive but also suffocate and decay. (Olsson 1991: p. 143, emphasis mine)*

As Olsson argues, if the boundaries of the body are redrawn through language and this redrawing constitutes a notion of society, then what happens to the body when that

⁴¹ Here, Rose-Redwood uses Foucault’s (1991, 2007) conceptualization of governmentality to further theorize the role of territory in the governing of a population.

language is cartographic -- when the 'text' of the map (that Harley identifies) figures bodies in spaces. How then might we imagine mapping bodies and body maps as a further intervention in the relationship between the body and the subject?

To address this question, consider the ways that critical cartography implies embodied practice and practices on bodies. Work within geography on the calculative motivations of carto-graphing, from a Foucauldian governmentality framework, emphasizes the ways in which bodies are figured within the calculative regimes of the state (Crampton and Elden 2006, 2007; Huxley 2006). These calculative regimes particularly invoke surveillance, where the constitutive actions of the state around populations and individuals are literal mappings -- or geocodings -- of fleshly lives (Graham 2005; Graham and Wood 2003; Rose-Redwood 2006). As Stephen Graham writes,

A new ontology of the body could be ushered in which uses software-sorting techniques to continuously police and stipulate notions of the purported value, fitness, riskiness, worth and legality of subjects, based on the continuous scanning of a whole suite of biometric signatures, as people move within and between city spaces. (2005: p. 574)

These software-sorting techniques of biopower have geopower as a prerequisite, as Rose-Redwood (2006) argues. The constitution of bodies to be governed thus takes a cartographic gaze to individualize and *locate* the target of government. Geopower organizes the spatial conditions which allow biopower's movement. Rose-Redwood (2006) analyzes this in terms of the creation of city directories in American cities in the late 18th and early 19th centuries. This cartographic gaze functioned to lay down a system to produce a space of enumeration. Likewise, Brown and Knopp (2006)

analyze more contemporary forms of governmentality in products like the *The Gay and Lesbian Atlas*, which produces the visibility/invisibility of queer space. Representation through these cartographic techniques enable these calculative and enumerative spaces. Furthermore, these techniques are not directly of the state. Both Rose Redwood (2006) and Brown and Knopp (2006) highlight the more-than-state actors that figure into governance. The cartographic gaze therefore slips through other modes of governance: state, non-state organization, and individual bodies⁴².

Since the opening of the field of cartography to intervention by critical GIS and critical cartography scholars -- as well as critical historians of cartography/GIS -- we can re-examine Harley's claim that "cartography is seldom what cartographers say it is" (1989: p. 1). This statement is too strong a critique presently, as there is certainly evidence in the literature reviewed here that *cartographers* are re-defining the field. Furthermore, these cartographers are not necessarily situated within the academy. The practices of cartography and GIS are increasingly distributed across university-government-nongovernmental organizations.

The cartographic subject is both constituted by the perspective, projection, and accuracy of the cartographic gaze -- which invests it with the conditions of a specific vision -- and by the bodily reconfiguration of worldly contact. Mapping practices invoke this subjectification as spatial knowledge is recorded, depicted, and expressed. And while research in critical cartography and critical GIS have documented the

⁴² See also, work by Stephen Graham and David Wood (2003) on emerging forms of surveillance in the increasingly digital city.

outcomes and *products* of cartographic practice, less research has discussed the moments of spatial knowledge acquisition -- the moments of capture within the mapping machine. These are the moments of cartographic subjectification. This section has reviewed the literature for ways in which the *mapping body* has been discussed: through the embodiment of carto-graphs, through the eye as an organ and figure of visibility, and through the formation of the cartographic subject.

6.4 Geocoding subjects

As was discussed in previous chapters, Sustainable Seattle's survey involved the use of handheld computers (Chapter 4) by community residents to code their neighborhood streets, to *map* quality-of-life concerns (Chapter 5). However, while these residents were taking part in the geocoding of these concerns, the production of the maps happened in partnership with the local Department of Geography at the University of Washington. Therefore, the mapping work that took place in the Seattle community surveying project was partly enabled through partnership with the University of Washington. The training of community residents to geocode their surroundings gets connected up with the academic discipline of Geography -- a training assemblage *par excellence*. This training assemblage therefore draws together the energies of community residents with their concerns for street conditions, the training protocol designed by a New York City foundation, the funding support of another NYC foundation emphasizing technological saturation in citizen-based government performance reporting, a Seattle nonprofit seeking to extend its mission in

‘actionable’ (fundable) directions, and a Seattle university curriculum in need of ‘real world’ examples to support the training of students of Geography.

This section shall argue that the training protocol developed by The Fund for the City of New York and customized by Sustainable Seattle produces a specific geocoding subject that takes as its objects, the neighborhood street and sidewalk. In the first sub-section, *Mapping apparatuses*, I situate this geocoding practice in the broader move to map and discuss the partnerships that condition this practice. In the second sub-section, *‘Seeing’ and data*, I discuss the ways in which the visual becomes inscribed into data during the process of geocoding. In the third sub-section, *Geocoding as ownership*, I relate a neoliberalizing discourse of ownership to the collection of data by community residents. Within these sub-sections I situate the training protocol that assembles these affects.

6.4.1 Mapping apparatuses

Sustainable Seattle did not create maps of their street-level data⁴³. Instead, through specific university-community partnerships, particularly with the Department of Geography at the University of Washington⁴⁴, Sustainable Seattle was able to provide mappings of their data. I point out this partnership as I believe it is indicative of broader patterns in university-community partnership. These partnerships with

⁴³ This is in distinction to the ComNET process in New York City, where The Fund took an active role in creating maps to represent the data collected by community residents, in order to report back to the community groups.

⁴⁴ During this four-year survey, Sustainable Seattle also partnered with Seattle Central Community College.

universities also occurred in Worcester, Massachusetts. Their ComNET program was teamed up with Holy Cross College, as part of their “service-learning” curriculum (Schaefer 2008). As Helga Leitner and Sarah Elwood have demonstrated, university-community partnership over the use of geographic information technologies can yield positive effects (Elwood and Leitner 1998, 2003; Leitner et al. 2000; Leitner et al. 2002), although not without consideration of what Barndt describes as “barriers to implementation” (1998, 2002). Universities increasingly have a mandate to provide students with ‘real world’ experience in the service of the local community. Even in the humanities, calls for public scholarship are gaining increased resources (Mitchell 2008). And from the perspective of community organizations, the increased access to geospatial technological enables new forms of knowledge production. However, to what ends? How do we critically interrogate these (our) implications?

While Wood (1992) notes the power that maps wield, other analyses document the map as form through which knowledge-power operates (Crampton 2001; Crampton and Elden 2007). From this perspective, maps -- especially maps that originate out of university-community partnership -- enable the flow of power in directions that are both enabling and disabling. This becomes clearer in discussion with Martha Pitzen, the program manager at Sustainable Seattle. These service-learning projects enabled a new way of thinking about the urban. One student group worked to map trends and presented specific overlays to community members:

And GIS can be really useful, because, in fact, last year... the 463 group mapped out the indicators for trend analysis, in just the International

*District... pedestrian safety, and public health, like, litter, graffiti, dirty indicators... And they mapped it. And then they talked to some people in the neighborhood, to find out well... Do you see anything profoundly interesting here... Locations of litter, graffiti, and um... those kinds of indicators. Virgil Dominion, from the public safety group, actually said, well, there are uh... there's crime here. **So there's a spike of litter and other elements of cleanliness, maybe whatever... and some safety concerns, because there's like drug dealing going on in that, like, that block area.** So, I thought that was interesting findings, actually. And that was from the maps, and we could see that." (Pitzen 2007)*

In her discussion of the possibilities created through a GIS service-learning project hosted with the Department of Geography at the University of Washington, Pitzen demonstrates the power of this mapping apparatus.

Through the Department of Geography's need for community organizations to provide GIS students with a *capstone* course experience, and through the organization's need for mappings of their neighborhood surveys, a specific system of meaning is enabled. This mapping apparatus therefore constitutes the visual language within which specific relationships between subjects and objects are made imaginable. As Pitzen notes above, the maps enabled them to see particular (constructed) relationships. The maps constituted the supposed relationship between crime and cleanliness, and the GIS enables certain juxtapositions that further this assumed causality. Granted this causality is logically specious, but the spectacle that is generated, nevertheless, holds. Data are, in this sense, visibility (see Figure 6.1 below).



Figure 6.1 Visibility, as featured by this slide from training materials developed by The Fund and used by Sustainable Seattle. Here, we see two concerned residents, one with a clipboard of the ComNET data model and the other with the ComNET handheld device, inspecting the 'abandoned shopping cart'. (Sustainable Seattle and The Fund for the City of New York 2004)

6.4.2 'Seeing' and data

A reoccurring theme throughout this study is the emphasis on the visuality of the streetscape, the visuality enabled through data. By surveying their neighborhood streets, residents were linking their perspective to data -- their vision was linked to code. This linking up became precisely what the organization, Sustainable Seattle, was seeking to establish -- that what residents saw and became concerned about on the streets could be turned into data that could inform municipal government. Figure 6.1, above, characterizes this linking up, in this photograph from training materials developed by The Fund. Jennifer Roberts, the first program manager of the survey project in Seattle, discusses the initial attraction to the ComNET technology:

I think neighborhood folks were really psyched about going out, tracking stuff on the street, with technology, and having data that they could sort of take to people in city government and say, 'hey, here are a bunch of things in our community that we want help with, or need fixed'. (Roberts 2008)

Roberts, here, reflects with me about the initial excitement of using handheld technologies with community residents to gather data to be used to address their concerns about their neighborhood. This was also clear in discussions with community residents. Tonya Oriega, an intern with Sustainable Seattle and an advocate for environmental justice in the International District, also shared this understanding.

*I think this is pretty much how the data goes. You know presenting what you've collected, **it helps the city to see** what's going on in the neighborhoods, things that are being collected." (Oriega 2007)*

The city was aided to 'see' the neighborhoods in this constructed (assumed legitimate) way. So there was a linking up of the visual tracking of the street to data, which was then linked up to the municipal government. The gaze of the concerned resident therefore linked 'seeing' with data.

However, as was discussed in the previous chapter, the vision of the concerned resident was through the data-model lens of the handheld device and of the ComNET program more broadly. Some residents I spoke with understood how this was affecting their data collection process. Lisa Graves, a resident surveyor from the Greenwood neighborhood, describes her worry with closed-ended surveys like the ComNET system:

*There's something about having categories of data that probably itself is **opening a door for input**, that may not have been out there, if they weren't looking for these things. (Graves 2008, emphasis mine)*

Graves, an advocate of urban youth habitats and the creation of skate parks and 'free'

walls, shares her concern with me about how frequently the coding of graffiti appeared on the maps and charts of the surveying. For her, the act of ‘seeing’ a marked traffic sign or a tagged park bench was predetermined by the data categories within the handheld. The handheld device and the data model it advances extend (and in this case focus) the vision of the concerned resident. Cyborgian vision (of linking ‘seeing’ with data) is a necessity of the geocoding subject.

Furthermore, the assemblage of the visioning geocoding subject took a particular form in the International District. Here, a division of the labor of ‘seeing’ emerged between the elders of the community and youth who were participating in the survey as an after-school activity. Weng, former director of the International District Housing Alliance youth program, describes this interfacing:

*The residents in the International District are limited English-speaking, 80-year-old folks, from communities historically that have often not even had running water and electricity, so for them to get engaged in the use of the ComNET PDAs was a little bit difficult. ... **But, I saw elders watching the kids, depending on the kids to actually use the devices, but being engaged in the use of the devices.** ... The elders were still taking charge and taking ownership of what data was being collected, but the youth were there supporting them, and the youth were learning what the perspective of the residents of the neighborhood really was. (Weng 2008, emphasis mine)*

The residents of the neighborhood felt unable to operate the handheld devices, which involved small print and the use of a stylus on a touch-sensitive screen. Instead, the youth, who were eager to operate these expensive, handheld devices, took direction from the elders. Cyborgian kinship in geocoding can be multi-generational and requires multi-skilled, visioning bodies.

6.4.3 Geocoding as ownership

I have previously suggested, following Dodge and Kitchin (2005a) and Rose-Redwood (2006), that the practice of geocoding constitutes space (see Chapter 5). This space is structured by the epistemology of the grid. As Dixon and Jones (1998: p. 253) reminds us, this epistemology of the grid works through categorization, “and categories are indeed necessary moments in all aspects of social life”⁴⁵. They continue to differentiate between necessity and naturalness, arguing that a category “appears as a ‘natural’ part of social life precisely through its necessity... There is nothing natural about how categories are constructed, deployed, and confronted.” (1998: p. 253) Indeed, there is nothing natural about how space is represented in the geocoding machine -- in the handheld device and the constructed vision of the concerned resident.

The geocoding subject is produced through these mapping practices – a collaborative effort of university, nonprofit, and community entities. They are asked to take stock of their neighborhood streets, to *own* and become *responsible* for what is around them. As Brenner and Theodore (2002) suggest, these interactions with the urban underscore the neoliberalization of cities more broadly, as the discourses of ownership and responsibility trickle through the projects of neighborhood assessment by quality-of-life indicators. Furthermore, the mere prospect of this kind of public-private partnership is in step with the devolution of state services more broadly. Janice Nelson, the then executive director of Sustainable Seattle, demonstrates how this

⁴⁵ Consider also work in GIScience that posits the utility of information abstractions in database modeling, where categorization is drawn out of language (Nyerges 1991).

neoliberalizing discourse enters into the discussion of resident training and the further of the organization's mission:

*The part about training citizens to walk their neighborhoods, to observe what's around them, **to kind of take ownership for what's around them**, for broken sidewalks, for streetlights, and what-not, became for us, at least for me, made it much more aligned with what we were trying to do, and made this program much more valuable to the organization. (Nelson 2008, emphasis mine)*

It is remarkable that these things of the urban built environment -- sidewalks and streetlights -- so quickly become the objects belonging to a responsible citizenry. For Nelson, the training of residents to see their concerns in the objects of the neighborhood street, is also a training of responsible citizens.

Geocoding subjects take ownership through their coding practices. Kathy Caruthers, program director at the International District Housing Alliance, also comments on the importance the activity of documenting and owning data:

*To us, it isn't just data collection, but that there is an action that can physically come out of that. And the action of **documenting itself, is such an empowering component of civic participation. It's these people owning their data.** So, I think that aspect is something that really appealed to us. And, obviously, that's also true for ComNET, right, it's the same idea. (Caruthers 2008, emphasis mine)*

And so, taken a step further, the taking of responsibility for the objects of the urban scene leads to ownership of one's concerns, manifested in the form of data. That communities own the data that they collected was very apparent from the neighborhood survey meetings I attended. However, the leap that communities would take ownership/responsibility for objects of their built environment was contested. Still the concept of ownership permeates this survey project. Sandy Weng, the director of the Department of Neighborhoods at the City of Seattle and previous partner with

Sustainable Seattle, expands this concept of ownership to include the broader community:

Ownership of communities is a very important thing in the success, the sustainable success, of the community, so it just makes sense that geographical tools would really be the best thing to use in reinforcing people's sense of place and sense of ownership of that place. (Weng 2008, emphasis mine)

This community mapping project surveyed public spaces: bus stops, sidewalks, and benches. Yet, the language of ownership motivates the discussion.

This section has discussed the ways in which geocoding subjects are constituted: through the mapping apparatus itself, as a series of partnerships between university, nonprofit, and community groups, through the linkages between the act of 'seeing' and its materialization in the form of data, and through the discourse of ownership and responsibility. This section has shown how the specific practices of geocoding a city street is embodied, enacts a cartographic vision steeped in the epistemology of the grid, and constitutes subjects of a larger neoliberal discourse of devolution and public-private partnership. In the next section, I discuss the training exercise itself and analyze the ways in which this subjectification is rooted in the training of resident surveyors.

6.5 'Training the eye'

They, um, learn the vocabularies, you know see something, when, let's say, and they see, um, an awning that's broken, they've learned. ... Like, when I do the ComNET [survey] now, I can look at something and, um, already sort of know what feature it would go under. (Oriega 2007, emphasis mine)

According to training materials designed by The Fund for the City of New York, the ComNET process "enables communities to serve as 'extra eyes' for government, by

introducing easily operated mobile devices with synchronized digital cameras to community organizations, so that troublesome street level conditions can be recorded and tabulated quickly, easily and accurately” (2008: p. 9). These “extra eyes” require training, and as Oriega discusses in the above quote, eventually these well-trained geocoding subjects are able to read their streetscapes using the vocabularies of the ComNET system. They “learn the vocabularies”, just as Olson at The Fund prescribed in the epigraph of this chapter’s introduction.

The previous sections have reviewed the literature for the ways in which cartography is both embodied and constitutive of subjects and have discussed the ways in which the geocoding of Seattle neighborhoods demonstrates this embodiment and subjectification. However, how are these subjects trained? What discourses permeating their actual training? In this final section, I review the training exercise titled, “How to look: training the eyes”.

The training protocol was iteratively developed over the course of the 4 years of surveying in Seattle. Specifically, the lists of ‘features-conditions’ were changed, to “normalize” the entry possibilities, in order to make these easier for community groups to record (Muñoz 2007), as well as create a systematic procedure for gathering data accurately and reliably (Greiner 2004). There were ten neighborhoods surveyed during the SUNI program. Each of the 25 surveys were facilitated by Sustainable Seattle, and included neighborhood residents, representatives from neighborhood organizations including chambers of commerce, and other volunteers and staff members from

Sustainable Seattle. The neighborhood surveys entailed teams of two or three people walking pre-defined routes through the neighborhood.

As was typical in these training exercises, a member of the Sustainable Seattle staff would use a PowerPoint presentation to describe the survey, overview the handheld technology used, detail the roles of the members in each survey team, and would actually train the members on “how to look” at the city street. Figure 6.2 displays a slide from this presentation used to describe the survey team. Each team member had a predefined role: a ‘recorder’ who was responsible for running the handheld device, an ‘observer’ who was responsible for directing the team to look in particular ways at particular ‘things’, and a ‘verifier’ who was responsible for checking that the way the recorder entered data into the handheld reflected the team’s interest. Each team would be assigned either an ‘asset’ route, mapping what was felt to be the ‘nice’ things about the neighborhood, or a ‘deficit’ route, mapping what the organization often described as ‘opportunities’ for improvement.



Figure 6.2. Team roles for the ComNET survey team, including observers, recorders, and verifiers. During the “Training the Eye” presentation, surveyors would review their roles on the survey team. (Sustainable Seattle and The Fund for the City of New York 2004)

The teams would use a handheld computer to enter features and the condition of that feature into the device, and assign it to a particular address or intersection.

‘Features’ and ‘conditions’ become the lexical categorizations of this technology⁴⁶.

Figure 6.3 displays an example of these feature-condition sheets, that the team member’s verifier would carry during the survey. Many of these ‘features’ include objects of the built environment: streetlights, signposts, benches, etc. Among these objects of the street, however, other ‘features’ stand out (enlarged in Figure 6.3):

Persons in Need, which is a feature marked by the conditions of visible ‘panhandling’, ‘persons sleeping in public’, and ‘public inebriation’; Suspicious Activity, which is a

⁴⁶ Chapter 5 discusses how these features and conditions sheets serve to qualify life.

feature marked by the conditions of ‘abandoned shopping cart’, ‘alcoholic beverage containers’, ‘condoms’, ‘drug paraphernalia’, and the presence of ‘urine or feces’; and, appearing on the reverse of this sheet, Vehicle, which is a feature marked by the conditions of ‘abandoned’, ‘appears to be lived in’, and ‘broken windows’.

Sustainable Seattle
Ecology • Economy • Community

Computerized Neighborhood Environment Tracking (ComNET™)
International District Features & Conditions List, Seattle, 2004-2005

Albs Dumping (Large Items) Litter Other	Bus Stop, Truck Cab Damaged Flare Stickers Posted Other Overflowing	Cracks/Chips Clogged/Ponding Crack Broken Litter Not Level with Roadway Other	Fencing, Other Damaged Graffiti Other	Public Art Damaged Dirty Educational Flare Stickers Posted Graffiti Needs Repair/Replacement Other	Sidewalks Barbed Damaged Cracks Dumping (Large Items) Hole Invasive Plants Litter Other Pavement Cracked Pavement Missing Under Construction Repairs Unseen Pavement Vegetation Obstructing Sidewalk	Sign, Fencing Damaged Graffiti Not Readable Obscured Other Sign Pole Fallen
Animal Dead Feces Other	Business Specialized Other Paperier	Historic Structure Architecturally Significant Allegiance Culturally Significant Ruined Deteriorated Other Wall Maintenance Under Restoration/Construction	Fire Station Damaged Graffiti Other	Public Toilet Damaged Graffiti Other	Sign, Streetname Damaged Graffiti Not Readable Obscured Other Sign Pole Fallen	
Barrier Other Tomb Decorative	Construction Construction Missing Lines Faded Litter Other Unseen Pavement	Knock Structure Deteriorated Other Used	Front Civically engaged/Activism Active/Healthy Other	Pavement Disturbed Broken Excessive Number of Stains Flare Stickers Posted Graffiti Impeding Walkway Other	Sign, Utility Litter Broken Missing Other Not Level with Sidewalk Under Construction Repairs	Sign, Traffic Damaged Graffiti Not Readable Obscured Other Sign Pole Fallen
Beach Damaged Graffiti Other Used	Curb Damaged Not Level with Sidewalk Other Paint Faded	Lot, Vacant Dumping (Large Items) Fence Broken Graffiti Invasive Plants Litter Other	Persons in Need Other Panhandling Persons Sleeping in Public Public Inebriation	Readers Bike Lanes Needed Litter Other Pothole Under Construction Repairs Unseen Pavement	Sign, Blue Damaged Graffiti Not Readable Obscured Other Sign Pole Fallen	Streetlight Bare Poles Missing Decorative Damaged Pole Exposed Wiring Flare Stickers Posted Graffiti Not Functioning Properly Other Poleing/Scraped Paint Banded
Building Architecturally Significant Significant Signage Flare Stickers Posted Graffiti Other Safety Hazard Vacancy-Commercial Vacancy-Residential Unoccupied	Curb Ramp Missing Not Aligned Other	Mallards Graffiti Other	Planting Strip Asphalt Concrete Should be Removed Other Grocery Invasive Plants Litter Not Level with Sidewalk Other Rusted Woods	Readers, Utility Broken Missing Not Level with Roadway Other Under Construction Repairs	Sign, Other Damaged Educational/Decorative Graffiti Not Readable Obscured Other Sign Pole Fallen	Suspicious Activity Abandoned Shopping Cart Alcoholic Beverage Containers Condoms Drug Paraphernalia Other Urine/Feces
Bus Stop, Bench Damaged Graffiti Other	Debris Not in Use Other Unseen Pavement	No Conditions Present Other Other	Vegetation Not Level with Sidewalk Other Rusted Woods	Readers, Other Broken Missing Not Level with Roadway Other Under Construction Repairs	Sign, Pole Damaged Graffiti Not Readable Obscured Other Sign Pole Fallen	Vehicle Abandoned Appears Lived In Broken Windows Other
Bus Stop, Shelter Flaking Flare Stickers Posted Graffiti Litter Other	Dumpster Clean/Proper Disposal Other Needs Repair/Replacement Other Overflowing	Other Other Other	Vegetation Not Level with Sidewalk Other Rusted Woods	Readers, Other Broken Missing Not Level with Roadway Other Under Construction Repairs	Sign, Pole Damaged Graffiti Not Readable Obscured Other Sign Pole Fallen	People Civically engaged/Activism Active/Healthy Other
						Persons in Need Other Panhandling Persons Sleeping in Public Public Inebriation

Figure 6.3. The “feature-conditions” sheet used during the surveying of Seattle neighborhoods, including four enlarged feature-condition examples. This functions as the data model for the ComNET system.

I point these out as they represent something quite different from the other feature-conditions. These categories in the ComNET data model are not specifically of the built environment. Streetlights, benches, sidewalks, curbs, alleys, etc., are all

physical features of the urban; all are *things* that fall into disrepair and require some governmental entity to either fix or replace. I argue that these three other feature-conditions indicate directly or indirectly the presence of certain bodies as features which require governmental intervention. As a further note, the feature-condition called 'People', displayed here, also marks bodies, but in a qualitatively different way. Here the 'conditions' of People are positively flagged in bold and italics – as 'civically engaged/activism' and 'active/healthy'. This *qualification* of certain bodies as 'assets' or 'deficits' underlines the analysis of this research: that objects become subjects in the digital coding of community.

During the training exercise, neighborhood residents would typically ask about particular feature-conditions, and gain clarification on particular instances that might cross several categories. However, during my participant observation of these sessions, not a single resident would inquire as to these *other* feature-conditions that clearly mark certain bodies of the street. Instead, focus was shifted to the handheld device -- itself a marvel for many of those residents in attendance. Figure 6.4 displays a photo from The Fund of one of these handheld devices in action.



Figure 6.4. The ComNET handheld device. (Sustainable Seattle and The Fund for the City of New York 2004)

In this image, we see the materiality of the geocoding subject, almost as if from their perspective. The object of the street, in this case a damaged fire hydrant, is being coded into the handheld device. The gaze assembles space and characterizes it through code: feature and then condition, followed by location. The geocoder has geocoded; the Sustainable Seattle staff member continues the training exercise.

After describing the terminology and the technology, the actual gaze of the surveyor is trained. The residents are told they will walk a particular route (pre-coded into the ComNET handheld devices), and that only certain aspects of the street are within the boundaries of accepted coding practices: namely, the sidewalk, the part of the street nearest the sidewalk, and the facades of buildings adjacent to the sidewalk. Figure 6.5 displays the presentation slide describing *where* the surveyors are to direct their gaze.

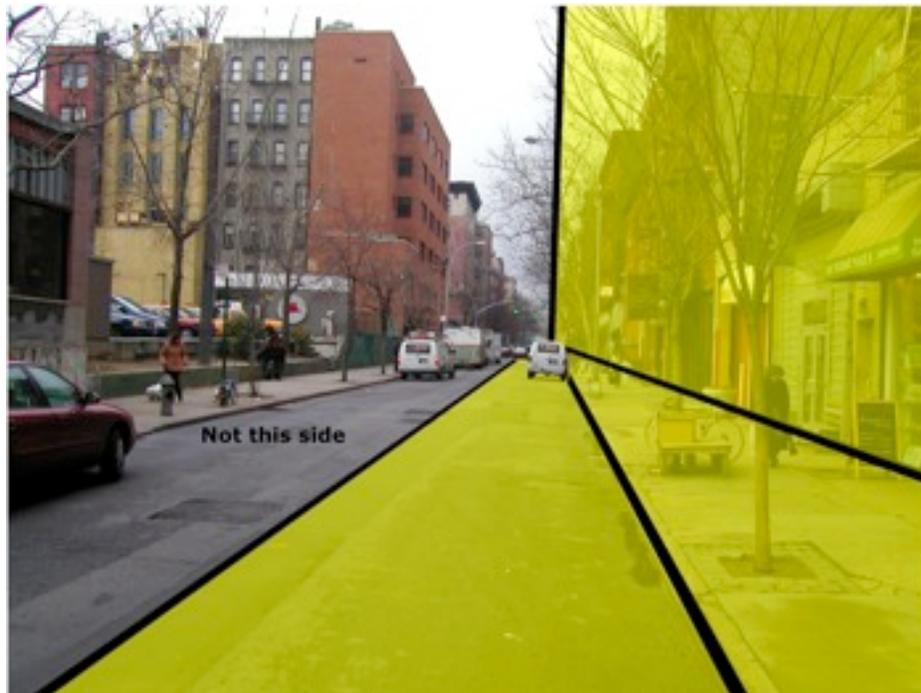


Figure 6.5. The spaces of the streetscape that are to be coded. Using this slide from the training presentation, Sustainable Seattle and The Fund sought to direct the surveyor's gaze to particular aspects of their walked survey route. (Sustainable Seattle and The Fund for the City of New York 2004)

At this point in the training, the residents have been exposed to the terminologies of the survey instrument and have been introduced to the handheld technology. The spaces of the street that are to be surveyed have been delineated.

Then, using a series of photographs, the resident surveyors are 'tested'. A photograph of a street scene is displayed, as in Figure 6.6, and the residents are asked to use their *new* vocabulary of features and conditions to describe what is 'wrong' in the scene. After spending some time on the scene, the staff member would advance the presentation to identify all the things that need coded, as well as the specific language that should be used to describe the object.



Figure 6.6. Four separate presentation slides in the 'Training the Eye' exercise. Here, residents would be asked to use their feature-conditions sheets to practice identifying things in the urban scene that need recorded in the handheld device.

It is at this juncture that the residents *become* surveyors, having absorbed the terminology of the handheld device, to be able to identify objects of the street using the language of government (just as Olson and The Fund had prescribed). Cyborgian geocoding subjects emerge from the training exercise, successfully programed to partner with their handheld devices. As cyborgs, these hybrid subjects are drawn (in)to the discourses of connected mobility and citizen empowerment. Their efforts to code their landscapes are both desirous and calculating. Their call to make a difference, to diffract, is multiply motivated, to both reclaim their neighborhood streets in the ownership that comes with data collection and to follow orders from their centralized data model.

These training exercises were susceptible to over-exposing surveyors to particular features or conditions in their surveying. One Sustainable Seattle staff member discusses this with me:

*The thing is too, though, you know, we had our examples of things, and I think because of those examples, that also um... affects what people have in mind for things to collect. So, for example, cracks in sidewalks, were almost always the top most collected thing. And that's because we went over... you know, we had a couple slides... like, because we had a couple slides, like tiny cracks don't record, big cracks do record... **and so everyone's out there looking... You know, and so there are things like that, that people collect, because they saw us have an example.** And honestly, even that one-sided list was a lot to take in, so people... Like I don't they really looked at it as closely, and so that would be also, so if you had a team that knew every single thing in there... and then they... so, they didn't just have to think about... cracks in the sidewalks, without looking at something that they see a lot, but they didn't look at it on the list, so they don't register it and then don't record it... (Muñoz 2007, emphasis mine)*

For Muñoz, the categories given visual examples in the training exercise often had more recorded items in the street survey. However, instead of being a question about the qualitiveness of this entire approach, she saw this as a question of the rigor of the method, that the method of surveying itself needed improvement, such that the impact of the training exercise on the collection of data could be controlled. In the words of Haraway, questions of data quality can “sustain paranoid fantasies” (1997: p. 102). Just as Sustainable Seattle and The Fund sought to standardize the vision and the language of the neighborhood resident, ‘for their own good’, the training protocol used could have the undesired effect of overdetermining the surveyors’ vision.

6.5.1. Messy enactment of digitally-extended vision

However, cyborgs are resistant to standardization. They are hybrid, both machinic and organic, “tricksters”, according to Haraway (1997). And so, while The Fund believed

that through “training the eye” the “emotional bias” that permeates neighborhood revitalization work could be scrubbed, cyborgs are resistant to that kind of automation. These geocoding subjects have a body, and as such they embody their cyborgian apparatus differently. The surveyors who participated in the ComNET program were of different ages, ethnicities, and socio-economic backgrounds. Their concerns about what constitutes a ‘quality life’ differed, although these differences were less reflected in the data model of the handheld devices. However, their subjectification meant that their bodies were to become altered -- their way of seeing and interacting with their neighbors and their government was to be challenged.

The ComNET program altered the way in which neighborhood bodies interact with the urban. The place-based narratives and grounded experiences of everyday urban living was funneled through the ComNET system. The categories served to abstract the differentiated, nuanced concerns on the streets into discrete points of data. However, this program was not only a simple abstraction through categorization. Something more complex was occurring. Discussions about the bodies of the street were transformed into non-discussions. Instead, bodily engagement with the urban was internalized through the categories and terminologies of the technology. The act of engaging the street and the neighbor becomes retooled through the handheld device and its technologies of assessment. This survey protocol relies upon bodily response, an action, a temporary halting of the urban voyage to enter a record, to observe and encode the affective register of place. As such, movement down the street becomes a

series of stops and starts, for moments of visual inspection and data entry.

Learning the vocabulary of the technology itself was also inscribed in bodily ways. Kathy Caruthers, program director of the International District Housing Alliance's youth program, describes how these terminologies required certain training:

*Because our youth are a limited English-speaking... the... um... oh my gosh, before they actually did the ComNET survey, I think we were training for four weeks on just vocabulary. So you know, **youth who had been in the country less than six months, could use the word 'bollard', but they couldn't use anything else.** They came out with a very strange vocabulary, I will say." (Caruthers 2008, emphasis mine)*

Here, Caruthers describes how the terminologies of the handheld device become part of the language of these young surveyors. The performative aspect of this survey practice, what Butler (1993) has described as power in its "reiterated acting", constitutes these geocoding bodies. This technology of assessment becomes implicated in their visioning of the urban scene. Even their gaze is cyborg.

This use of the citizen body is well inline with the objectives of local government. For some at the City of Seattle, this move to place these assessment technologies in the hands of residents worked to shift citizens away from complaint systems and into reporting systems. Sandy Weng, director at the Department of Neighborhoods, describes how this reporting system might work, drawing on her experience with the ComNET survey:

*You know if we had ComNET equipment at the neighborhood service centers, in each of the 13 districts around the city, **that community members could pick up, you know, every Friday morning, when they do their walk around the neighborhood...** They would just use ComNET data, and you could download it at the neighborhood service center into a city computer, so that the city could actually use the information and track the information geographically, as well as track it, just incident-based, you know, 'how many times do people call about litter issues, how many times do people call, or you*

*know, how many times do bollards get run into by trucks and cars, or how often do we have to replace a streetlight over here?’ ... It means that **if there’s a regular reporting, it’s not about being angry about something**. And the city has the information to be able to respond to it, that’s not based necessarily on a complaint. **Reports are just a much better way to do partnerships, than complaints.** (Weng 2008)*

This is not a utopian fiction, but an actual solution imagined by those at the Department of Neighborhoods. Community residents, according to this narrative, would ideally incorporate neighborhood assessment as part of their weekly routine, that while they were doing their walks around the neighborhood, they would also be generating data that would be uploaded into a central computer. For Weng, this is about citizens as regular reporters of *information*, as partners with the city. Their digitally-extended vision become part of the vision of the state, a cyborgian enhancement that is not without a looming sense of dystopia.

6.5.2 Data-based imaginings of bodies at the margins

People become objects. I began to discuss this in the previous chapter on how quality-of-life indicators begin to slip into concerns about the ‘quality life’. In this chapter I have discussed ways that the practice of geocoding, and specifically the training of geocoders, is a process of subjectification. And while this survey project largely brought little if no physical harm to anybody, it is precisely the ease with which these kinds of assessment projects code and classify urban space that I suggest should give geographers and GIScientists some pause. Ian Hacking describes this process:

We think of many kinds of people as objects of scientific inquiry. ... They are moving targets because our investigations interact with the targets themselves, and change them. And since they are changed, they are not quite the same kind of people as before. The target has moved. That is the looping effect.

Sometimes our sciences create kinds of people that in a certain sense did not exist before. That is making up people. (Hacking 2006: p. 2)

The coding of objects on the street, to create data about objects, constitutes “kinds of people” in the ways Hacking suggests. These people do exist, and while Hacking writes that this is “making up people”, I read ‘making up’ in the constructed sense. Kinds-of-people are made.

In the ComNET survey, kinds-of-people emerge as objects of inquiry. There are bodies that cannot be coded, nor discussed, but can only be hyper-referenced through the objects of their daily actions. These are the houseless body, the loitering body, and drunkard and the druggie. These bodies cannot be discussed during the geocoding process, as they introduce ‘emotion’ into the objective surveying practice. This is more about what cannot be said, the required silence within the surveying machine. While they cannot be coded into the ComNET system, these bodies are *marked*⁴⁷. Below is one awkward discussion I had with Flora Muñoz, a staff member at Sustainable Seattle, on the topic of the feature, ‘suspicious activity’, that was a predefined category in the handheld device:

Muñoz: “So, there was like, if you see drug paraphernalia, I think was on there... and then there was like the abandoned shopping cart, which never made any sense to me... honestly.”

Matt: “Why did they keep it?”

Muñoz: “[laughter] I have no idea! I don’t think anyone ever made a motion to remove it... And that was something I think was generated out of New York, and um... and so I have no idea why it was kept on there... I don’t think it ever

⁴⁷ Here, I draw on Judith Butler’s (2006 [1990]: p. 10-17) discussion of Irigaray’s and Beauvoir’s theories of gendered marking. The question for Butler is through what language does female become woman. In my study, bodies are marked through their unavailability to be coded. They are marked as other, as different from those bodies which can be coded.

got [marked]. Or I think if it did, people were like, 'oh, let's track that cause there's an abandoned shopping cart', you know, for just like the novelty of it versus because it really means anything." (Muñoz 2007)

Several moments intersect in this discussion excerpt. Firstly, the objects of the street themselves again allow Muñoz to avoid the messy discussion of *who* those objects represent. The relationship between 'suspicious activity' and the 'abandoned shopping cart' is cemented. Secondly, the displacement of responsibility for this category of concern to The Fund for the City of New York, which had a qualitatively different approach to this (see Chapter 5). Finally, I am struck by the remark (and my implicit engagement of it during the interview) that the coding of 'abandoned shopping cart' as 'suspicious activity' is read as a "novelty" in the game of geocoding. For Muñoz, that it is a novelty offsets that its coding holds any meaning. This conversation underlines the awkward silences around my discussions with community residents and other nonprofit staff members (in both NYC and in Seattle) about this kind of coding. These are the bodies that cannot be code (and yet are marked, through the objectification of their lives lived on the street).

This is in contrast to the bodies that can be coded, and are unmarked. These are bodies that are explicitly coded within the ComNET system: the shopping body, the body in or with stroller, and the diverse body. During the later half of the four-year survey, Sustainable Seattle became interested in counting the bodies on the streets -- mainly, those that were out walking and shopping. The organization's interest in counting *these* bodies of the streets is indicative of a particular limitation, around which bodies matter. These were called 'assets', and the communities were eagerly

interested in capturing data about these. Kathy Caruthers, representing the International District describes this to me:

For example, if a restaurant is doing really well, and there's lots of people in there, that's an incredible asset, but how do you capture that, do you just call that, you know, 'busy business'? (Caruthers 2008)

These objects, such as 'busy business', are those that communities generally want to support in their neighborhoods. To do so, they felt these niceties that contribute to their quality-of-life needed to be encoded into a system of geographic information such that these assets could be understandable in the halls of government. These bodies had to be captured in the form of data.

6.6 Conclusions

For, I both see and am seen; my body belongs to both the order of vision and the order of visibility. (Wylie 2006: p. 525)

*Further, I argue that in the present political climate, **not** being registered, **not** making it into certain databases, can have its own potentially quite profound negative consequences. Indeed, we may be witnessing the emergence of a new and very important social distinction between the normally visible and the 'underscrutinized.' (Hannah 2008: p. 302, emphasis his)*

The ways in which a neighborhood resident comes to interact with her government is refigured in these moments of mapping. One might ask, who is being mapped?, and who is doing the mapping? However, this chapter has been more interested in *how* these mappings occur. In the above quote, Wylie underlines the visual function of the body -- both to see and to be seen. This chapter has considered mapping foremost a visual practice, and therefore an embodied practice. To see and be seen is the dual function of the map. Along these lines, I have reviewed the critical cartography literature for the various senses in which the body is figured as part of this functioning.

I have drawn a distinction between the cartographic gaze and the gaze of the cartographer -- the former a grid epistemology of vision and the latter the instantiated visioning of a mapmaker, which is not necessarily reducible to the former.

Furthermore, I have reviewed the literature for how mapping practices form embodied subjects. By drawing this literature to speak on this study of the training of Seattle residents to map their neighborhoods, I have demonstrated the ways in which geocoding subjects are formed.

In this study of the training of geocoding subjects, *being seen* is significant. Not being seen and therefore not being coded -- what Hannah describes in the above quote as being 'underscrutinized' -- has its own consequences. I have discussed the explicit coding of certain bodies and the implicit, non-coding of other bodies in this four-year survey of ten neighborhoods in Seattle. In doing so, I have highlighted the importance of language in mapping practices, specifically as these practices constitute subjects. I have also documented the ways in which mapping logics become inscribed into bodily vision, focusing specifically on the training protocol used to train residents to code their neighborhoods.

The photograph in Figure 6.7 captures the making of urban space. The resident in the back of the room, scratches his head. To his left, another resident shifts to her side to better see the speaker, the trainer. In front of her, a resident leans forward to see the PowerPoint presentation; the lights in this conference room make it hard to see the survey routes and the diagram of the handheld computer. This is the training of

geocoding subjects. These are the moments that constitute urban space.



Figure 6.7. The training of geocoding subjects. (Sustainable Seattle and The Fund for the City of New York 2004)

More research should continue to look to these everyday moments of geocoding – particularly where the question of ‘quality life’ motivates its practice. As this code work becomes more mobile, interconnected, and ubiquitous, geographers will be responsible for tracing these new maps, made not by us, but through new mapping *practices*. Our analysis of these cartographies requires our attention to the various present absences, the spaces between the spaces, and those that are forced to inhabit them.

Chapter 7. Re-viewings

There is a relation yet a distinction between what I say, what I say something about, and what I say about what I say something about. This mutual dependence is especially clear in the intertwining of epistemology and ontology: my knowledge of the world and my delimitation of the world are intimately connected. (Olsson 1991: p. 205)

Cyborg geographies raise our consciousness of the kind of “mutual dependence” that Olsson discusses in the above quote. They map the relations that compose such dependencies, and insist upon the mapmaker’s implication in this relationality. The coding of community constitutes a cyborg geography, an assemblage of handheld computing technologies and the discourses that permeate them, specific nonprofit and foundation mission statements, quality-of-life indicator development, metrics of government performance, and the training of community residents to be surveyors. The previous chapters have drawn together these elements to write differently the mapping of the urban and the mapping of the body, while also challenging the narrative practices of GIScience. That is the role of the cyborg, as a figuration. These new mappings of connectivity and contingency are witnessed and situated, through material and discursive acquisitions, such that diffractions are possible.

This research set out to explore how technologies are imbricated in the emerging urban political imaginaries of a community mapping program. As a result, *Coding Community* articulates a different sort of urban political geography, a different understanding of the ‘city of bits’, as William Mitchell (1995b) puts it. Mitchell describes a virtual city, a city fashioned through the interconnecting networks of the

‘information super highway’. His city of bits is precisely a city that is made of software. *Coding Community*, alternatively, is a narration of real communities, material and physical streets, sidewalks, residents, and interactions. However, as a ‘city of bits’, these communities are simultaneously software -- encodings of particular urban imaginations. The coding of community is space and place, hardware and software, virtual and physical, discursive and material. The previous chapters have demonstrated the importance of the conjunction (and...and...and), following Deleuze and Guatarri (1987; see also Doel 1996). The intent is to add complexity to what might be glossed over as an otherwise everyday and banal activity (Amin and Thrift 2002). The point is to render these knowledge productions visible as such, to document how they produce spaces and subjectivities, to fashion openings such that the implications of these productions can be discussed, critiqued, and re-coded.

Not only does the coding of community necessitate a different understanding of the relationship between virtual cities and physical cities, but it also disembarks from reified notions of the cyborg -- as a mechanically enhanced organism (c.f. Halberstam and Livingston 1995b; Gray 1995). Instead, *Coding Community* extends the concept of the ‘cyborg citizen’ developed by William Mitchell (1995b) and Chris Hables Gray (2000), to insist on the ways in which the body is not only augmented by electronics but is actually produced through code. Indeed the geocoders in Figure 7.1 below are augmented with handheld technologies and global positioning systems attached to their shoulder. They are, technically speaking, cyborg. However, what *Coding Community*

has shown, is that these cyborgian ‘augmentations’ are also subjective. They involve the adoption of new languages of government, the priority given to ‘data’ as a measurement of performance and of quality-of-life, as well as the coding of marked bodies. In other words, these cyborgian prostheses are not just an addition of objects -- of machines to flesh -- but involve the reformulations of subjects and spaces. These are the practices of geocoding that become ‘cyborg’ as they encounter mapping bodies and mapped bodies.



Figure 7.1. The geocoding subject, with handheld device, and GPS receiver over the shoulder. (The Fund for the City of New York 2008: p. 30)

It is impossible, I further argue, to separate the practices that train residents to code their urban landscape from those practices that serve to continually code certain aspects of urban living as *being* livable or *having* a high quality-of-life. Furthermore, I suggest that these separate (and differentially scaled) practices are mediated through

mobile technologies. Reading chapters 5 and 6 with chapter 4 is key to mapping these imbricated practices. The technological and societal are necessarily contingent. The networks of power that give rise to handheld technologies are intimately connected to those that enable the classification and coding of the inter- and the intra-urban.

In this concluding chapter, I shall re-code, that is, re-view, the argument as traced through the preceding chapters. As such, this chapter does not work in lieu of the previous chapters, but syntactically the 're' in the title of this chapter indicates that this is an iterative working of the previous threads. It is important to draw together these previous chapters, both as a re-minder of the work of the conjunction and as a re-making of the argument. I also discuss limitations for this research, while forecasting what work has yet to be done. Throughout, I provide some closing scenes for Sustainable Seattle's community mapping program.

7.1 Re-viewing the findings

As was demonstrated by the efforts of this four-year mapping program in Seattle, the coding of community constitutes a complex urban political geography. Toward unpacking this complexity, I have made eight findings that are guided conceptually by what I have called 'cyborg geography'. In Chapter 4, I considered the role of technological innovation and related technological panacea in late 1990s Seattle and New York City. The Fund for the City of New York's late 1990s decision to use personal digital assistants (PDAs) as the tools to provide citizens with these measurement capabilities must be considered alongside the expansive growth of the

mobile technology sector, a growth I situate in the pages of *Wired* magazine at this time. What emerges is a different telling of the use of geographic information technologies in community revitalization politics, one that is not beholden to *the* theory of Neoliberalism, but works through the grounded practices among these organizations and their enrolling of the materiality and discursivity of mobile technologies. I detail three findings in this chapter: First, the development and marketing of mobile technologies advances a discourse of *connected mobility*. Second, the discourse of *connected mobility* is co-articulated with the broader discourse of *citizen empowerment* in programs of governmental accountability and neighborhood quality-of-life. It is through the productiveness of this co-articulation that makes possible my next finding. Third, mobile handheld technologies become one way in which a Seattle nonprofit could *mobilize*, as in create pathways for supporting their organizational mission.

Chapter 5 weaves in yet further articulation of the work of citizen empowerment, by discussing the indicator as the technology of quality-of-life measurement. Here, I situate the street-level surveys conducted in Seattle within the ‘broken windows’ worries of ‘clean-up-the-streets’ movements. The emergence of ‘data’ as the central object of mobilization for the Seattle nonprofit is analyzed, as emblematic of a city based on information flows and ‘communities’ that exist through (or in spite of) data. By drawing on my discussions with staff members and community residents, I argue that indicators constitute a field of objectivity. This chapter reported on three findings: First, the use of indicators to assess the urban

environment enables the construction of a causal relationship between the disorder of the built environment and social disorder. This is inline with work critiquing Broken Windows theory, but further extends this critique by documenting the importance of technologies like indicators in facilitating this relationship. Second, the emphasis on measurement of urban disorder constitutes the imagination of a city of information flows, wherein the objects of the street are digitally connected to municipal agencies. Third, in an imagined city of information flows, data matters such that space is *transduced* through data collection, storage, analysis, and representation. Here, the space of the neighborhood street is *re-made* through these processes of coding. In other words, the practice of walking the sidewalk and geocoding signs of decay work to re-produce the urban, in a different embodiment or imaginary.

Chapter 6 focuses on the training protocol developed by The Fund for the City of New York and used by Sustainable Seattle to instruct citizens to survey their neighborhoods. Here, I conceptualized the training of surveyors as moments of geocoding training. By situating the training of geocoders within the broader literature in critical cartography, I extended discussions emphasizing the *practices* of mapping. I discussed how mapmakers are embodied and bodies become mapped. It is through this conceptual interplay, situated in the critical cartography and GIS literature, that I discuss the training of geocoders as the emergence of geocoding subjects. Therefore, this chapter reports on two findings. First, data collection using handheld technologies constitutes geocoding subjects, who are programmed to visualize the street as a series

of discrete, knowable objects. Second, as a result of this subject formation, the training of neighborhood residents to measure their city streets enabled the marking of certain bodies through objectification. Language and vision are underlined in this analysis, as constitutive of the subjects and objects of community mapping. I problematize this kind of vision as a rationalization of urban space that places difference in categorical boxes, and uses language in the form of data to mark bodies as marginal.

7.2 Re-visiting Sustainable Seattle

If we could recreate this from scratch, we probably would put very different metrics for success, [such as] people engagement: whether they are actually making a difference in the community, with the information that they are using. (Nelson 2008, executive director at Sustainable Seattle)

Janice Nelson, executive director at Sustainable Seattle during the ComNET survey program, sat down with me to discuss the completion of the project. I scheduled a meeting with her in Sustainable Seattle's downtown office building. I entered the office, and immediately noticed how different things were from the hustle and bustle of the previous year. Pitzen and Muñoz were no longer working at the organization, since the funding attached to the ComNET program dried up. Their desks sat empty and cleaned of their stacks of papers and computer cables. Post-it notes no longer decorated their computer monitors. Nelson invited me back into her office, the only private office at the organization.

The discussion turned to reviewing the program. Nelson discussed how the ComNET program allowed the organization to experiment with neighborhood scale indicator development, but at the same time placed incredible burden on the

organization. At times the board of directors felt the ComNET program was largely disconnected from the mission of the organization, that it absorbed too many staff resources and was unclear in its impact in communities. In her quote above, Nelson describes how the survey program would need to have different “metrics for success”. The Sloan Foundation required Sustainable Seattle to conduct a certain number of surveys in a specified number of neighborhoods. While the organization scrambled to meet these quantitative objectives, Nelson notes that different metrics might incorporate how this data collection was being taken up by communities, and how these surveys were making a difference.

At this point in our discussion, Nelson turns to Sustainable Seattle’s newest endeavor (and potential source of revenue): the website, B-Sustainable. Here, the organization sought to use the web to bring together partners in industry, government, and communities to collectively articulate indicators for sustainability at multiple scales. When I asked how the neighborhood survey data would be incorporated, Nelson agreed that the surveys “informed” the website development and that the data would be available for community members to access. However, the website would not directly incorporate the ComNET survey data.

As it became clear that the data produced by the ComNET survey would not directly enter into the new website, I inquired about the continuation of the survey practice itself. Nelson described that the technology would be available, at cost, to those community organizations interested in conducting further surveys. Sustainable

Seattle would not, however, be facilitating these new surveys, except when hired as a consultant to do so. It seemed that ComNET hit a wall in Seattle.

The coding of community occurs in these everyday moments. This code-work was assembled around the ComNET surveying of these ten neighborhoods in Seattle for four years, 2003 to 2007. This is not to say that other code-work was not happening. The coding of community is a distributed practice, occurring at the municipal and county government as well as at regional planning organizations, community betterment organizations, real estate developers, and nonprofit organizations. *Coding Community* has focused on the coding of community by a local nonprofit in collaboration with a NYC foundation. It has emphasized the practices by which urban neighborhoods are made legible within coding systems, in the everyday moments of revitalization work.

7.3 Re-mindful of practice

Research is a continual project of limiting, and therefore, progresses through (and in spite of) limitations. My positionality during this research is best described as technopositionality, that is

a positionality in conducting research that is simultaneously about and with the technology. It is 'techno' in the sense that its relationship with technology is hybrid – a taking up of the discourses and the technicalities of the machine. ... Furthermore, it is a way of doing technology as a craft – of practicing technocritique. (Wilson 2009: p. 164)

My ability to conduct research about and with these community residents and the Seattle nonprofit was partly figured through my technical abilities. I was marked as a 'GIS expert' from the University of Washington, as someone invested in the project

and, in particular, its methodological endeavor.

I use *technopositionality* as a label to mark a different kind of relationship to technology, that is neither insider nor outsider (see Wilson 2009). Here, I draw particularly on Michael Curry's discussion of these kinds of relationships in the field of GIScience:

*I said these [insider-outsider] strategies are dysfunctional, and this is exactly what I meant. The first, the rejection of the outsider, is certainly widely held. Yet it is as certainly rejected by those who claim to hold it. Who, after all, would insist that only artists can say anything substantive about art, only cancer patients can say anything substantive about cancer? What geographer would insist that only the residents of Redding can say anything substantive about Redding? Indeed, those who make such claims are double inconsistent, just to the extent that they at once argue for the rationalization of means of data analysis, and make an argument that is in the end an **ad hominem**: "Your argument is incorrect because you're not one of us." (Curry 1998: xiv, emphasis original)*

Curry is speaking with those academics who felt that the critique of GIS was unfounded unless it was situated from the perspective of someone invested in the development and implementation of the technology itself. Here, I charted a different sort of relationality -- where my investment in the technology enabled my study of the practices that surround its use.

As such, this research is limited due to my simultaneous insider and outsider relationship to the Seattle organization, as a volunteer, technician, and PhD researcher (see Chapter 3). At times, my mutability (that I wore several 'hats') served as a resource in the conducting of this research. From the organization's perspective I was clearly invested in their project, given the span of years that I attended meetings, helped with surveys, and remained in contact with staff members. From the

perspective of community members, I often seemed as an extension of the organization, a partner in the cause, and one interested in researching their ‘situation’. However, in other instances, my ambiguity confused my research participants: was I volunteering?, observing?, supporting?, *etc.* In what form would my research take shape? What kinds of deliverables (products or outcomes) might they be able to make use of, if any?

This research was obviously limited to the ComNET surveys conducted in Seattle, and did not analyze the surveys conducted in the eighty other neighborhoods using ComNET. This was not necessarily a limitation. However, the success of the other neighborhoods as described by staff members at The Fund was markedly different than in Seattle. For instance, while other ComNET neighborhood surveys were able to connect citizen concerns to municipal agencies, Sustainable Seattle struggled to get their partners at the City of Seattle to recognize the ComNET data as a legitimate source. As this research is not comparative, I chose to focus on understanding the ways in which ComNET worked in Seattle. Perhaps future research would explore how these surveys work in other cities, for example, to highlight the role of certain structures of local political practice.

7.4 Re-searching

Returning to my call for a cyborg geography in Chapter 2, I suggest that *Coding Community* has inhabited the spaces of the nonhuman, not through fetishizing the lives lived, but through an narration of the conditions that establish their emergence.

Furthermore, it has resisted temporary stabilizations of urban study, by recognizing urbanization as an always-incompleted project of working knowledges. It is my hope that this research is marked as GIScience studies and urban political geography, as a hybrid writing. This research has demonstrated the importance of spatial technologies in urban governance and the prominence of urban governance in spatial technological development -- the constitution of monsters.

Future research should continue to explore these monsters -- the hybridities of the everyday. Specifically the growth of *neogeographies* and *volunteered geographic information* indicates that these everyday moments of mapping are becoming ever more distributed to new mapmakers. *Coding Community* has demonstrated that we must be conscious of the internalities and externalities of these new mappings, to ask what is being represented?, who is implicated by these representations?, and what is enabled by their being represented? In this work, I have documented the technological discourses of 'connected mobility' as it intersects citizen empowerment in neighborhood revitalization. However, what other discourses permeate the 'neogeo' movement? Furthermore, how do these other discourses motivate particular urban and bodily imaginaries? These questions are too important to be addressed serially, by either GIScience or critical human geography. Instead, the work of the cyborg geographer is to insist on the knowledge-power of the conjunction, to continue to pile on complexity for the study of the urban, to tease the boundaries between the technological and the social, to inquire about new shifting borderlands, and to offer this

all, not as *the* grand narrative of more-than-human urbanity but as something far more simple: as situated narratives of the everydayness of technological adaptations.

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Appendix A. Sustainable Seattle Timeline

A document created by Jennifer Roberts (9 Nov. 2003) describes the history of the lead-up to the Sustainable Urban Neighborhoods Initiative program.

June 2001: Initial SUNI proposal developed and first inquiry made to Sloan Foundation

~July 2001: Response from Ted Greenwood, Sloan, with some questions

September 2001: Sustainable Seattle sends response to Greenwood

February 2002: Finally, an email from Greenwood asking questions about project with a series of questions about the project and indicating interest from Sloan

February 2002: Initial meeting with Steve Nicholas, director of City of Seattle Office of Sustainability and Environment, to discuss SUNI project and talk about partnerships

March 2002: Revised project concept proposal developed and sent to Greenwood, Sloan Foundation

April 2002: Response from Greenwood with questions and OK given to submit full proposal

Late April 2002: Decision not to try for May deadline and instead wait for fall. In the meantime Sustainable Seattle invited Greenwood to come to Seattle.

May to June 2002: More work on project concept

June 2002: Ted Greenwood visits Seattle

August 2002: Sustainable Seattle submits formal proposal to Sloan

November 2002: Sustainable Seattle awarded \$54,000 planning grant to begin project, refine its proposal, and then re-submit large proposal in spring 2003

November 2002: Sustainable Seattle staff member goes back to New York for meeting/event with ComNET folks

November 2002: Decision made to start project in Beacon Hill rather than South Park, based on advice from City of Seattle Department of Neighborhoods

December 2002: Colleen Srull hired, Kirvil Skinnarland steps in under contract to fill in as executive director of Sustainable Seattle for Ray Victurean who was out of country for extend periods in early 2003

January 2003: Community outreach in Beacon Hill to recruit members for Steering Committee

February to May 2003: Beacon Hill Steering Committee works on valued conditions for their neighborhood, goals, strengths and weaknesses of Beacon Hill, preliminary selection of preferred Communities Count and Sustainable Seattle indicators, review of ComNET, briefing from Darlene Flynn on neighborhood planning process

February to May 2003: Community surveys (in English, Spanish and Chinese) placed at several locations throughout Beacon Hill

May 2003: Hilda Blanco becomes involved in project to help with indicators that will help assess implementation of City comprehensive and neighborhood plans

May 2003: Ruth Olson from The Fund for the City of New York visits Seattle. Several events with City of Seattle (emphasis on involving Department of Neighborhoods and Department of Information Technology folks). Olson works with Beacon Hill steering committee to do sample data collection on Beacon Hill.

April to May 2003: Revised full grant proposal is developed and submitted to Sloan. There is extensive back and forth discussion with Ted Greenwood. Proposal is sent out to 8 reviewers (mostly local) for comments.

May 2003: Recruitment for SUNI project manager begins in anticipation of receiving grant

June 2003: Sustainable Seattle is awarded four-year grant from the Sloan Foundation. Jennifer Roberts is hired as project manager.

July 2003: Srull leaves. Skinnarland leaves for Africa.

Late July 2003: Jennifer Roberts starts.

[based on Neighborhood Indicators/Scoping/Old/Sloan Project History Goals and Deliverables.doc]

Appendix B. Key Documentation in Sustainable Seattle Archive

Nonprofit published reports:

Listening to the Public (Cohn Berman 2005)

Involving the Public in Measuring and Reporting Local Government

Performance (Cohn Berman 2008)

Starting Performance Measurement from Outside Government in Worcester

(Schaefer 2008)

Nonprofit server files:

Training documentation

North Beacon Hill and Capitol Hill training PowerPoint (2004)
[Neighborhood Indicators/Street-Level Surveys/Training Materials/ComNET
Powerpoint Presentation/OLD Seattle Trainings/04-05-22 Capitol Hill &
North Beacon Hill.ppt]

Worcester, Mass. training PowerPoint (2003) [Neighborhood Indicators/
Street-Level Surveys/Worcester/volunteertraining.ppt]

Features-Conditions (Features-Problems) lists

‘Features’ and ‘conditions’ are the units of observation for the street-level surveys. They are the architectural elements at the level of ontology in the ComNET system as developed by The Fund for the City of New York.

Documentation that describes the evolution of these lists:

Bell Hill Summary, Worcester, Mass., includes an early version of this list, called “Conditions”, in the Appendix of this summary of Worcester’s ComNET surveys in 2001, 2002, and 2003. (10 November 2003) [Neighborhood Indicators/Street-Level Surveys/Worcester/Bell Hill Summary 2003.pdf]

Capitol Hill list, modified from The Fund (17 Dec 2003) [Neighborhood Indicators/Street-Level Surveys/Features and Conditions Evolution/Old lists with changes/F-C list NY.doc]

Modifications (8 September 2004) [Neighborhood Indicators/Street-Level Surveys/Features and Conditions Evolution/Old lists with changes/Modifications to list 9.8.04.doc]

Changes made to the list (21 September 2004) [Neighborhood Indicators/Street-Level Surveys/Features and Conditions Evolution/Old lists with changes/Changes to list.xls]

S2 2004-2005 List (1 June 2005) [Neighborhood Indicators/Street-Level Surveys/Features and Conditions Evolution/Old lists with changes/Current word list.doc]

Themed Lists, features-conditions grouped by Aesthetics, Amenities & Business, Infrastructure, and Mobility (24-25 October 2005) [Neighborhood Indicators/Street-Level Surveys/Features and Conditions Evolution/Theme Lists/]

Assets and Deficits Lists, also described as Assets and Opportunities in the combined list (4 January 2006) [Neighborhood Indicators/Street-Level Surveys/Features and Conditions Evolution/Deficit List.pdf] [Neighborhood Indicators/Street-Level Surveys/Features and Conditions Evolution/Asset List.pdf]

News articles about the ComNET process:

In Seattle:

Keeping a digital eye on the South End. (Miller 2006)

Working toward a healthier Wallingford: Local nonprofit group looks to sustain the neighborhood. (Sabrowsky 2007)

In NYC:

Urban Tactics: Street Smart. (O'Grady 2003)

The New York City Beacons: Rebuilding communities of support in urban neighborhoods. (Kleinbard 2005)

Palm-Size Computer Helps Citizens Track Nuisances. (Charkes 2007)

In Philadelphia:

Center City District gets techy tool for routing gripes. (Slobodzian 2005)

In Worcester, Mass.:

Tracking Team. (Walters 2006)

Appendix C. Datascapes

Table of datascapes

After the processing of the survey data⁴⁸, comparisons could be made across neighborhoods and years. Table C.1 shows the breakdown by neighborhood, year, assets mapped, and deficits mapped during the SUNI program.

Table C.1. Street-level survey data collected by Sustainable Seattle, 2004-2007. Key: a = 'assets', d = 'deficits', t = total. 46 records were unmatched in the geocoding analysis, which assigns addresses a geographic coordinate.

Neighborhoods	2004	2005	2006	2007	Total
Admiral District	-- -- --	-- -- --	a: 326 d: 162 t: 488	a: 87 d: 59 t: 146	a: 413 d: 221 t: 634
Capitol Hill	-- d: 321 t: 321	-- d: 313 t: 313	-- -- --	-- -- --	-- d: 634 t: 634
Columbia/Hillman City	-- -- --	-- -- --	a: 99 d: 30 t: 129	-- d: 46 t: 46	a: 99 d: 76 t: 175
East Ballard	-- -- --	-- -- --	a: 58 d: 254 t: 312	-- d: 138 t: 138	a: 58 d: 392 t: 450
Greenwood/Phinney Ridge	-- d: 457 t: 457	-- d: 297 t: 297	a: 264 d: 57 t: 321	-- d: 204 t: 204	a: 264 d: 1,015 t: 1,279
International District	-- d: 290 t: 290	-- d: 290 t: 290	a: 95 d: 145 t: 240	a: 164 d: 222 t: 386	a: 259 d: 947 t: 1,206
Lake City	-- -- --	-- -- --	-- d: 9 t: 9	-- d: 228 t: 228	-- d: 237 t: 237

⁴⁸ Here, I must thank Chris Fade, Whitman College, for her tireless efforts preparing the data for the geocoding analysis.

Neighborhoods	2004	2005	2006	2007	Total
North Beacon Hill	-- d: 272 t: 272	-- d: 260 t: 260	a: 139 d: 27 t: 166	-- -- --	a: 139 d: 559 t: 698
Uptown	-- -- --	-- -- --	-- d: 27 t: 27	-- d: 109 t: 109	-- d: 136 t: 136
Wallingford	-- -- --	-- -- --	a: 115 d: 183 t: 298	-- d: 122 t: 122	a: 115 d: 305 t: 420
Total Records	-- d: 1,340 t: 1,340	-- d: 1,160 t: 1,160	a: 1,096 d: 894 t: 1,990	a: 251 d: 1,128 t: 1,379	a: 1,347 d: 4,522 t: 5,869

This table demonstrates the change in the organization from surveying four neighborhoods for their deficits in 2004 and 2005 to surveying nine neighborhoods for their deficits and, in many cases, their assets in 2006 and 2007. Interesting, however, is that given this increase in the number of neighborhoods surveyed, the total mapped records per year only slightly increased. This table also allows a comparison among the neighborhoods being mapped. Note the difference in total records from the Greenwood/Phinney Ridge, with 1,279 records, and Columbia City/Hillman City neighborhoods, with 175 records.

Maps of datascape

We can visually analyze the proportionality of the surveys across the ten neighborhoods of Seattle in Figure C.1 below. We can also see the spaces of Seattle that were left unsurveyed, where data does not reside and therefore does not represent. Additionally, by zooming into these neighborhoods, the map in Figure C.2 represents a datascape at a larger scale. In this figure, the left map represents the International

District, and the concentric rings represent the relative amount of records captured at that particular location. The same symbology is used in the map on the right of the Greenwood/Phinney Ridge neighborhood. These maps represent the datascape of these neighborhoods, and provide the context for a discussion about what gets represented and what does not.



Figure C.1 Proportional map of the total number of records captured in the ten surveyed Seattle neighborhoods of the SUNI program, 2004 to 2007 (unit

of analysis is each individual feature-condition pair). The larger the concentric ring, the larger number of data records that were captured in that neighborhood.



Figure C.2 Proportional map of survey points of two Seattle neighborhoods in the SUNI program, 2004 to 2007: the International District on the left and Greenwood/Phinney Ridge on the right.

Curriculum Vitae

education

- 2005 to 2009. Doctor of Philosophy (Geography), University of Washington.
Dissertation: *Coding Community*. [committee: Timothy Nyerges (supervisor), Michael Brown, Sarah Elwood, Christine DiStefano (graduate school representative)]
- 2003 to 2005. Master of Arts (Geography), University of Washington.
Thesis: *Implications for a public participation geographic information science: Analyzing trends in research and practice*. [committee: Timothy Nyerges (supervisor), Michael Brown.]
- 1999 to 2002. Bachelor of Science (summa cum laude), Northwest Missouri State University. Major in Geography, double-minor in Geographic Information Systems and Computer Science Information Systems.
Undergraduate core research paper: *Home-schooling families in Nodaway County, Missouri*. [supervisor: Mark W. Corson.]

grants and awards

2008. Graduate School Fund for Excellence and Innovation (GSFEI) award. University of Washington.
- 2008 to 2009. HASTAC Scholar. Humanities, Arts, Science, and Technology Advanced Collaboratory.
- 2008 to 2009. Huckabay Teaching Fellowship. University of Washington Graduate School. Preparing Future Faculty initiative.
- 2007 to 2008. Howard Martin Medalist. Department of Geography, University of Washington.
2007. Howard Martin Dissertation Fellowship. Department of Geography, University of Washington.
2007. Institute on the Public Humanities Fellowship. Simpson Center for the Humanities, University of Washington.
- 2007 to 2008. Graduate Student Research Grant. Nancy Bell Evans Center on Nonprofits & Philanthropy, Daniel J. Evans School of Public Affairs, University of Washington. \$1,000.
2006. Co-author (with Serin Houston and Kevin Ramsey). University of Washington Student Technology Fee proposal for qualitative research equipment and software. Awarded: \$34,326.10.

2006. Master's Thesis Award. Urban Geography Specialty Group, Association of American Geographers. February.
2005. Edward L. Ullman Award for Outstanding Master's Work, Department of Geography, University of Washington. June.
2002. Alfred H. Nolle Scholarship, Alpha Chi Honor Society. The Alfred H. Nolle Scholarship is a national scholarship through Alpha Chi Honor Society given to 10 undergraduate seniors.
- 2001 and 2002. Mark Jefferson Award, Department of Geology/Geography, Northwest Missouri State University. The Mark Jefferson Award is given to the junior or senior with the highest grade point average in the Geology/Geography Department at NWMSU.

refereed publications

- Wilson, Matthew W. Forthcoming, 2009. Cyborg geographies: Towards hybrid epistemologies. *Gender, Place & Culture*.
- Wilson, Matthew W. Forthcoming, 2009. Recalling insider-outsider debate: Towards a genealogy of qualitative GIS. In *Qualitative GIS: A Mixed Methods Approach*. Sage. Sarah Elwood and Meghan Cope, editors.
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- Brown, Michael, Matthew W. Wilson. 2009. Ten years on(ward)! *Social & Cultural Geography*. 10:1. p. 1-8.
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- Wilson, Matthew W., Kevin S. Ramsey (equal contribution). 2008. Integrating online deliberation into transportation investment decision-making: Preliminary reflections on a field experiment. In proceedings of *Tools for Participation, DIAC / Online Deliberation 2008*.

Nyerges, Tim, Kevin Ramsey, Matthew Wilson. 2006. Design considerations for an Internet portal to support public participation in transportation improvement decision making. In *Collaborative Geographic Information Systems*. Hershey, PA: Idea Group, Inc. Suzana Dragicevic and Shivanand Balram, editors. p. 208-236.

professional experience . teaching

- 2004 to 2008. Instructor, Department of Geography, University of Washington Extension Outreach. Certificate Program in GIS. Course: *Geo-spatial Information and Technologies* (GEOGcp200).
- 04/2008 to 06/2008. Teaching Assistant, Department of Geography, University of Washington. Course: *Geographic Information Systems Workshop* (GEOG463).
- 01/2008 to 03/2008. Teaching Assistant, Department of Geography, University of Washington. Course: *Urban Geographic Information Systems* (GEOG461).
- 09/2007 to 12/2007. Teaching Assistant, Department of Geography, University of Washington. Course: *Explanation and Understanding in Geography* (GEOG315).
- 01/2005 to 03/2005. Teaching Assistant, Department of Geography, University of Washington. Course: *Analytical Cartography* (GEOG465).
- 01/2003 to 05/2003. Graduate Teaching Assistant, Department of Computer Science Information Systems, Northwest Missouri State University. Courses: *Data and File Structures* (44-242), *Database Systems* (44-460).
- 08/2001 to 12/2002. Teaching Assistant, Department of Geology/Geography and Dept. of Computer Science Information Systems, Northwest Missouri State University. Courses: *General Geology* (27-110), *Introduction to Geography* (32-101), *Fundamentals of Computer Science* (44-230), *Database Systems* (44-460).

professional experience . research

- 06/2008 to present. Editorial Assistant, *Social & Cultural Geography*, Routledge.
- 01/2007 to 06/2008. GIS Analyst. ACLU Drug Law Reform Project. Supervisor: Katherine Beckett, University of Washington.
- 12/2007 to 03/2008. Co-investigator. Evaluating urban indicators using geographic information systems in Seattle, Washington. Principal Investigator: Chris Fade, Whitman College.
- 09/2003 to 12/2007. Research Assistant. Participatory Geographic Information Systems for Transportation, Department of Geography, University of Washington. Principal Investigator: Timothy Nyerges. Funded by National Science Foundation, Division of Experimental and Integrative Activities, Information

Technology Research (ITR) Program, Project Number EIA 0325916, funds managed within the Digital Government Program.

invited lectures

- Wilson, Matthew W. 2009. "Coding community: Geographic information technologies and mappings of the city street." Department of Geography, Ball State University. 3 March.
- Wilson, Matthew W. 2009. "Designing location services for neighborhood revitalization efforts." Department of Geography and Geology, Mansfield University of Pennsylvania. 18 February.
- Wilson, Matthew W. 2009. "Coding community: Geographic information technologies and mappings of the city street." Department of Social Sciences, Emporia State University. 30 January.
- Wilson, Matthew W. and Jentery Sayers. 2008. "Project-based approaches to the digital humanities." Research Conversation Series, The Information School, University of Washington. 21 November. <http://staff.washington.edu/jentery/digitalhumanities>
- Wilson, Matthew W. 2008. "Knowledge-making alliances and the problematics of acquiring discourses." Department of Geography Colloquium, University of Washington. 31 October.
- Wilson, Matthew W. 2008. "On focus groups and interactive mappings: Reviewing the rhythms of the neighborhood advocate." Tracking the rhythms of daily life, an Economic & Social Research Council seminar of the Time-Space and Life Course seminar series, organized by Rachel Pain and Susan Smith. 26 August.
- Elwood, Sarah; Katharyne Mitchell; Matt Sparke; Matthew W. Wilson. 2008. "Mappa-loquium: Finding our way with new mappings of geographical learning." Department of Geography Colloquium, University of Washington. 30 May.
- Wilson, Matthew. 2004. "'Participatory' GIS (PGIS): Theorizing 'community' as a perspective of 'participatory' GIS, through readings of Elwood and Craig, et al." Presented for the certificate program in GIS, cp200. 8 December.
- Wilson, Matthew. 2004. "Creative collaboration: Toward an understanding of participation in participatory GIS (PGIS)." Presented at UW Geography Home Seminar. 2 December.

conference participation . papers presented

- Sayers, Jentery and Matthew W. Wilson. 2009. "Mapping the Digital Humanities." HASTAC III Conference, Urbana-Champaign, IL. 21 April.

- Wilson, Matthew W. 2009. " 'Training the Eye': producing cartographic vision and data-based bodies." Association of American Geographers 105th Annual Meeting, Las Vegas, NV. 25 March.
- Wilson, Matthew W. 2008. "Making community-nonprofit geographies visible: Knowledge-making alliances and the problematics of acquiring discourses." Royal Geographical Society and the Institute of British Geographers, 2008 Annual International Conference, London, UK. 28 August.
- Wilson, Matthew W. 2008. "Cyborg geographies: Towards hybrid epistemologies." Association of American Geographers, 104th Annual Meeting, Boston, MA. 19 April.
- Wilson, Matthew W. 2007. "Learning to laugh at ourselves: Approaching GIS critique from the 'inside'." Association of American Geographers, 103rd Annual Meeting, San Francisco, CA. 21 April.
- Ramsey, Kevin S. and Matthew W. Wilson (equal contribution). 2006. "Rethinking the 'Informed' Participant: Precautions and Recommendations for the Design of Online Deliberation." Faith, Knowledge, and the Interface of Epistemologies: Graduate Conference for Interdisciplinary Studies, University of Washington. 5 May.
- Wilson, Matthew. 2006. "On producing an 'us' and 'them': political community in the context of PGIS." Association of American Geographers, 102nd Annual Meeting, Chicago, IL. 9 March.
- Nyerges, Tim, Kevin Ramsey, and Matthew Wilson. 2005. "Designing Public Participation Geographic Information Systems to Support Analytic-Deliberative Democratic Processes for Local Governance." Research Symposium on Societies and Cities in the Age of Instant Access, The University of Utah. 12 November.
- Wilson, Matthew, Kevin Ramsey, and Tim Nyerges. 2005. "Design considerations for supporting online, analytic-deliberative, public participation." 2nd Conference on Online Deliberation: Design, Research and Practice / DIAC-2005, Stanford University, CA. 21 May.
- Wilson, Matthew. 2005. "Designing PPGIS with 'community' in mind: an analysis of trends in PPGIS." Association of American Geographers, 101st Annual Meeting, Denver, CO. 7 April.
- Wilson, Matthew, Christina Drew, Tim Nyerges, and Kevin Ramsey. 2004. "Comparing and contrasting models of participation for online transportation decision making." Poster presentation. National Conference on Digital Government Research, Seattle, WA. 24 May.
- Wilson, Matthew and Tim Nyerges. 2004. "Conceptual framework for comparing participation models for transportation decision making." Association of American Geographers, 100th Annual Meeting, Philadelphia, PA. 19 March.

Wilson, Matthew. 2003. "Home-schooling families in Nodaway County, Missouri." Association of American Geographers, 99th Annual Meeting, New Orleans, LA. 8 March.

Wilson, Matthew. 2002. "Home-schooling families in Nodaway County, Missouri." Alpha Chi Honor Society, 2002 Region IV Meeting, Salina, KS. 4 April.

conference participation . discussant

2009. Discussant of *Volunteered Geographic Information and GIScience*. Organized by Daniel Sui and Keith Clarke. Association of American Geographers, 105th Annual Meeting, Las Vegas, NV. [chair: Keith Clarke; presenters: Brian Klinkenberg, Chen Xu, Britta Ricker, Hanif Rahemtulla; second discussant: Renee Sieber]

conference participation . panel member

2009. Panelist of *Philosophy for GIScience*. Organized by Nicholas Tate and David O'Sullivan. Association of American Geographers, 105th Annual Meeting, Las Vegas, NV. [chair: Nicholas Tate; panel members: Francis Harvey, Agnieszka Leszczynski, David M. Mark, Barbara Poore, Renee Sieber, Matthew W. Wilson.]

2008. Panelist of *Participatory GIS and Online Democracy: Reflections on a Field Experiment*. Organized by Matthew W. Wilson and Kevin Ramsey. Association of American Geographers, 104th Annual Meeting, Boston, MA. 16 April. [chair: Keiron Bailey; panel members: Piotr Jankowski, Tim Nyerges, Kevin Ramsey, Martin Swobodzinski, Matthew W. Wilson.]

2007. Panelist of *Public Participation GIS: Metrics of Empowerment*. Organized by Melinda J. Laituri and Laxmi Ramasubramanian. Association of American Geographers, 103rd Annual Meeting, San Francisco, CA. 20 April. [panel members: Sarah Elwood, Renee Sieber, Daniel Weiner, Matthew Wilson.]

conference participation . sessions organized

2008. Co-organizer (with Kevin Ramsey) of *Governing Technologies I: Representation, Participation, and Governance in the 'Digital Age' I* (paper session). Association of American Geographers, 104th Annual Meeting, Boston, MA. 19 April. [chair: Matthew W. Wilson; paper presenters: Michael W. Longan, John Saunders, Richard Donohue.]

2008. Co-organizer (with Kevin Ramsey) of *Governing Technologies I: Representation, Participation, and Governance in the 'Digital Age' II* (paper session). Association of American Geographers, 104th Annual Meeting, Boston,

- MA. 19 April. [chair: Kevin Ramsey; paper presenters: Jeremy Crampton, Jacob J. Peters, Sarah Starkweather, Sam Kinsley, Matthew W. Wilson.]
2008. Co-organizer (with Barbara Poore) of *'Straddling the Fence' I: Theory, Practice, and History in Critical GIS* (paper session). Association of American Geographers, 104th Annual Meeting, Boston, MA. 17 April. [chair: David O'Sullivan; paper presenters: Patrick McHaffie, Miriam Cope, Dalia Varanka, Jin-Kyu Jung.]
2008. Co-organizer (with Barbara Poore) of *'Straddling the Fence' II: Theory, Practice, and History in Critical GIS* (panel session). Association of American Geographers, 104th Annual Meeting, Boston, MA. 17 April. [chair: Eric Sheppard; panel members: Francis Harvey, Mei-Po Kwan, David O'Sullivan, Marianna Pavlovskaya, Nadine Schuurman.]
2008. Co-organizer (with Kevin Ramsey) of *Participatory GIS and Online Democracy: Reflections on a Field Experiment* (panel session). Association of American Geographers, 104th Annual Meeting, Boston, MA. 16 April. [chair: Keiron Bailey; panel members: Piotr Jankowski, Tim Nyerges, Kevin Ramsey, Martin Swobodzinski, Matthew W. Wilson.]
2007. Co-organizer and co-chair (with Kevin Ramsey) of *Research Design and Methodologies in Critical GIS Research I* (panel session). Association of American Geographers, 103rd Annual Meeting, San Francisco, CA. 21 April. [panel members: Stuart Aitken, Michael Brown, Jeremy Crampton, Vincent Del Casino Jr., Sarah Elwood, Rina Ghose, Stephen Hanna, Francis Harvey, LaDona Knigge, Lawrence Knopp Jr., Nadine Schuurman.]
2007. Co-organizer (with Kevin Ramsey) of *Research Design and Methodologies in Critical GIS Research II* (paper session). Association of American Geographers, 103rd Annual Meeting, San Francisco, CA. 21 April. [paper presenters: Fletcher Chmara-Huff, Wen Lin, Eli Moore, Kevin Ramsey, Matthew Wilson. chair: Karen Culcasi.]
2007. Co-organizer (with Kevin Ramsey) of *Research Design and Methodologies in Critical GIS Research III* (paper session). Association of American Geographers, 103rd Annual Meeting, San Francisco, CA. 21 April. [paper presenters: Hamid Ekbia, Jin-Kyu Jung, Falguni Mukherjee, Ingrid Nelson, Brian Thayer. chair: Rina Ghose.]
2006. Co-organizer (with Kevin Ramsey) of *The Politics of Participatory GIS I* (paper session). Association of American Geographers, 102nd Annual Meeting, Chicago, IL. 9 March. [paper presenters: Jonnell Allen, Peter Kyem, Laxmi Ramasubramanian, Kevin Ramsey, Matthew Wilson. chair: Rina Ghose.]
2006. Co-organizer (with Kevin Ramsey) and chair of *The Politics of Participatory GIS II* (panel session). Association of American Geographers, 102nd Annual

Meeting, Chicago, IL. 9 March. [panel members: Keiron Bailey, Meghan Cope, Sarah Elwood, Rina Ghose, Kevin Ramsey.]

service . professional

- 2009. reviewer for *Social Studies of Science*.
- 2008. reviewer for *GeoJournal*. (2 manuscripts)
- 2008. reviewer for *Social & Cultural Geography*.
- 2007. reviewer for *Journal of Applied Geography*.
- 2007. reviewer for chapter in *Qualitative GIS: A Mixed Methods Approach*. Edited by Sarah Elwood and Meghan Cope. Sage.
- 2006. reviewer for *Transactions in Geographic Information Systems*. (2 manuscripts)

service . advising and mentoring

- 2008. Facilitator. Balancing Graduate Demands, TA Conference, University of Washington. 16 September.
- 2008. Undergraduate Independent Study Mentor. Oliver Kurabi, senior in Geography, University of Washington.
- 2007. Co-chair (with Tim Stiles). Graduate Student Orientation, Department of Geography, University of Washington.
- 2005. Co-chair (with Anna McCall-Taylor). Graduate Student Orientation, Department of Geography, University of Washington.
- 2005 to 2006. Co-president (with Anna McCall-Taylor). Geography Graduate Student Association (GGSA), Department of Geography, University of Washington.

service . department, university and community

- 2009. Panelist. The Graduate Student Experience. Department of Geography, University of Washington. 17 April. [panelists: Matthew W. Wilson, Caroline Faria, Stephen Young, and Annie Bartos]
- 2009. Graduate Student Representative. Development of Applied Masters in GIS Committee, Department of Geography, University of Washington.
- 2008. Facilitator. Introduction to Departmental Technology Resources, Department of Geography, University of Washington. 22 September.
- 2008. Facilitator. Departmental 'Tech' Workshop, Department of Geography, University of Washington. 21 May.

- 2008 to 2009. Student Representative. GIS Specialty Group. Association of American Geographers.
- 2004 to 2007. Volunteer. Sustainable Urban Neighborhoods Initiative (SUNI), Sustainable Seattle.
2006. Graduate Student Representative. Fiscal Coordinator Search Committee, Department of Geography, University of Washington.
2006. Graduate Student Representative. GIScience Assistant Professor Search Committee, Department of Geography, University of Washington.
- 1999 to 2005. Media School Instructor, American Legion Missouri Boys State, Warrensburg, MO 64093. Third week of June.

other professional preparation

2008. Foucault Across the Disciplines. University of California, Santa Cruz. 1-2 March.
2007. Second Annual Cascadian Mini-Conference on Critical Geographies. Department of Environmental Studies, Huxley College of the Environment at Western Washington University and the International Critical Geography Group. Western Washington University, Bellingham, Washington, USA. October. Session Chair: *Questioning Urban Geographies*.
2007. Interacting on Interdisciplinarity: Opportunities and Successes. Graduate and Professional Education Week, Graduate School, University of Washington. 1 March.
2006. Inaugural Cascadian Mini-Conference on Critical Geographies. Simon Fraser University Geography and the International Critical Geography Group. Harbour Centre, Simon Fraser U., Vancouver, British Columbia, Canada. October.
2006. ASIS&T 7th Information Architecture Summit. American Society for Information Science and Technology. Hyatt Regency, Vancouver, British Columbia, Canada. March.
2005. Hansard Society Online Coordinators Course. Hansard Society, 9 Kingsway, London WC2B 6XF. January through February.

other employment

- 11/2007 to 12/2007. Geo-blog Consultant, Department of Geography, University of Washington.
- 02/2007 to 03/2007. Website Maintenance, Department of Geography, University of Washington.
- 07/2003 to 09/2003. Executive Assistant, Paul B. Anderson, Media Agent, Seattle, WA 98136.

04/2002 to 06/2003. GIS Technician, Midland GIS Solutions, 501 N. Market, Maryville, MO 64468.

08/2002 to 12/2002. Resident Assistant, Department of Residential Life, Northwest Missouri State University, 800 University Drive, Maryville, MO 64468.

05/2001 to 08/2001. Copy Editor, Peninsula Daily News, 305 West First Street, Port Angeles, WA 98362.

05/1996 to 05/2001. Macintosh Consultant/Layout & Design Artist, Nodaway News Leader, 116 East Third Street, Maryville, MO 64468.

05/1996 to 05/2001 Layout & Design Artist, The Zimmerman Ancestry, Maryville, MO 64468.