In Search of New Riders: Affective Exclusions and Bicycle Planning in Minneapolis/Saint Paul

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Abstract

Riding a bike is typically viewed as something most people can simply do without thinking, an automatic response latent inside one's body from childhood. Thus, in a useful way, the cliché "it's just like riding a bike" refers to the connection between technology and the body, which can bypass the consciousness-based model of behavior in provocative ways.

But at the same time, the phrase subsumes a complex relationship within a seemingly automatic response. The fact that riding a bicycle is often taken for granted erases subtle differences between how and why people ride. Rather than an innate human capacity, for many people riding a bike is an experience that offers a wide range of emotional dynamics. By examining how "riding a bike" differs depending on specific bodies, spaces, and technological relationships, we can learn how subjectivity forms in relation to social and material environments. The complex relationship the body, bicycle, and space challenges assumptions that govern urban systems.

Current bicycling trends have shifted debates around bicycling in ways that challenge traditional approaches of bike planners and advocates, particularly in attempts to attract new riders. Yet without a careful understanding of how and why bicycling differs from dominant automobile-centered transportation, urban decision makers risk re-inscribing existing patterns of mobility at the expense of a more impactful future.

In this dissertation, I examine how differences emerge around everyday bicycling as a relational capacity to act, locating my approach within the field of "mobilities studies." I use the concept of the affective assemblage, a concept that describes the relational dynamics of the bicycle, bodies, and diverse kinds of urban space. I then describe how bicycle planning debates that emerged in the 1970s pivoted around assumptions that privileged specific age,

gender, race, and class positions at the expense of others. I extend these debates into the present by looking at how contemporary approaches frame design debates in ways that simultaneously include and exclude certain ways of moving.

Next, drawing on urban spatial theory and qualitative research, I examine how bicycle riders employ tactics based on social capacities for feeling "in place to negotiate pathways through changing urban terrain. These spatial practices are connected with a nonlinear urban landscape that displays spatial gaps fundamental to developing bicycling habits in different ways, and lay the foundation for affective difference.

Next, drawing on crowd theory, I outline how patterns form around particular aspects of the bicycle assemblage, so that clothing or riding style signify a larger affective connections, combinations of emotional attitudes and capacities for action. Using interviews, I show how these patterns form an affective taxonomy that describes how different modes of experience and capacities sort bicyclists.

Finally, I look at how affective difference relates to current planning policies that attempt to appeal to new riders. As decision makers have begun to recognize the limitations of traditional bicycle planning, they are experimenting with design and policy approaches aimed at diversifying the affective range of bicyclists, for example, bicycle boulevards, "open streets" events, and bike share systems. Yet in practice, while these approaches circumvent automobility logics in specific ways, they remain limited by both political and institutional constraints, and the affective assumptions made by advocates.

Table of Contents

List of Tables and Figures

Chapter 1: The Problem of the New Rider

"A man without faith is like a fish without a bicycle."

-Charles S. Harris

1.1 Introduction

The oft-cited phrase, "it's just like riding a bike", has a double-edged meaning. On one hand, bike riding here stands in for body memory, a kind of knowledge often overlooked in an era that privileges language. Riding a bike is viewed as something most people can simply do, without thinking, an embodied and automatic response latent inside one's arms and legs (usually) from childhood. In a very useful way, the cliché refers to the potential connection between technology and the body, which can bypass the consciousness-based model of behavior in provocative ways. In a sense, riding a bike stands in for acts that exceed articulation and logic, and comes to represent a social concept for rethinking how the technology and spatial environments can matter in our everyday lives.

At the same time, the phrase "it's just like riding a bike" poses a problem for bicycle researchers and planners by subsuming a complex relationship within a seemingly automatic and autonomic response. The fact that, for many people, riding a bicycle is taken for granted is a problem because it erases the subtle differences between how people ride bicycles. Rather than an innate human capacity, for many people riding a bike is not something automatic, but an experience that offers the full range of emotional dynamics from terror to glee. By thinking through how "riding a bike" differs depending on the specific bodies, spaces, and technological relationships involved, we can learn a great deal about how conscious and more-than-conscious subjectivity is formed in relation to its social and material environment. As it turns out, not even riding a bike is "just like riding a bike."

1.2 The Value-Action Gap

Thinking more critically about the bicycle is important because the case for increasing bicycling in North American cities has never been more convincing. Over the last century of development, and accelerating during the post-war era, the contemporary urban landscape has evolved into an almost entirely auto-dependent space (Wells 2013). Each year, the US and Canada consume over 20% of the world's energy production, driven in large part by a hegemonic dependence on personal cars and trucks for personal and commercial mobility and *per capita* car ownership rates that have reached super-saturated levels (US EIA 2012, World Bank 2010). For a host of reasons, the North American urban landscape has evolved into an historically unparalleled "system of automobility" where the private space of the automobile dominates both the built environment and our forms of social interaction (Urry and Sheller 2000, 2003). As a result, in the US over 86% of commuting trips are taken by car; just 5% are on public transit, a mere 2.8% walk to work, and fewer than 1% ride a bicycle (US Census 2014).

This extreme dependence on the automobile has stark social consequences across three interlinked areas. First, automobile dependence is increasingly incompatible with rising energy costs in a world where peak oil has become a material reality. For most of the 20th century, oil prices remained extremely low. The gradual depletion of the large 20th century oil fields in the Middle East, the North Sea, and the north slope of Alaska combined with increasing demand from the growing economies in the Global South have elevated world oil prices through historical highs, while increasing volatility (Mitchell 2012). While these high prices have triggered a new round of oil exploration and development in unconventional oil, these new sources have logistical and environmental limitations that pose problems for

continued social reliance on fossil fuels as a primary source. At this point, attempts to develop alternative automobile technologies – such as hydrogen, electric, or natural gas powered cars – remain largely impractical and commercially insignificant (Williams 2013).

Meanwhile, despite overwhelming scientific consensus, no North American country has taken meaningful action on the issue of global climate change. International conferences are routinely waylaid by disagreement over how to divide carbon usage between the rich countries of the Global North and the poor countries of the Global South. That impasse, combined with congressional and parliamentary reluctance to tax or reshape politically untouchable automobility landscapes, has meant there are few signs of hope for a regulatory solution to the climate change crisis. Reducing oil usage from currently unsustainable levels remains a goal far out of reach. As global temperatures rise alongside oil costs, the need for changing the system of automobility will only become more acute.

The second pressing issue connected to automobile dependency is in the arena of public health. Because the overwhelming majority of trips are made by car, the average US or Canadian leads an extraordinarily sedentary life. Physical activity has been so divorced from the patterns of everyday life that, for most people, getting regular doses of exercise requires careful preparation and trips to the gym. As a result, only 26% of Americans were active for at least a half-hour at least five days a week (Frumkin, Frank, and Jackson 2004 90). From a public health perspective, the costs of this level of inactivity are very high, ranging from "chronic disease, osteoporosis, poor mental health, and obesity" among others (Frank, Engelke, and Schmid 2003 1).

In addition to the consequences of automobile dependency on everyday patterns of physical activity, the automobile has striking pollution effects, producing particulate matter causing over one million annual deaths across the globe (Douglas et. al. 2011). Less

obviously, the effects of automobile noise and the social isolation stemming from auto dependency is detrimental to balancing stress, leading to increases in mortality rates. More directly, almost 40,000 US and Canadian people are killed in automobile accidents each year, despite immense sums spent on improving road safety. For this reason, many health insurance companies have begun funding efforts to increase "active living," or incorporating physical activity into everyday life by decreasing use of the automobile.

Finally, construction and maintenance of automobile infrastructure are gradually increasing fiscal pressure on government budgets to unsustainable levels (Harvey 2010). In an era of austerity, the maintenance costs for the automobile infrastructure are facing large budget shortfalls at every level of government (Congressional Budget Office, via Liang 2012). Because funding for infrastructure requires sustained real estate development and growth, the maintenance of automobile infrastructure becomes burdensome as economic growth slows or disappears altogether. States like Michigan, which have begun un-paving roads and abandoning regions of infrastructure, may be a harbinger of the stress faced by transportation funding structures.

In addition to the problems faced by governments at all levels, the cost of automobile ownership consumes a large portion of individual household budgets, approaching an annual average around $9,000 (American Automobile Association 2014). In other words, automobile dependent transportation places an inordinate burden on those least able to afford its high cost. This transportation landscape operates in inherently unequal ways, and leads to the economic ghettoization of the poor, who lack access to jobs and services. For these reasons, increasing non-motorized transportation becomes a question of economic justice.

For many decades, these problems have been clear, and bicycling has been seen as a tantalizingly practical solution to these interlinked problems. City plans repeatedly call for increasing everyday bicycling, often citing the fact that half of all Americans already own a bicycle (often sitting un-used in the garage) (NHTSA 2008). Increasing bicycling rates could promote social and individual health, reduce economic and racial disparities, and begin to reduce environmental harms, and yet the vast majority of North American cities have made little to no progress. Just 0.6% of daily US commutes are made by bicycle, a mark that has hardly improved since the 1960s, and even the best cities still have bicycling rates that are a fraction of their European counterparts (US Census 2014).

This dissertation is an investigation of the gap between planning approaches to promoting bicycling and the actual experience of new bicycle riders in Minneapolis and Saint Paul. The difference between policy goals and actual patterns of everyday life has long perplexed policymakers and urban geographers, who refer to it as an "implementation" gap or a "values" gap (Banister 2005, Shove 2010). But unlike many planning frameworks, I view the mobility patterns of everyday life as a complex emergent relationship between individual bodies, technology, and the material structures of the built environment. My research is premised on the assumption that the lived experience of riding a bicycle in a heterogeneous city requires building capacities for movement that have their foundation in this dynamic relationship, which emerges differently for different people.

The theoretical framework for this research is based on the concept of *affect*, which I use to refer to the inseparable mixing of capacity for action and subjective feeling. Using the concept of affect, I investigate how the spatial practice of urban bicycling emerges relationally in ways that have implications both for policy makers and for social science research focused on mobilities. Similarly, I use the concept of the *assemblage* as theoretical

framework that refers to this relational emergence, how the body, the bicycle and its equipment, and the built environment must all be included within any account of bicycle mobility.

There are three main questions that drive the following argument. The first question is historical: **How are bicycle planning approaches framed around particular kinds of affect in ways that include and exclude certain groups of bicyclists?** This question examines how bicycle planning emerged around a specific white, male, athletic, and upper-middle-class conception of bicycling. This question contributes to North American bicycle planning research as a whole, as well as questions of urban planning history and identity. The second question looks at contemporary spatial practices: **How does bicycling affect form in relationship to the human and non-human landscape in Minneapolis/Saint Paul?** This question examines the complex ways that bicyclists differently develop habits around diverse bodies, spaces, and social networks. Particularly by focusing on new riders, this question has implications for both mobilities research and transportation planning literature. The third question focuses on policy: **What are the implications of current planning attempts to foster bicycling habits in Minneapolis/Saint Paul?** This question looks at specific contemporary policy cases, and contributes to the literature on bicycle planning aimed at including diverse populations and promoting behavior change.

1.3 The Minneapolis NTP Project

The 2007 Non-Motorized Transportation Pilot (NTP) project represents one of the more ambitious top-down bicycling policies at the federal level, representing (as many advocacy interlocutors admitted) an experimental federal policy approach that will likely not be repeated due to political considerations. When noted bicycling advocate Jim Oberstar (D-

MN) became the chair of the House Transportation committee, in addition to increasing overall funding for bicycling and walking in the regular federal transportation bill, he inserted specific money for the NTP project targeted at four cities, including Minneapolis. As the original legislation stated:

(b) PURPOSE – The purpose of the program shall be to demonstrate the extent to which bicycling and walking can carry a significant part of the transportation load, and represent a major portion of the transportation solution, within selected communities.

(US DOT 2006)

The NTP bill aimed at attracting new riders across a wide cross section of types of urban environments, from rural Missouri to suburban Marin County, to small and large cities. These different positions along the urban-to-rural gradient formed one of the key variables for the methodology and outcomes of the project, where each location received $25 million dollars to invest in bicycling and walking infrastructure.

However, when the act of bicycling is considered as part of a larger context, the question of new riders becomes more complicated. Many planning approaches assume that individual capacities for bicycling are somehow static, preceding any particular intervention. In this light, appealing to new riders involves accounting for potential capacities that may be yet unexpressed within the existing city. In this dissertation, on the other hand, I argue that capacities for bicycling emerge only in relation to social practices and different bodies, so that catalyzing new bicycling activities might involve more complex forms of intervention that many designs and advocacy approaches used by NTP groups. In other words, the ability to ride a bicycle in the city is a political outcome difficult to reconcile with the narratives of subjective neutrality common in engineering and design discussions. The Minneapolis test case uniquely focused on moving past traditional bicycle planning approaches by offering a

wider range of experimentation. Unlike the other project cities, the Minneapolis project

retaining a non-profit advocacy group as the mediator for disbursing the federal applications,

allowing greater flexibility around bicycle planning.

In the case of the Minneapolis NTP project, the role of the advocacy nonprofit as an

institutional mediator became a key for thinking about affective politics. The aims of the

nonprofit were geared towards allowing more experimental political interventions to

flourish. For example, as they described the call for project proposals, Bike/Walk Twin

Cities (through the local nonprofit, Transit for Liveable Communities) explicitly requested

projects that were experiential or innovative. The language of the request for proposals

(RFP) reads:

TLC will fund demonstration innovations that inspire exclamation points -- "wow!" "aha!" or

"yes!" Reaching new users is good. Building synergistic relationships that could bring a *complete*

streets mentality into the mainstream is good. Examples of eligible capital projects include, but

are not limited to: bike station development, comprehensive wayfinding signage, mapping, bike

sharing, or free bikes incentive program. Suitable projects could also be facilities for pedestrians

or bicyclists applied in an innovative or strategic way, e.g, creative streetscape retrofitting for

ADA accessibility, covered bicycle parking; or using innovative funding or collaboration, e.g.,

cost sharing programs for new sidewalks, multi-modal enhancement of economic development

projects.

(TLC 2008)

The language of the RFP illustrates the desire of the program to exceed the traditional

restrictions of bicycling planning approaches. For example, according to Piatowski (2013),

the federal Sheboygan, WI case study included a great deal of "outreach" while the

Columbia, MO projects "focused extensively on public awareness and educational

campaigns" (18). Compared the other test cities, Minneapolis had a far higher ratio of on-

street bicycle infrastructure and, overall, included relatively fewer amounts of "soft" infrastructure such as outreach and education (Horning et. al. 2007). [See Figure 1.1.]
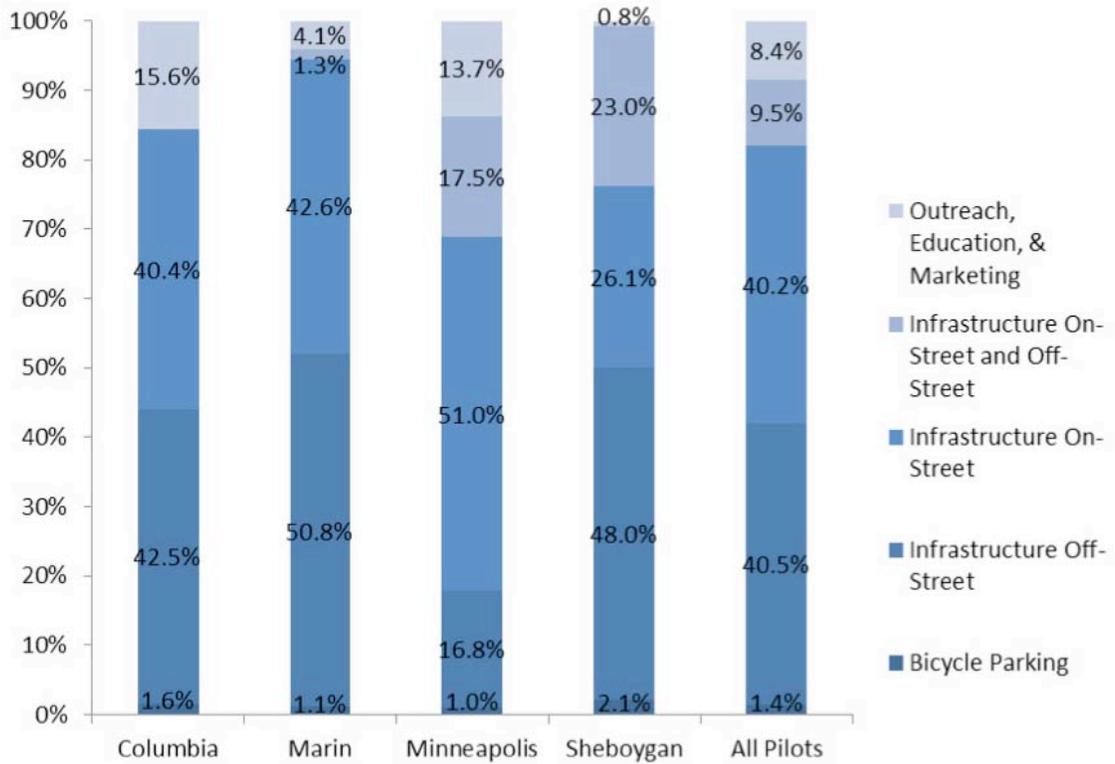
Figure 1.1: NTP Program Investment by Type, (US-DOT 2014).

Minneapolis' explicitly experimental approach to infrastructure and design marks a departure for linear planning processes that have increasingly become driven by statistical accountability. Yet the kinds of built environment interventions that Minneapolis attempted during the NTP projects are not unique to Minneapolis, but reflect trends in cities across North America. For example, Open Streets events, bike sharing programs, bicycle boulevards, and other kinds of "separated" bicycle infrastructures are quickly becoming commonplace and objects of scrutiny for bicycle research. These new approaches, along

with more temporary urban trends such as "tactical urbanism," reveal a frustration with historical approaches to bicycle planning and an interest in allowing for different planning and advocacy approaches to flourish within the urban environment.

1.4 Plan of Dissertation

This dissertation is organized into three parts. The first part focuses on the broader theoretical and historical context, the second takes a close look at present-day bicycling practices in during the years 2011 and 2012, and the final part examines policy approaches from the NTP project that range from 2007 to 2014. These different scales and objects of study intersect around the problem of the new rider in two ways: first by thinking about how bicycle planning has approached behavior change both historically and in the present, and second by looking specifically at one group of new riders and examining how they behave in the everyday world.

Chapter 2 will examine the theoretical and methodological aspects of this study, first outlining the spatial and temporal boundaries of the dissertation before the theoretical justifications for the methodology. In particular, this chapter explains why affect is a crucial concept for understanding how bicycling habits develop differently across different populations. Additionally, I will outline why "mobile methods" are a fruitful approach to studying bicycling, crossing disciplinary and spatial boundaries in ways that complicate some traditional qualitative and quantitative approaches within social science.

Chapter 3 will focus on the historical context for bicycling planning in the United States, paying particular attention to the history of debates within bicycle advocacy and planning narratives. Here, I will trace the conflicted legacy of bicycle planning that emerged during the "bicycle boom" of the 1960s and 70s, particularly the arguments over "vehicular

cycling" and separated bicycle-only paths, and how these debates continue to shape bicycle advocacy and planning.

Chapter 4 draws on "mobile methods" interview data to examine how bicycling habits are formed and maintained. The aim of this chapter is to more completely describe how bicycling is experienced on the city street, with particular emphasis on how new riders experience bicycling. Here, as elsewhere in the project, I place particular emphasis on how habits are formed within different race, gender, age, and class groups, illustrating important differences in how populations experience the same spaces.

Chapter 5 draws on participant-observation data and qualitative interviews to describe the current landscape of bicycling for new riders in Minneapolis/Saint Paul. This chapter offers a typology of different populations of bicycle riders that describes and outlines how different types of bicycling affect emerge in in relation to social groups, bicycle culture, and the bicycling assemblage.

Chapter 6 looks at three case studies taken from the Minneapolis/St Paul metropolitan area, and how these advocacy approaches are implemented. By looking at how these advocacy policy examples emerged in relation to the existing social limitations of the system of automobility, I look at how bicycle planning practices relate to new riders and potential bicyclists. The first of these cases is a contested bicycle boulevard debate in St. Paul, where a series of iterations of a project aimed at enticing new riders met with stiff community resistance. The second case looks at an ongoing series of "Open Streets" events modeled after a popular policy approach that emerged in South America, and has gradually been adopted in North American cities (Lugo 2013). The third case examines the implementation of the city's recent "bike sharing" program, Nice Ride Minnesota.

Finally, in Chapter 7 I draw conclusions about the relationship between potential and actual bicycling populations and urban spaces, focusing on what a more inclusive city for bicycling might look like. I identify a few key proposals for interventions that my research might offer for both mobilities researchers and non-motorized transportation planning.

One more note on method: throughout the dissertation I offer a series of "interludes" that come directly from my personal history riding a bicycle. These are always included as illustrations of a particular kind of experience or concept, as a way to bypass the more formal interviews and accounts of bicycling events and practices, as well as a way to bring the reader closer to the experiences that have kept this dissertation project moving forward. As a mixed-method project, this dissertation attempts to balance participant observation, in-depth accounts from others, and documentary evidence in the hopes of crafting an argument that overcomes epistemological and disciplinary borders that can often fragment urban studies. This research is partly autobiographical, in that I cannot help but think about bicycling through my own moments of revelation and my gradual shift into an expert of sorts on bicycling. Because bicycling is so rare in most of today's North American cities, anyone who regularly attempts it quickly becomes an expert whether they like it or not. The question "did you bike here?" replaces the usual introductory small talk, and through its very statistical oddity, the exceptionality of the bicycle develops into a form of sometimes-unintentional identity.

In a sense, the bicycling city that I envision traces a tragedy. If bicycling ever becomes mainstream in our cities, the cultural exceptionalism that marks bicycling today will wane. Bicycles would be just another mundane technology, as taken for granted as a pair of sneakers, and the rich and differentiated world of today's bicycling affects might fade into

the background. Given the dire situation of our personal, social, and planetary health, it would be a worthy sacrifice.

Chapter 2: Differential Theories of Bicycle Planning

The first concrete rule for assemblages is to discover what territoriality they envelop, for there always is one: in their trash can or on their bench, Beckett's characters stake out a territory. Discover the territorial assemblages of someone, human or animal: "Home."
       -Deleuze and Guattari, A Thousand Plateaus.

2.1 Introduction

The bicycle offers an example of a relationship between the body, technology, and space that challenges many of the assumptions that govern our urban systems today. While seemingly simple, the bicycle's radical openness to the surrounding environment makes it more expressive of the differential relationships that individual and collective subjects can have with their urban environment. The vast diversity of types of bicycle, from high-tech recumbent to homemade tall bike, are merely one dimension of the kinds of diversity that appear once the world of bicycling is examined.

When compared to previous decades, the current "bicycle boom" has witnessed an explosion of the styles of bicycling that are taking place every day in cities throughout North America. These new trends have shifted the traditional debates around bicycling in ways that challenge the approach of bike planners, advocates, and city staff. Yet without a careful understanding of how and why bicycling differs from dominant automobile-centered transportation, urban decision makers risk re-inscribing existing patterns of mobility at the expense of a more impactful future.

This chapter addresses the concepts and methodology I employ to study attempts to reach new bicycle riders in Minneapolis and Saint Paul. I begin with an examination of the differences that can emerge around everyday urban bicycling and some of the reasons for the diversity of bicycling practices. I next look at how differences emerge as a relational capacity

to act within the bicycling assemblage of the body, the bicycle, and urban space. I locate my approach within the field of "mobilities studies," which attempts to de-stabilize objects of social science research in order to better understand movement, social patterns, and relationships. Finally, I end by looking at a fictionalized Samuel Beckett account as a radical example of how bicycles and bodies come together, in specific places and specific times, to create capacity for action.

2.2 Minneapolis' Premature Bicycling Moment

May 26th, 2010 was a good day for bicyclists in the Twin Cities. The June issue of *Bicycling* magazine declared Minneapolis to be the "#1 Bicycle City in the America," dethroning the long-time American champion city of Portland, Oregon (Friedman 2010). The announcement was a bit of a surprise because by statistical measures Portland still led the nation in bicycle commuting. Minneapolis was a not-so-close second, both measured by number of commuting cyclists and miles of on-street bicycle infrastructure.

In spite of the numbers, *Bicycling* awarded Minneapolis its honor largely because of the role that "bicycling culture" plays in the city. The heterodoxy, creativity, and emotional qualities of Minneapolis cyclists warranted aplomb, and in particular, *Bicycling* identified the city's "underground" scene and lauded the archetype of the intrepid winter rider. The article listed a series of cultural events such as the "Babes in Bikeland" alley-cat race, an all-female, unsanctioned competition where participants mimic the routes and behaviors of bicycle messengers. Other examples of Minneapolis bike culture included: "blood-spattered bikes,

two-by-four jousting matches, night-time vigilantes, [and] ice warts" (dangerous bits of salty ice that stick to the roads in the wintertime) (Friedman 2010).[1]

Ever since the announcement, the "#1 Bike City" ranking has been an often-mentioned accolade for Minneapolis bicycle advocates and politicians. Former Mayor R.T. Rybak (in office at the time) was famous for citing the statistic in speeches, and references to the ranking appear frequently in planning and advocacy presentations concerning issues like sustainability, environmentalism, and public health (Gellner 2010). The ranking has taking on the aura of an actual statistical measure, and been used to emphasize the importance of bicycling to the culture and transportation plans for Minneapolis. It's fair to say that the *Bicycling* article has played a significant role in defining Minneapolis' identity as a "bicycling city" within the media and throughout urban policy circles.

The use of the *Bicycling* magazine "#1 bike city" as an advocacy tool within Minneapolis is ironic because many of the manifestations of bike culture lauded in the article have been often ignored, and sometimes condemned, by the community of bicycle advocates, city planners, and staff aiming to promote bicycling in the Twin Cities. Instead, like most US cities, advocacy and planning approaches have long practiced a more traditional and conservative approach to bicycling that emphasizes caution, safety equipment, and "vehicular" approaches to urban bicycling. Official planning documents, outreach efforts, and infrastructural provisions operate as if the kinds of bicycle riding and communities of riders lauded in the *Bicycling* article do not exist. The people that garnered the city its #1 ranking have been largely marginalized from official planning policies, and positioned as a problem within bicycling narratives. This fissure is particularly noticeable during discussions of enforcement, where discussions in the media and in public are dominated by attempts to

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[1] (Since the 2010 article, Minneapolis has failed to keep pace with rising rates of cycling in the US, and Portland has regained the coveted "#1 Bicycling City" ranking, followed by New York City in 2013. REF)

regulate behavior through bicyclist education.[2] These contrasts point to a deeply rooted divide between the cultural and emotional attractions of bicycling and the policy approaches embraced within the advocacy and planning fields.

The challenge is that, at this point, there continue to be stark differences in how people approach changing transportation behavior. Despite (or perhaps because of) the recent increases in bicycling popularity across North America, heated debates are common around what kind of infrastructure is best, how to entice more riders into bicycles, what constitutes proper cycling behavior, what kinds of laws should be enacted, and what kind of equipment is necessary for riding. Often these differences reflect divides within communities of current and potential bicyclists across race, class, age, and gender lines. Resolving these debates, while doing justice to the different needs, desires, and attitudes of these different groups, remains difficult.

Despite the long history of the bicycle, the field of bicycle planning is still young. Particularly within countries of the global North, these differences are rooted within long-running debates over proper and improper bicycle habits and infrastructures. As Pucher and Buehler (2008, 2009, 2010, 2012) have repeatedly pointed out, there is a great degree of diversity in planning and advocacy approaches across different countries, particularly between the Northern European and Anglo-Saxon nations. The recent dramatic rise of bicycling as a social and cultural phenomenon, growth which has much to do with shifting economic, technological, and cultural contexts, makes these debates and differences more apparent now than they have been in decades. There can be little hope for dramatic increases in bicycling rates in North America without more attention paid to the theoretical presumptions of bicycle planning.

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[2] Field notes, Minneapolis Bicycle Advisory Meeting.

2.3 Assemblage and Affect

A fundamental challenge of increasing urban bicycling is the intimate connection to both the human body and the urban space in which bicycles are ridden. Bicyclists touch their vehicle at three points – the hands, feet, and rear end – and all the while the bicycle moves through a continually shifting city. Bicyclists are always looking out for potholes, exposed to the elements, and keenly aware of topography in ways that are uncommon with motorized transportation modes. In this way, movement is a complex relationship between the human body, a form of technology, and the city.

These three realms intersect to produces the particular bicycling subject, each of whom displays specific sets of capacities and perceptions. Modeling bicycling mobility in this way challenges concepts of abstract spatial transportation that reduce movement to time and distance, a perspective where different modes seem interchangeable. Instead, bicycling offers an example of a complex and emergent mobility among a great many others, for example, how we move in airports and on flights, the experience of long-distance running, skateboarding through the city's marginal spaces (Borden 2001, Spinney 2006, Kellerman 2008).

In particular, the intersection of the automobile, the automobile body, and the automobile-oriented city has recently been an object of study. "Automobility," as it is termed, points to how, rather than being a natural or passive intersection of technology and human bodies, the automobile driver has been produced through historically contingent social and political processes (Urry and Sheller 2003). For example, Packer (2008) describes how, during the early days of the automobile society, drivers had to be taught how to act and behave. The evolution of the "driver education" process and parallel safety and awareness

campaigns point to how the "system of automobility" can be understood as a form of governmentality, where the state invests its resources into "the conduct of conduct" (Foucault 2004). The automobile city has a similar history, slowly evolving to produce spaces easily traversed by fast-moving cars (Wells 2013). Today, the contemporary relationship between the plush insulated interior and the driving body is the literal manifestation of technological "embeddedness," as Bull's (2004) work on the relationship between drivers and their musical experience of driving reveals.

While there is some variation between drivers and their cars – think of the difference between driving a sports car and an SUV – in general, the landscape of automobility has been engineered to create a set of universal expectations and perceptions: a flat, highly structured space that operates according to principles that are quite literally inscribed both in the landscape and the law. To a large extent, all automobiles are created equal, such that (lane-weaving Porsches aside) moving cars can be treated as having equal capacities of speed and control. Very few human spaces outside the factory floor display as much uniformity as the contemporary North American road system.

Meanwhile the bicycle complicates automobile-centered categories of understanding movement. Unlike the highly ordered space of the roadway system, where great lengths have been taken to create a uniform set of standards and expectations, bicycling spaces remain highly varied from place to place, from city to city, and even from block to block. Similarly, there is a large degree of contrast and difference between styles and types of bicycles. Even slight adjustments in bicycle geometry – the angle of the seat post, the length of the handlebars – cultivate different postures and attitudes in bicycle riders. For example, riding an upright "city bike," common in European cities, allows for a posture of relaxation: the vast majority of the weight of the body is on the butt, which allows the hands to relax, the

head to be held upright, and forms a wider and higher field of vision. By contrast, the

geometry of the racing-style road bicycle forces its rider to lean forward placing the knees

above the pedals, and making an aggressive posture almost mandatory. Alternately, a BMX

bicycle is ridden with bent knees, low to the ground, its rider often rising from the seat to

pedal or turn; its surprising agility stems from these very traits. There are many more styles

of bicycle, from reclining recumbents to DIY "tall bikes," where the rider sits eight feet off

the ground; each has its own posture and attitude.

Figure 2.1. A tall bike on Minneapolis' West Bank.

Another dimension of difference stems from the bicycle's specific material, where

individual components can make a large difference in the experience of riding. The

difference between carbon fiber and steel, or between thin or fat wheels, may seem a

minimal matter of a few pounds or centimeters, but the way that these material variations

change the dynamics of riding offers a glimpse into the dynamism at the heart of the

bicycling experience. All these variables, combined with the near constant changes in bicycling routes, trails, surface conditions, and interactivity with the urban environment, make the bicycle far less amenable to uniformity, standardization, and the ubiquitous "best practices" of urban planning.

Each individual combination of bicycling body, particular bicycle, and urban space forms what I will call an *affective assemblage*. While I will explain each of these terms in detail, in a rough sense the concept of affective assemblage accounts for the wide degree of variety between different riders on different bicycles who, as we shall see, also ride bicycles for strikingly different reasons. While there are some common narratives and experiences between certain groups that can be sorted into a rough typology (see Chapter Five), in general, coming to terms with the different affective assemblages of bicycling allows for a more comprehensive ability to plan cities for bicycles.

The most important concept within the affective assemblage is the theory of the affective subject. Most simply, *affect* is defined here as the set of capacities and emotions experienced by a moving subject embedded within a particular space, and embodied within a particular body. For example, describing a musician and their instrument as an affect refers simultaneously to the capacity to create music and the experienced feeling of that creation. In general, affect is felt emotion combined with capacity to act, two primary understandings relatively common within social science theory and practice, though not always thought in combination.

The first of these meanings of affect is more developed: affect understood as a set of emotional registers (e.g. Schore 1943, Russ 1993, Wetherell 2012). As Masssumi (2002)

points out, affect is most commonly used as a synonym for emotion.[3] In this light, to describe the affective register of a phenomenon is to account for the full set of feelings that accompany subjective decisions. For example, while labor is understood to be the intentional action of human beings within a material system of capitalist value production (e.g. the factory), affective labor is value production that takes place primarily through social relations (e.g. empathic care). Describing the affect of a situation, or an affective relationship, implies a careful attention to subjective thoughts and feelings.

Less obviously, affect is also understood as a capacity to act. This way of understanding affect drawing on the concept as defined by Baruch Spinoza (1994), who defined affect as "what a body can do." In this sense, the infinite affects of human existence describe the way in which connections can occur between human and nonhuman bodies. Affect in this sense is a term that describes heterogeneous difference-producing connections, for example the connection between co-evolutionary organisms, groups of individuals, or human subjects, technologies (e.g. television), or concepts (e.g. gender). This is the understanding of affect that Deleuze and Guattari rely on heavily in their ontological discussions about the production of "multiplicity", in other words, how reality is created through the positive combination of difference (Deleuze 1994 118). Importantly for this argument, these two understandings of affect are not distinct, but two ways of looking at the same process of social becoming. As Spinoza puts it, a change in what a body can do is always simultaneously feeling and power, action that registers for human beings as feeling or

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[3] In the full quote, Massumi is careful not to make this easy analogy: "in the absence of an asignifying philosophy of affect, it is all to easy for received psychological categories to slip back in, undoing the considerable deconstructive work that has been effectively carried out by post structuralism. Affect is most often used loosely as a synonym for emotion. But one of the clearest lessons … is that emotion and affect – if affect is intensity – follow different logics and pertain to different order" (Massumi 2002 27).

emotion. The concept of affect describes at once this double sense: emotion and action, capacity and care. They are inseparable.[4]

Understanding human experience in this way requires re-thinking assumptions about how and why we make decisions. As Protevi (2010) describes, the traditional model of the "rational cognitive subject" consists of a model whereby "the subject gathers sensory information […] processes that information into representations […] calculates the best course of action," and finally "commands its body […] to best realize those desires" (3). Drawing on Hurley (1998), Protevi refers to this as "the sandwich model of the mind," because the decision making process is sandwiched between an initial sensory perception and a final external action (3). In other words, a separation between the mind and body, the inner and outer worlds, always exists. The interior decision-making self remains distinct from, yet surrounded by and engaged with, the exterior world.

Affective theories of the subject pose problems for this rational cognitive model because they suggest multiple ways in which the acting subject bypasses and exceeds the operations of inner consciousness. Throughout much of the Western philosophical tradition,

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[4] The simultaneity of feeling and the ontological constitution of bodies expands the importance of the affective subject. The inseparability of technology, environments, the body, and human experience suggests that the "individual" is better defined, not as a discrete organism, but as any "thing" or group of "things" that combine together (through their affections) to create causal effects. As Deleuze defines it, the body is defined precisely by what it can do:

> A body, however small it may be, is composed of an infinite number of particles; it is the relations of motion and rest, of speeds and slownesses between particles, that define a body, the individuality of a body. Secondly, a body affects other bodies, or is affected by other bodies; it is this capacity for affecting and being affected that also defines a body in its individuality.
> (Deleuze 1970 123)

Here, Deleuze defines bodies as having two properties. First, they are defined by their extensive relations: "speeds and slownesses" that describe the material (physical) properties of a body in its existent actuality. At the same time, and in the same space, a body has its intensive relations, its capacities for affecting and being affected by other bodies. Or, more simply, a body's intensive properties equal the (infinite) sum total of its possible affects. Bodies, in other words, cannot be studied in isolation, but only in action:

> We know nothing about a body until we know what it can do … what its affects are, how they can or cannot enter into composition with other affects, with the affects of another body, either to destroy that body or to be destroyed by it.
> (Deleuze and Guattari 1987 257)

Following this logic, any theory of bodies and becoming cannot precede the actualization of these bodies.

the mind has been conceptualized as existing independent of the body, able to control it using varying degrees of cognitive intentionality. The classic example of this is Descartes' famous *cogito*, but a great many derivative or evolutionary models of the mind-centered subject have continued to dominate Western subjective concepts (Thrift 2007). Theories that emphasize affect, by contrast, do not presume the existence of a hierarchical relationship between mind and body. On the contrary, the mind can be described as an "after effect" of the body (Massumi 2006). In other words, action can sometimes come first, as illustrated by neurological studies showing how movements of the body itself can often precede the actual mental intentional decision to make a movement.

It is not enough to simply say that the concept of affect challenges traditional models of human behavior. Rather, the way in which it complicates the picture is important for understanding why this model of human action can make a difference for both theory and practice of any particular problem. While there are many definitions of affect, Clough's (2007) definition of affect is both comprehensive and explicit about its focus on the body. She writes that affect is the field of "pre-individual bodily forces augmenting or diminishing a body's capacity to act" (1). These pre-individual bodily forces combine with the individual subject along four distinct modalities that pose difficulties for the traditional mind-centered concept. These are: the subject embodied within a particular body, embedded within a particular space, extended technologically, and emotionally connected. Each of these dynamics is always at play in any human action.

Unpacking this definition, the first key dynamic of affect is that any action involves the whole body, all at once. Rather than thinking through the body and its capacities as the aggregate of individual parts, capacities, and sensations, a theory of affect understands the body as a complex. For example, picture the way that a violinist holds her body and breathes

before each note. Consider the whole bodily motion of a baseball pitch, the visceral

identification with watching dancers, or the way that yoga understands its connection

between the breath, the mind, and a particular pose. The execution of any individual action

occurs insuperable from the body, which is always operates in excess of the strict

intentionality of the mind. Affective terms such as proprioception, habit, and nonconscious

reaction begin to express precisely this relationship. As Clough (2007) describes, "the

substrate of bodily responses, often autonomic responses, in excess of consciousness," is

continually performing work and engaging with the world in ways that destabilize the

decision-making self (2). As a result, we must understand any action not just as the

operation of the mind or one specific part, but of an entire moving body, feeling as a whole.

Second, the affective body is always embedded within space. Unlike the rational

cognitive individual, who can theoretically exist only in the brain, the affective subject is

always embedded within a particular environment that constrains and controls action,

allowing possibilities and withdrawing others. For affect, embeddedness describes how our

bodies are continually working within a landscape of specific objects, within a particular

climate, and along particular topographies. At the small scale, our world is populated by

things: a plush leather couch contains a human form, the interface between a doorknob and

a grasping hand (Dreyfus 1990). At the urban scale, as Lynch (1960) famously illustrated, we

are always embedded within a particular landscape. As we move, we operate within a set of

expectations, mental maps, and perceived "paths," and any movement through the city

occurs in relation to these possibilities. These can be largely mental, as for Lynch, or they can

be material "affordances," ways that the environment affords action to a particular body

(Thrift 2000).[5] For example, the Situationist interventions were aimed at creating political change precisely through tweaking maps that reflect understandings of potential actions within the environment (Pinder 2005, Smith 2010). Another example: for bicyclists, skateboarders, or the art of "parkour," the city provides different set of paths and networks of possible routes (Borden 2001, Ammel and Tani 2011).

Third, the affective subject is "extended" by technology. The body's capacity to act is not simply provided affordances by its environment, but also by the technologies with which it engages. Examples such as reading glasses, a skateboard, or a thick winter jacket can literally extend the body and allow it to act across distances, at speeds, and in ways that provide different capabilities that complicate autonomous individuality (Dant 2004, Urry 2004). Massumi (2002) describes this meeting of technology and body as "composite bodies," where "things and objects are literally, materially, prosthetic organs of the body" (96). The bicyclist is illustrative; the rider experiences the bicycle as an extension of her legs and arms, so that its movements are literally felt through the body (Spinney 2006).

Finally, the subject is "emotional," continually experiencing and reacting to the felt experience of the whole, embedded, extended body. Changes in power register simultaneously as a feeling, so that the two registers of affect are continually bound together. In this light, cognition is not a simple matter of rational calculation taking place according to a calculated weighing of values and perceived outcomes. Rather emotions, feelings, and decisions operate as a different degrees of intensity, largely nonconscious after-effects that the mind then makes sense of, narrates, and understands as a matter of conscious choice and

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[5] Deleuze and Guittari say this quite explicitly, that a difference in affordance is only a difference in bodies' capacity to act: "the greater a body's power to act, the vaster the field embraced by perception" (Deleuze and Guittari, 1983: 153).

decision in retrospect. In this way, the concept of affect profoundly disrupts the traditional mind-centered model of action (Gallagher 2005).

The importance of this affective understanding of human activity is that it creates space for the expression of different bodies across the full population of human difference. Compared to the rational-cognitive approach, the affective model of action can better account for differences that express themselves across gender, race, class, and age divides. As we shall see in the following chapters, whereas a model of action that emphasizes cognition might attempt to universalize one particular "rational" set of rules, the an affective approach, with its differential sets of bodily capacities and spatial potentials, poses difficulties for universal norms.

In this way, thinking about mobility problems through the theory of the affective subject suggests consequences for how policy makers craft environmental policy. As Shove (2010) describes, a reliance on the rational cognitive model of the subject (which she calls it the "ABC" approach, for "attitude, behavior, and choice") limits the types of interventions available to institutions (1273). The ABC approach insists that changing broad social behaviors best occurs through changing individual values and attitudes. Thus, the role of policy makers is to make sure that individual actors are "given better information" or "more appropriate incentives"(Ford 2010). One consequence is that affective relations, such as embeddedness and embodiment, might be considered external to individual decision making processes. These kinds of conditions are pushed into the background "context" of the subject, while broad connections between the built environment and social outcomes are seen as expressing sets of consistent internal values and beliefs. This approach implies that broad social change relies on persuasion and rational argument.

Shove (2010) suggests that environmental policy prescriptions that work through the rational cognitive subject are not adequate for changing broad social behaviors because they marginalize many of the most important factors affecting patterns of everyday life. Again, for the example of bicycling, weather, route choice, physical ability, social group acceptance, and perceptions of safety are all crucially important variables for understanding whether or not one rides a bicycle. According to Shove, all of these different factors are considered to be a muddled "mixture of positive 'motivators' and negative 'barriers'" that become difficult to distinguish, categorize, or understand within the rational cognitive approach. Thus, there often appears to be a "value-action gap," between one's expressed desire to lead an environmentally sustainable lifestyle and one's actual patterns of everyday life (Shove 2010). Within transportation planning literature, the individual "value-action gap" becomes a collective "policy-behavioral gap," referring the crucial difference between the expressed values of a community and the actual outcomes of attempts at implementation (Banister 2005 71).

For bicycling in particular, the lens of affect creates space that better accommodates the concept of potential behavior. By combining emotion and capacity through particular spaces and bodies, affect is able to explain how bicycling might gradually become habitual, how the needs and desires of any individual might change along in relation to their environment. As described in Chapter One, learning to ride a bicycle is a cliché for timeless habit formation precisely because it illustrates how the body can operate automatically, so that someone who has never ridden a bike has little sense of their potential to do so, while

someone who has learned to ride never forgets.[6] In other words, every body contains the potential to be a bicyclist.

While bicycle planners are beginning to understand the importance of the concept of potential bicyclists, this category of new riders remains difficult to reconcile with the cognitive behavioral approach, precisely because this model is predicated on pre-existing values and desires. For example, this kind of sandwich or ABC model of behavior has difficulty explaining exactly how desires or values that may exist in one setting (e.g. a vacationing in a European city) may not exist within another environment (e.g. one's suburban home). The existence of spatially specific desires points to the importance of how, within an affective model of human action, actual and potential capacities and feelings can co-exist. When a human body and a bicycle come together, there are first a set of additions and subtractions of capacities that develop within the particular combination, specific to its time and place. These shifting capacities are accompanied by a second felt experience, the embodied perception of the process of change from the perspective of the subject. Affect thus mixes the interests of phenomenologists – the proprioceptive, emotive, and non-conscious dimensions of experience – with a more ontological register that describes how the possibilities of an encounter shape any actual action. By combining these two registers, affect brings emotion and power directly into the political calculus of human experience. It is this combination of emotional politics and the feeling body that provides affect with theoretical and practical traction.

The concept of affect combines separate components to better reflect that way in which the act of riding a bicycle is always a mixture of pleasure and activity, a blend of one's values and one's body. The concept of affective capacity suggests that the ability to bicycle is

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[6] Indeed, in the early days of bicycling the experience of turning the handlebars in one direction and traveling in the other was viewed as magical. (Woodforde 1970).

not simply a matter of muscle memory, but rather a set of feelings and capacities that permeate the body, and out into the spatial environment. (For example, affect might include knowing which route to take, understanding how to ride in traffic, and the formation of muscles in the calf, etc.) Studying the bicycling body in motion, as continually formed and shaped by its surroundings, requires accounting for the embodiment of the bicyclist, the embeddedness within a particular world of movement, and the relationships between the body, the bicyclist, and the city street.

2.4 The Challenge of Mobility

While the "affective turn" described by Clough (2007) and others may be important within theoretical debates, practically speaking, applying the concept of affect within social science research has been difficult. For example, Protevi's (2010) analysis of Hurricane Katrina or the Terry Shaivo debate illustrate the challenge of using affective techniques to make specific claims about social and political events. Whereas an approach that holds that attitudes and values drive behavior might rely on interviews and surveys in order to better understand these attitudes, a theoretical commitment to affect calls for methods that move beyond this representational approach, and suggesting the need for methodologies that better fit spatial and social theories is one of the supposition of mobilities research. As Thrift (2004) describes, moving beyond representational concepts requires thinking not through "sedentary" relationships between subjects and environments, but through patterns and relations always in motion. Drawing on Martin Heidegger's (1996) notion of being-in-the-world, Thrift (2004) focuses on the "human background," the environments through which patterns of "walking and talking" become "spatial orders" that guide human action (14). As Thrift's non-representational theory proliferated through geography, social scientists began

to emphasize the way in which "flows" and "affect" compose urban environments (Urry 2000, Thrift and French 2002).

Thrift's approach to thinking about subjects as patterns and relationships, rather than as specific forms of being, became known as "non-representational theory," where human behavior is a relational "emergent outcome" composed of "practices" rather than actions (2007). Thrift's non-representational approach uses "affect and sensation" as the building blocks for human subjects that retain only "minimal humanism" (13), such that the non-conscious, or "more than conscious," dynamics of behavior come to the fore. For example, rather than relying on the mental representations of an intentional actor, here behavior is "a form of thinking… a different kind of intelligence… a set of embodied practices that produce visible conduct as an outer lining" (Thrift 175). Cities are thus described, rather dramatically, as "roiling maelstroms of affect" (171) whereby "human language is no longer assumed to offer the only meaningful model of communication" (174). For Thrift and others, crowds, bodies, patterns of movement, and spaces dictate the practices of everyday life.

Most generally, Thrift's non-representational approach has been taken up through mobilities studies, which emphasize movement and pattern over stasis and being "in place." To offer one example, a mobilities approach to studying transportation means thinking more systematically about the relationship between structure and agency, individual and environment. Rather than placing an autonomous individual subject at the center of the story, as the one "deciding" and acting within a passive world, a mobilities approach would consider how environments and subjects mutually come together as a relationship that fosters particular actions. Within this project, the relationship or *assemblage* is fundamental to describing how different bodies combine to create possibilities for action.

31

The key benefit of an assemblage approach is that the relationship between the individual and his or her environment is not conceived as a discrete, additive relationship. In other words, a given space is not simply a collection of things; rather, the way in which they hold together is of crucial importance. To again turn to the example of automobility, the automobile assemblage would refer to the relationship formed between the driver, the automobile, and the city designed specifically for automobiles. Put another way, this assemblage of the automobile is a combination of the human body, the car, and the built environment that produces a subject with particular capacities for moving (and other actions). In this way, driving a car is not simply a neutral technology, but a passionate and durable pattern of moving, thinking, and feeling about the surrounding world. As Dant (2004) describes it, the automobile assemblage becomes a primary site of production:

The driver- car may be assembled from different components with consequent variations in ways of acting, and its modal form may vary over time and place. However, despite variations, the assemblage of the driver-car enables a form of social action that has become routine and habitual, affecting many aspects of late modern society. […] Neither the human driver nor the car acting apart could bring about the types of action that the assemblage can; it is the particular ways in which their capacities are brought together that bring about the impact of the automobile on modern societies.

(62)

Thus, the driver and car combine into a single (composite) body with distinct capacities that exceed and are distinct from the capacities of either human or automobile in isolation. The driver-car produces a particular form of freedom: automobility. It is precisely because this affective assemblage displays such a firm grasp on our habits, behaviors, and feelings about the city, that the challenge of increase non-motorized transportation has become so difficult.

As this example illustrates, the affective assemblage de-centers the role of human beings so that other kinds of entities begin to appear to take "action." In other words, our cars drive us as much as we drive them. Expanding the concept to embrace entire ecosystems, assemblages can describe how populations of animals, insects, or other "natural" categories act within the world as assembled bodies of living and non-living things (Ingold 2000). Even beyond this, seemingly inanimate technologies or material substances can be seen as acting on human beings, so that cognition no longer becomes the measure of action, and material technologies combine with human bodies to create new subjectivities, new combinations of affections (Clough 2007). Technologies, spaces, and the material objects that surround or serve human being can be usefully conceptualized as combining with and "affecting" human being. These combinations become, in retrospect, continually forming individual bodies with distinct characteristics based on their capacities.

Despite the insistence on becoming rather than being, it is important to recognize that these kinds of non-essentialist ontologies do not deny the existence of structure. One common misunderstanding of these sorts of theoretical claims is that they reduce the world to undifferentiated flows, a gigantic and infinite soup that makes it nearly impossible to rely on stable categories. These ambiguous flows can seem to have little purchase on explaining causality, such as why and how actually existing bodies come to exist in one form or another. Yet this is hardly intentional; on the contrary, as Ian Buchanan (1997) states, admitting the presence of a non-essentialist "flux" makes it all the more important to clarify a set of concepts of relative permanence. For these structures, "defining [them] simply as flux is to admit defeat. That is why the term 'assemblage' is so crucial" (Buchanan 1997 81). On the one hand, all "individuals" are necessarily part of a single infinite and unitary substance; on

the other hand, these individuals assume an identity that is based on their particular

consequences, the particular things that these bodies can do.

To this end, the categories of identity traditionally used to ground taxonomic

ontologies – human beings, species, different physical forms of matter such as the elements

– become, not some sort of radical and ineluctable flux, but particularly "intensive" orders.

These categories become "singularities" or "assemblages", semi-permanent but always

permeable patterns that have marked and operational forms of behavior. As Deleuze and

Guattari (1987) define it,

An assemblage has neither base nor superstructure, neither deep structure nor superficial

structure; it flattens all of its dimensions onto a single plane of consistency upon which reciprocal

presuppositions and mutual insertions play themselves out.

(90)

This lack of base or superstructure is another way of saying that there is no transcendental or

reductionist logic according to which these 'identities' are ordered. Rather, assemblages often

seem remarkably permanent. For example, extending Dant's (2004) analysis, Urry (2004)

describes the automobile assemblage as:

[A] car system that is remarkably stable and unchanging, even though a massive economic, social

and technological maelstrom of change surrounds it. The car-system seems to sail on regardless,

now over a century old and increasingly able to 'drive' out competitors, such as feet, bikes, buses

and trains.

(32)

Thus the "car system", though highly dynamic and full of momentum, is conceptualized as a

particularly stable and powerful organization of matter, subjectivities, and human bodies.

This pattern works to produce certain forms of life, is maintained by powerful political

interests, and has concrete local policy consequences. For example, Seiler (2008) describes

how the construction of the Eisenhower Interstate Highway System through the U.S. during the 1950s explicitly served as a mechanism for resisting "collective" forms of identity, and producing individualized citizen subjects.

The system of automobility, in this case referred to as the "car-driver-city" assemblage, offers perhaps the definitive example of a practical application of a "mobilities" methodology, while simultaneously serving as an useful but problematic model for bicycling research. For example, De Lyser and Sui's (2012) mobilities approach offers methods that foreground movement over situatedness in place,

Rather than relying on after-the-fact, stabilized retellings, prioritize the researcher's being there, in motion, engaged in active knowledge production, seeking to understand mobile phenomena first hand.

(4-5)

In order to examine this kind of active production of mobile phenomena, for years mobilities methodologies have been using audio, video, and mobile communications technology to generate data that better describes the continually moving and changing flows between places. In particular, mobilities research, and the diverse set of methods associated with it, focuses on social groups as continually made and re-made by patterns of movement. For example, mobilities researchers will focus on movement habits within everyday life, the role of digital communications devices (e.g. smart phones), and the workings of places such as airports or urban squares (Couldry and McCarthy 2004, Urry 2007, Kellerman 2008). In its explicit concern with the role of everyday movement and the connection between spatial imaginaries and identity, mobilities research draws connections to other geographic work concerned with migration and transnational global identities to craft a coherent theory of spatial movement (Massey 1994).

The diversity of approaches to studying automobility offers a good illustration of how mobilities methodology is gradually applied (Wachs and Crawford 1994). For example, while both Thrift's (2000) and Urry's (2000)'s descriptions of "automobilized time-space" attempt to think through how the car remakes both its surroundings and its drivers through affect, a rich set of studies of automobiles emerged. Sheller (2004) has looked at the kinesthetic feeling of the driving body, Bull (2004) examined the experience of music and sound within the cockpit, and Merriman (2004) looked at to how places are reconfigured architecturally, and experienced differently, in conjunction with high speed freeway travel. Since then, mobilities researchers have expanded their methodologies beyond the traditional qualitative interview, to include both video cameras (Laurier et al. 2008), GIS (Jones and Evans 2011), and time journals (Jungnickel and Aldred 2013), among other approaches (Fincham et al. 2010).
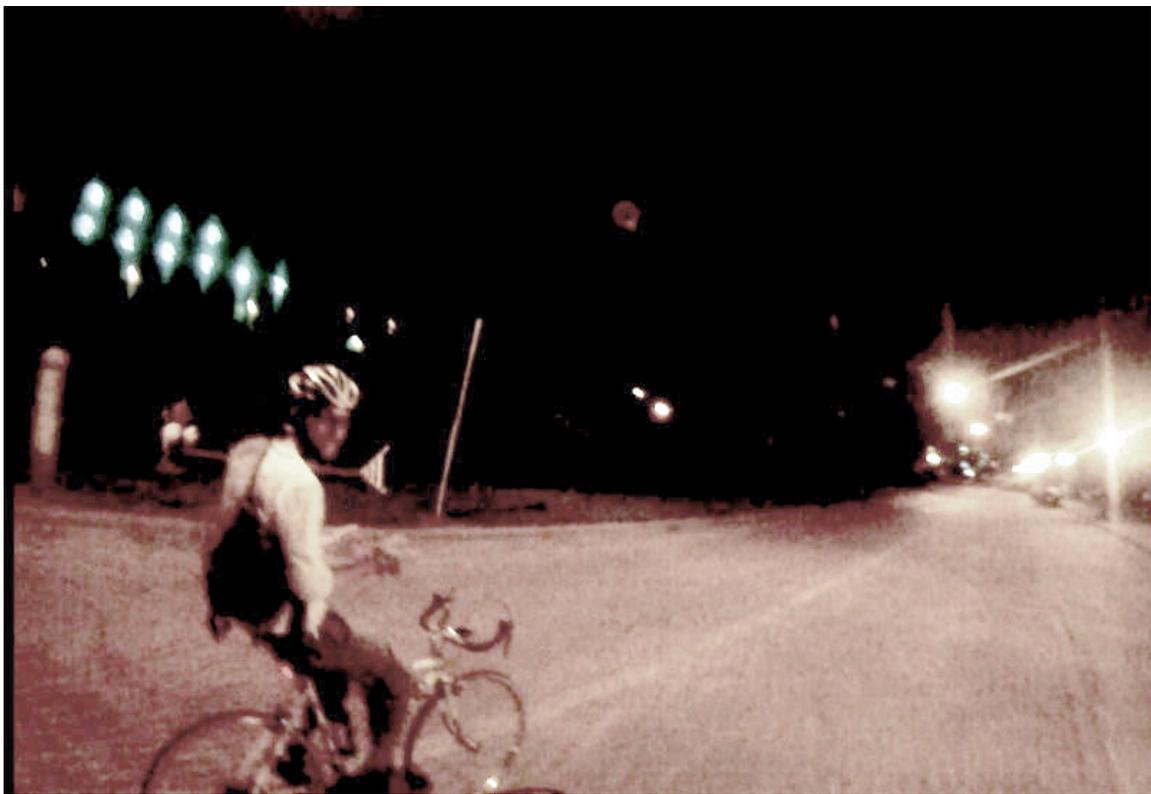
Figure 2.2 - Participant riding "hands free" on an empty street in Southeast Minneapolis at midnight.

The focus of mobilities research has increasingly expanded beyond the automobile to study other ways of moving, particularly patterns of walking (Edensor 2011, Pinder 2011) and transit use (Fincham et al. 2010). In the UK, mobile methods have increasingly been applied to understand the experience of bicycling. Most notably, Spinney (2009, 2010, 2011) has used different video cameras mounted on bicycles to look at the changing relationship of the body and the bicycle during trips through London. Jones (2012) relies instead on microphones mounted on cyclists commuting to work, using "mobile audio diaries" as a means of accessing the changing affective experience of bicycling through the heterogeneous landscape of Birmingham, UK. And Aldred (2013, 2014) has used surveys and time series data to think about commuting patterns across populations.

Figure 2.3 - Participant resting his foot on the curb at a red light during an afternoon in downtown Minneapolis.

This study adopts a mixed method mobilities approach that has three benefits that make it particularly useful for studying the formation of bicycling habits. First, following Spinney (2010) and Laurier et al. (2012), video recordings of bicycling trips allow for a closer observation of embodiment. There is a great diversity of ways that different people ride bicycles. Video allows one to observe whether or not a cyclist is sitting upright or leaning forward like a cycling racer. Body language can suggest when and where cyclists feel more relaxed, and when and where they are more cautious. Similarly, there are meaningful differences surrounding how cyclists prepare for trips: What kind of equipment do they bring with them? How confident do they seem when they mount and dismount their

bicycle? When do they smile? When do they appear to be bored? Video methodology allows these questions, most of which occur within an embodied world that is difficult to describe within a traditional interview narrative, to begin to be answered.

Second, a mobilities approach provides a far richer degree of spatial data than traditional qualitative approaches such as interviews or focus groups. Much like time geography or contemporary GPS mapping, video ethnography provides rich spatial data that illustrate bicyclist commutes alongside video data. This kind of information is particularly important for thinking about bicycling because of the variability and heterogeneity of most urban bicycle trips, because of how bicycle infrastructure designs lack standardization.

During the past few decades, and particularly during the past few years, there are constant changes in how bicycling infrastructures, lanes, and on- and off-street trails are designed and built (if, indeed, they exist at all). This infrastructural confusion means that nearly all (non-recreational) urban bicycle trips involve negotiating a highly variable, continually changing, set of circumstances. Cyclists experience rapid changes in the built environment, hurdles and moments of danger interspersed with long stretches of less stressful, more comfortable conditions (that is, if they are lucky). These differences translate into a great degree of variability and idiosyncrasy over precise route choices, depending on the particular cyclists' skill and comfort levels, particularly when it comes to negotiating with automobile traffic [See Figure 2.3]. Unlike fixed cameras, photographs, or informant interviews, longitudinal video data provides a consistent document of these conditions, and reveals the non-linear relationships between spatial distance and perceived comfort.
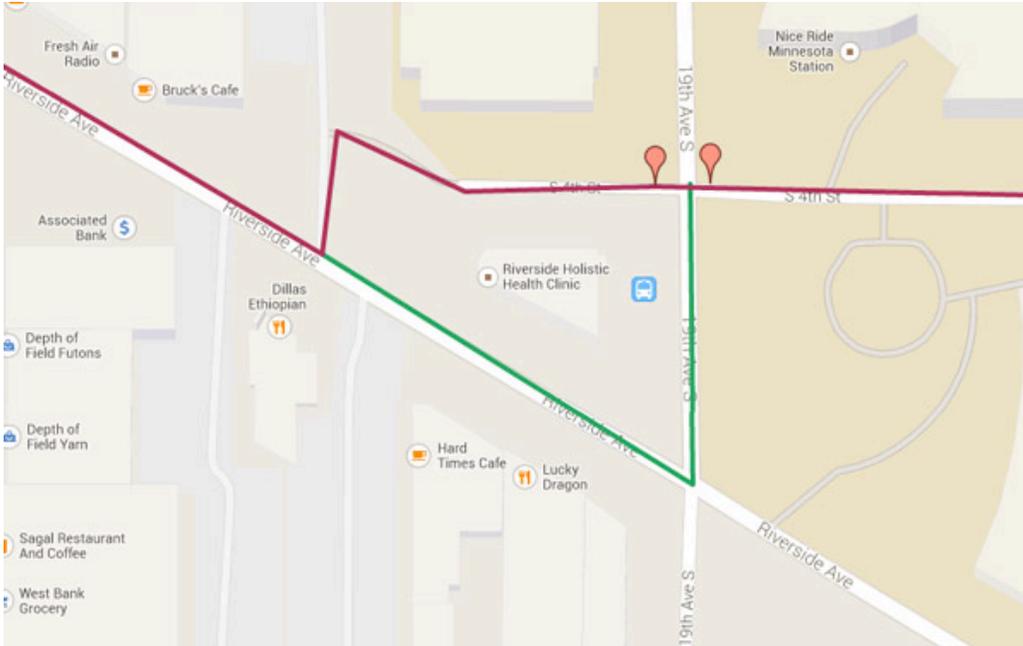
Figure 2.4. Map of a short-cut taken along a bike ride through Minneapolis' Cedar-Riverside neighborhood.

Figure 2.5. Participant being addressed by a driver during the afternoon in South Minneapolis.

Third, mobile methods research provides access to the way that the bicycling experience is spatially embedded within the city. Video data reveals moments of encounter

between research subjects and the built environment that trigger positive and negative reactions within the subjects [See Figure 2.4]. For example, Linda's observation about the experience of the crunching sound that occurs when riding over acorns in autumn was a detail that did not occur in the indoor seated interview, but was trigged on the bike path under the oak trees alongside the riverbank.[7] A similar example ocurred during an interview with Maria, who reacted after being accosted by a passing motorist within a construction zone.[8] These kinds of environmental events provide data that would likely be missing within a more traditional informational narrative about the experience of cycling. It is precisely this contrast between sedentary accounts of cycling and the mobile experience of cycling that suggests the need for mobilities methodology.

Technically, for this research I conducted eleven ridealong interviews of varying lengths with participants, which consisted of sit down and riding portions of routes chose by the participant. In addition, participant observation with many different bicycling events informed the analysis, in addition to 24 informant interviews with subjects in formal and informal settings.

Interlude: On Bicycle Legs

Like most people, I became a bicyclist slowly. It started with a girl I began dating after moving back to the Twin Cities. She and her friends would sometimes go out around town on bicycles, and that was a new thing for me. I desperately wanted to join in, and retrieved an old family bike from out of my mother's garage. I hadn't ridden a bicycle in the city since a few times in high school, six years prior, and the experience of following this

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[7] Ridealong interview with Linda.
[8] Ridealong interview with Julia.

41

group of people on bicycle around Minneapolis was a thrill that came to define the bicycling city for me.

I rode my bicycle more and more when the weather was nice, eventually buying a new used road bicycle from out of the basement of my favorite downtown Minneapolis shop. And eventually, after my car died, I didn't fix it. Partly, I couldn't afford the ever-increasing repair bills for the old coupé, but another part of the reason was that I didn't want to. Increasingly, dealing with a car was an unnecessary burden.

I suppose riding my bicycle has kept me relatively thinner than I might be otherwise, but until a few years ago I never really noticed any particular changes in my bodily self. Then one summer, after buying a nice bicycle equipped for touring, I began going on longer rides: 25 miles back and forth to the Saint Croix River, 50 miles into Wisconsin one day and 50 back, 80 miles due East out to a friend's farm. The meditative experience of spending a full day riding a bicycle alone in the countryside is a mental and physical revelation.

And then I noticed my legs. I was laying down and felt my legs tighten just a bit. I reached down and realized my thighs had developed muscles that I'd never known about, hard wiry things almost with right angles. I can still vividly recall the feeling of reaching down and touching my own legs and discovering these new muscles! Growing up, I'd never been athletic and the idea that activity or exercise might change one's body hadn't really occurred to me.

But it does, of course. Bicycling changes your body. The more you ride a bicycle, not only do you become more adept at handling corners and turns in a proprioceptive way, but your physical body evolves to better accommodate the machine. You develop bicycle muscles — those funny lines up one's calves, square thighs, and (sadly) little else — and the bicycle and the body start to fit together.

2.5 Beckett's Bicycle

Samuel Beckett's novel *Molloy* is the eponymous story of a crippled schizophrenic who spends most of his time in the hospital. The novel consists of two monologues, one of which describes time Molloy has spent traveling around Ireland on his bicycle, traveling through the city, often confused about why or where he is riding. One charm of the narrative is that Molloy's bicycle provides him with unmitigated joy, one of the most stable experiences of his unstable life. Molloy's crippled body and unstable identity interact with the bicycle in a few crucial ways that illustrate the possible complexities of bicycle riding. For example, his narrative begins with a description of his bicycle that belies traditional assumptions about the mindset and habits of bicyclists:

I found my bicycle (I didn't know I had one) in the same place I must have left it. Which enables me to remark that, crippled though I was, I was no mean cyclist, at that period. This is how I went about it. I fastened my crutches to the cross-bar, on either side, I propped the foot of my stiff leg (I forget which, now they're both stiff) on the projecting front axle, and I pedaled with the other. It was a chainless bicycle, with a free-wheel, if such a bicycle exists. Dear bicycle, I shall not call you bike, you were green, like so many of your generation, I don't know why. It is a pleasure to meet it again. To describe it at length would be a pleasure. It had a little red horn instead of the bell fashionable in your days. To blow this horn was for me a real pleasure, almost a vice. I will go further and declare that if I were obliged to record, in a roll of honour, those activities which in the course of my interminable existence have given me only a mild pain in the balls, the blowing of a rubber horn—toot!—would figure among the first.

(15)

Molloy's helter-skelter bicycle narrative illustrates three key dynamics that run counter to traditional assumptions about bicycling. First, Molloy's bicycle undermines theories about

intentionality and the decision to ride a bike. Typically, intentionality plays a large role within models of bicycling decision making. One rides a bicycle after careful consideration of the alternatives, after weighing the possibilities, consequences, and judging according to one's values. Yet here, Molloy becomes an accidental bicyclist, even unaware of the fact of owning a bicycle in the first place. (Or course, he could also be stealing the bicycle.)

Second, Molloy's absurdist description of his cycling technique (combined with his partial ignorance of its workings) runs counter to the expertise assumed by many bicycling advocates and professionals. The comic lengths to which Molloy goes in order to successfully use his "chainless" bicycle defy the imagination. Yet, as I will describe, many people riding bicycles have only very partial knowledge of how it works, or what the proper bicycle terminology might be. Most riders are continually making similarly idiosyncratic compromises and makeshift adjustments while riding bicycles.

Finally, Molloy's description of the vice-like pleasure of his bicycle horn suggests that bicycling, for him, is an emotionally charged act. Rather than serving as the outcome of a rational calculation about transportation, Beckett's bicycle is a fetish and an obsession, an object of pleasure and a cathartic release. This kind of attachment suggests that the attachment of the bicycle is something that defies logic. In all three of these ways, Molloy's bicycling narrative subverts commonplace assumptions about how individuals relate to technologies of movement. Molloy operates through inexplicable paths of desire that undermine rational decision making processes (often quite humorously). Yet, when compared to abstract rational choice theories, the kinds of connections, descriptions, and relationships that Molloy forms between himself and his bicycle mirror more closely how people actually describe riding a bicycle.

According to most narratives within the bicycle advocacy and literature community, the archetypical bicyclist is one who trains him or herself how to ride in the midst of chaotic traffic, equips him or herself with the latest gear, and achieves an encyclopedic knowledge of the workings of the bicycle. Examples of techno-centric narratives purporting to explain the technique of bicycle riding abound (Haynes 2009, Forester 2012, Peterson 2012), but they all operate under the general assumption that the bicyclist is a committed expert, of whom the (white, male) author is an archetypical example. In all of these cases, the fit, equipped, and knowledgeable bicyclist is the clear role model for less experienced riders.

Yet when it comes to how people actually describe riding a bicycle on an everyday basis through the city, most every cyclist is closer to Beckett's Molloy than Chip Haynes' "practical cyclist" (2009). For Beckett's deranged schizophrenic, the act of bicycling combines dimensions of movement, pleasure, and simple mechanical capability into a single complex stream of narration. The bicycle, for Molloy, is beyond thought:

It was I and my bicycle. I began to play, gesticulating, waving my hat, moving my bicycle to and fro before me, blowing the horn, watching the wall. … It is difficult to think riding, for me. When I try and think riding I lose my balance and fall. I speak in the present tense, it is so easy to speak in the present tense, when speaking of the past.

(25)

Molloy's inability to think while riding is wholly consistent with an affective understanding of the subject. Molloy's embodied capacity combines with his experience of pleasure so that the bicycle forms an affective connection with Molloy's body and his environment. The (schizophrenic) bicycle-subject is continually immersed within his world, concerned with movement, with the walls, with the bicycle's horn. The bicycle-subject becomes something that exceeds Molloy, the cripple. Capacity and feeling are indistinguishable.

The crucial dynamic here is that bicycling is not simply a rational outcome of a set of values or principles. For Beckett's schizophrenic, such an analysis would be impossible. Bicycling here is a form of play and pleasure, of exercise and struggle, a combination of unlikely bodies resulting in meaningful movement. Ironically, this fractured confused description of bicycling more accurately captures how people actually feel when they ride a bicycle, so that Beckett's tragicomic Molloy may be the true archetype of a bicyclist.

Within bicycle planning, the new rider problem is often referred to as a "chicken and egg" situation, one where cause and effect are difficult to isolate from each other. Without a broad, diverse, politically influential bicycling constituency, it is very difficult to persuade local and state governments to fund and build bicycle infrastructure. Similarly, without safe and comfortable bicycling infrastructure, it is next to impossible to attract a large group of bicyclists. In following current procedures, which rely on responding to citizen pressure, neighborhood lobbying, and traffic count statistics, this leaves bicycling advocates and planners in a bind. They must lobby for a constituency that does not yet exist, outweighing the expressed concerns of currently existing (automobile) citizens in favor of not-yet existing (or invisible) bicycling and walking citizens.

This more constitutive role for bicycling planners places them in a difficult position, having to make assumptions about the mentality, ability, and conditions – the affective relationships – of potential bicyclists that continue to be the goal of contemporary bicycle planning. A great deal of the effectiveness of bicycle planning hinges on whether or not these assumptions accurately reflect the proper range of affect, the variety of capacities and feelings that exist within the pool of potential cyclists. People of different ages, races, or genders will experience bicycling very differently, and approach the situation with radically contrasting sets of memories, habits, and emotions. More fully understanding the affective

experience of cycling across different groups will help planners and advocates as they embrace a more constitutive role in planning the city. Without this broader embrace, a true "bicycling city" in North America will remain a plan, gathering dust on a shelf somewhere in a city office.

2.6 Conclusion

In this chapter, I have outlined the basic theoretical framework of the dissertation, arguing that affect theory is particularly useful for thinking about bicycling because of its conflation of experienced emotional states and capacities for action, conceptual categories that are often separated within individualistic methodological frameworks. I argued that the concept of the assemblage offers critical purchase for questions of mobility, and that mobile methods can illustrate how the body-bicycle-urban space assemblage can differ across spaces and populations.

As I will show, the ability to ride a bicycle is always a relational capacity, dependent on one's body, one's feeling of (dis)comfort, and the specificities of the urban space through which one is travelling. This relational complexity forces bicycle researchers to come to terms with how specific spaces and technologies can affect people in different ways, in other words, with affective difference. In the next chapter, I describe the specific evolution of bicycling in general, and North American bicycle planning more specifically, focusing on how particular affective relationships became normalized and normative.

Chapter 3: Historic Bicycling Bifurcations

The bicycle has done more to liberate and empower women than anything else in the USA.
  –Susan B. Anthony

3.1 Introduction

In the previous chapter, using the concept of the affective assemblage, I outlined a theoretical framework predicated on the relational dynamics of the bicycle, (different) bodies, and diverse kinds of urban space. In this chapter, I offer an overview of the history of bicycle planning in the United States, focusing primarily on debates that emerged following the "bicycle boom" in the 1970s, where rates of bicycling grew quickly in cities across North America. In particular, I look at how arguments between "vehicular cyclists" and more pragmatic planners pivoted around assumptions about why people choose to ride bicycles. Many of these assumptions involved the privileging of specific age, gender, race, and class positions at the expense of others.

In particular, I look at two examples of 1970s bicycle planning arguments, how they positioned themselves in relation to the affective experience of the cyclist. The first of these is what Epperson (2013) terms "the lost third way," referring to early bicycle planning approaches around the campus of the University of California-Davis beginning in 1963. The second is the "effective cycling" approach of influential bicycling advocate John Forester (2012). The details of each of these two planning approaches reveal important assumptions about how and why bicyclists ride in cities.

Finally, I bring these early planning debates into the present day by looking at how contemporary bicycle planning philosophy – "the six E's" outlined by the League of

American Bicyclists – has evolved over the last few decades. By examining how the City of Minneapolis Bicycle Master Plan (2012) makes implicit and explicit assumptions about how and why people ride bicycles, I examine how bicycle planning still frames design debates in ways that simultaneously include and exclude certain ways of moving, tracing a trajectory between early bicycle planning controversies and contemporary planning.

3.2 Origins of the Bicycling Motive

Within the world of professional transportation planning, it has become an ingrained habit to abstract the discipline from questions of motivation. For most research, why people drive cars is hardly important. Any given automobile driver could be heading to work, taking a child to baseball practice, cruising out of hormonal boredom, or rushing to the hospital with a wounded roommate. Any given driver could be singing to herself to her favorite pop song, daydreaming, or filled with road rage; from the transportation engineering perspective, it hardly matters. The important thing is that each automobile is treated as an individual entity, part of a complex system of traffic, governed by rules of supply and demand, and malleable according to the systems of engineering, road design, and rule of law.

This bird's eye perspective treats traffic largely as a fundamental given, and through much of the 20th century transportation planning has evolved as a scientific discipline based around the principle of easing congestion, improving "level of service" (LOS), and creating conditions of convenience for this continually growing stream of automobile traffic. This perspective is one of continual struggle against this growing tide of traffic. As a result, 20th century urban design has created "streets [that] serve primarily as storage spaces and racetracks for motor cars that are absolutely incompatible with traditional street functions" (McShane 1994 228). Urban development has been synonymous with reducing gridlock

through wider streets and more rapidly negotiated intersections. The mentality of each driver, their thoughts or desires or reasons for driving, is often missing from this worldview. Traffic is the problem, and engineering is continually warding off inevitable failure.

The elision of individual motives lies at the heart of the difference between bicycle and automobile planning. For bicycle and pedestrian planning, affective concerns matter for at least two reasons. First, compared to the standardization of automobile roads (e.g. signage, lane width, limited grading, controlled turning radii), there is far more variability about how streets are designed for people moving under their own power. Sidewalks can be designed to accommodate many different types of movement: marching, strolling, wandering, walking, jogging, and window-shopping for example. Variables such as sidewalk width, streetscaping, and buffers between moving traffic, strongly affect levels of physical safety and perceived comfort in ways that make streets more or less conducive to different sorts of pedestrian movement.

The same principle holds true for bicycle infrastructure. There are significant differences between a wide shoulder, an on-street bicycle lane, a buffered "cycle track," or an off-street bike path. Each of these designs is conducive to certain kinds and styles of bicycle riding while making difficult other types and styles of riding. When contrasted with the uniform assumptions of automobile designs, where the "style" of driving or the motives of the driver can be ignored, the variability of motives and behaviors means that bicycle and pedestrian planners cannot ignore the affective differences of riders. On the contrary, these assumptions become crucially intertwined with design concerns.

Secondly, since the late 20th century, one planning goal has been to shift the transportation mode share (i.e. the percentage of people who choose each different mode: car, transit, biking, or walking) away from the single occupancy automobile and toward other

options. This political project means attracting "choice riders," people who have the means to drive, toward alternative modes and away from the perceived convenience and comfort of their automobile (e.g. Holeywell 2012). As such, shifting urban transportation away from the automobile is as much a marketing problem as a design problem. In other words, the perceptions of the comfort and qualitative experience of alternative modes become as important as their actual cost, convenience, and speed (Pucher and Buehler 2008; Pucher, Dill and Handy 2010). This means that understanding the affective experience of different transportation users becomes more important. For example, the crucial question of how to get people to try bicycling involves attempting to identify individual barriers (e.g. weather, sweaty clothing, fear of traffic) and overcoming them one by one (e.g. Garrard, Rose, and Lo 2008). Answering any of these questions in detail hinges upon proper understanding of motive.

For both these problems, the crucial difference between the experience of cars and non-motorized transportation lies in the relationship to the external environment. The automobile is an inherently isolating technology. Inside the car, one can be warm or cool, listening to music or a book on tape; outside the car, it might be freezing or terribly hot, pouring rain or the year's most smoggy day. On the other hand, for non-motorized transportation modes, the environment is inseparable from experience. This fundamental difference means that design questions that might be practically inconsequential to an auto-oriented plan become important when designing a non-motorized transportation facility. This difference means that it is more difficult for pedestrians or bicycle infrastructure to adopt narratives of neutrality; instead they become charged with assumptions about audience such as how and why people move through the city, and for whom the facility is being designed. To some extent, this is true of every transportation decision; spending millions of

dollars to improve a roadway means that money is not being spent on non-motorized alternatives. Yet, the politics of street design for non-motorized users extends this logic down to the very details of design considerations, from curb cuts to buffers.

3.3 Gendering the Bicycle

The most surprising fact about the invention of the modern bicycle is that it took so long for engineers to discover its most practical form. As Bijker (1995) describes, the invention of the modern "safety" bicycle exemplifies the intrinsic relationship between social and cultural norms and the pace of technological change. Early bicycles evolved from rudimentary two-wheeled scooters – called *draisiennes* or hobby horses – into the classic high-wheeled "ordinary" (later "pennyfarthing") bicycle during the 1860s and 1870s. From a technological perspective, the high-wheeled ordinary had many disadvantages. The fact that the locomotive pedals were attached directly to the front wheel meant that turning the bicycle required a gymnastic use of one's entire body. The direct connection also meant that the speed of the bicycle was directly related to the size of the front wheel, which was the main motivation for its increasing size. Additionally, the dangers and inconveniences of these early bicycles meant that they appealed only to a narrow, male demographic of "scorchers," who triggered debates over street safety in early US and European cities

SCORCHING STILL RAMPANT

The bicycle rider who speeds down the street leaving a trail of wounded and dying behind him is known as a "scorcher." He seems to think he owns the street. People who happen to be out walking have no chance unless they too are riding bicycles. It is getting to be so that no one is safe who does not ride a bicycle.

Even if the "cyclist" does not go fast there is still the danger of his pedals hitting something in their mad whirl round and round. It stands to reason that a big pedal jutting out from the side of a bicycle is going to hit **something** as it goes past and some day it may be you that it hits or your own mother.

Is the game worth the candle? The public is entitled to a square deal. Let the "scorchers" go where they can really "scorch."

(Woodforde 1970).

Figure 3.1 Newspaper clipping warning against the dangers of "scorchers" from the 1890s (Retronaut 2012).

The high-flying reign of the "ordinary" bicycle lasted for decades, until the invention of the first modern "safety" bicycle in around 1889. This design combined all the basic features of the bicycle as we know it today: a centrally-located set of cranks, a steerable front wheel, a geared drive train, and brakes mounted on the handlebars. The combination of these features triggered a revolution in the uses and appeal of the bicycle, transforming it from a novelty machine dominated by "young athletic men, distinctly upper and upper-middle class" into an actual transportation tool for a large portion of the rapidly urbanizing US and European public (Bijker 47). Indeed, the bicycle was such a revolutionary leap forward over the plodding transportation options of the time that the key question isn't "why did it become so popular?" but, "why did its invention take so long?"

Bijker employs an approach to the evolution of the bicycle based on the work of science and technology studies scholars (Latour 1996, 2005). Importantly for Bijker (Ibid), the bicycle was seen quite differently by different "relevant social groups" used for different purposes and goals according to which the success or failure of the bicycle was measured (46). Thus, the prime reason for the long-career of the impractical high-wheel "ordinary" bicycle was that it was successful at showcasing one's athleticism and daring. As Bijker suggests,

For the social group of Ordinary non-users an important aspect of the high-wheeled Ordinary was that it could easily topple over, resulting in a hard fall; the machine was difficult to mount, risky to ride, and not easy to dismount. It was, in short, an Unsafe Bicycle. For another relevant social group, the users of the Ordinary, the machine was also seen as risky, but rather than being

considered a problem, this was one of its attractive features. Young and often upper-class men could display their athletic skills and daring by showing off in the London parks. To impress the riders' lady friends, the risky nature of the Ordinary was essential. The meanings attributed to the machine by the group of Ordinary users made it a Macho Bicycle. This Macho Bicycle was, I will argue, radically different from the Unsafe Bicycle – it was designed to meet different criteria; it was sold, bought, and used for different purposes; it was evaluated to different standards, it was considered a machine that worked whereas the Unsafe Bicycle was a nonworking machine. (Bijker 75)

The innovations of the safety bicycle were derided and shunned by the users of the high-wheeled "ordinary" as being childish, unaesthetic, and improperly engaged with the environment until the new bicycles proved to be consistently faster in racing competitions. (As I will explain, contours of this argument were mirrored by athletic male bicycle advocates during the 1970s debates over the construction of bike paths.) At that point, the bicycle as a technological artifact was "stabilized" and its mechanical consistency adopted across North America and Europe (Bijker 88).

Female Scorcher—Male Attire—Diamond Frame Wheel—Ram's
Horn Handle Bars

PHOTO BY BUTLER

Figure 3.2 Female "scorcher" and women's bicycling dress in the 1890s. (Retronaut 2012)

One important thing about Bijker's argument is that, even at this very early stage of

the bicycle's history, there was already a contested relationship between the technological

apparatus and the social and cultural groups to which they appealed. The delay of the

appearance of the "safety" bicycle had as much to do with the relationship between its

primary demographic and the nascent bicycle industry as with shortcomings in technology.

When the "safety" finally did appear, using pneumatic tires and quickly decreasing in price,

the "bicycle boom" that followed was popular beyond any expectations. Its appeal stretched

out to groups of people that were had hardly been considered before. Bicycles sold very

briskly in the US, Canada, Britain, France, Germany, and the Netherlands (among other countries), and became a highly important political and social force for over a decade. The delay in their adoption and dissemination suggests, even at this early stage, the depth of the interconnection between technology and society, between machines and cultural mores.

The best example of this relationship was the way that bicycles affected the roles and spatial freedoms differently afforded to men and women. The bicycle granted (primarily bourgeois) women a great deal of freedom of mobility, allowing access to the city in ways not previously possible. [See Figure 3.2.] Similarly, despite many early efforts by engineers to design a vehicle consistent with cumbersome Victorian dress, once the safety bicycle became accessible to the middle- and upper-middle class women, the technological limits of the bicycle became a force for social change. The safety bicycle was not compatible with the petticoats and corsets of the time, and led to the invention of new forms of women's dress (e.g. "Bloomers" were named after the woman who invented them) (Bijker 1995). The famous quote by Susan B. Anthony (epigram) throws into relief the magnitude of this change, and its importance in the nascent movement for women's rights.[9]

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[9] That being said, the culture of bicycling during the first boom was still dominated by men. The pre-eminent US bicycling advocacy group of its day, the League of American Wheelmen, had obvious issues with gender identity. Cycling groups in the UK were similarly biased.
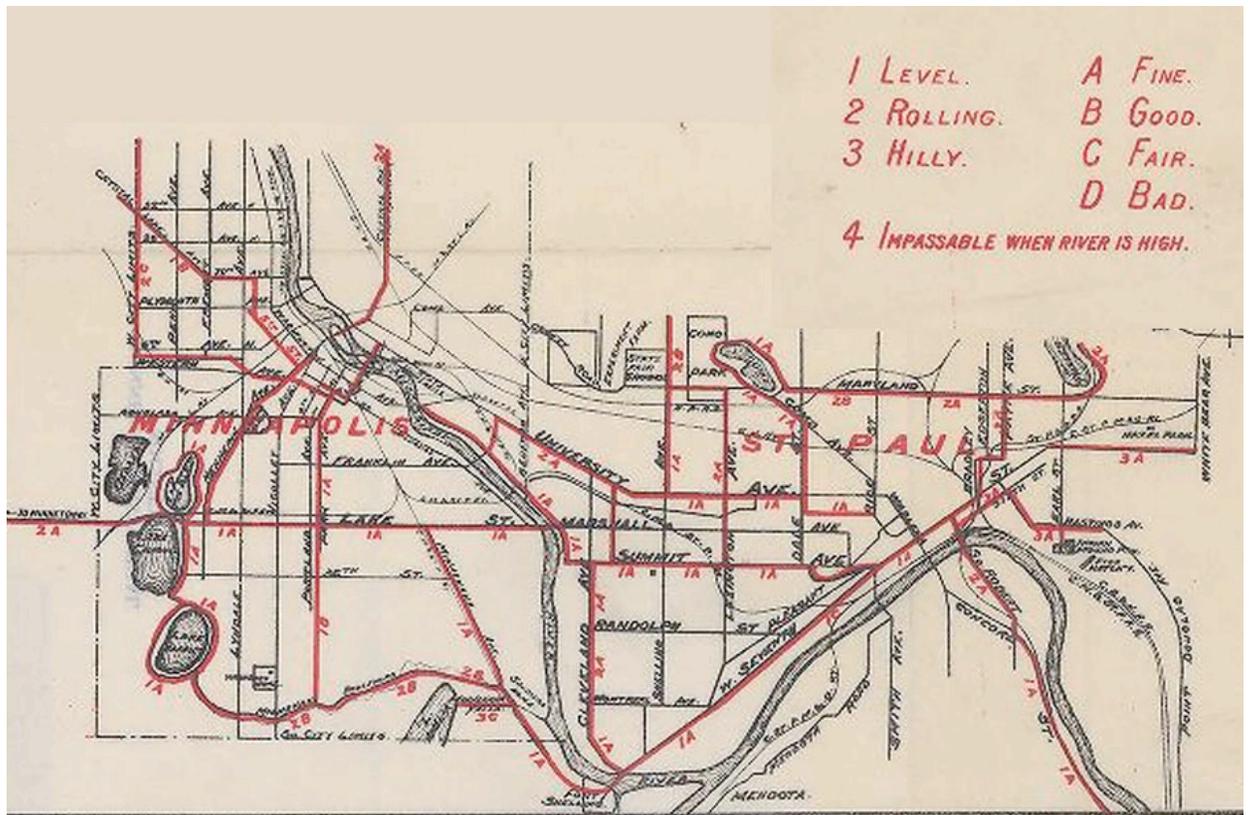
Figure 3.3 Twin Cities bicycle map from 1899, League of American Wheelmen. MNHS (2012)

Particularly in the United States and Great Britain, the popularity of bicycles did not last very long. The automobile arrived quickly afterward; indeed, many early car manufacturers had previously been bicycle engineers, and they shared many technical features and innovations.[10] The arrival of the automobile on the crowded streets of rapidly growing US cities posed problems, particularly in terms of safety for pedestrians. The speed differentials between slow moving horse-drawn wagons, early streetcars, and the rapidly accelerating technology of automobiles were dramatic, and bicycles, as the "one of the least safe elements" all but disappeared from the traffic mix by 1910 (McShane 1994 188).

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[10] As Read (2013) points out, one of the great ironies of bicycling history is the ease with which political demands for decently paved bicycle routes – the "Good Roads Movement" – were quickly appropriated by automobile interests.

At this point, the social evolution of bicycling in Europe, particularly in certain countries in the North, diverged from US concerns. Differences in urban density and available land meant that redesigning European cities to accommodate automobile traffic was far more difficult than in the US (Pucher and Buehler 2013). Particularly in the Netherlands, Scandinavia, and Germany, a system of separated "cycle paths" were constructed that ran alongside, but separate from automobile traffic. Of these, the most thorough attempt was a Dutch government system begun in 1924 and maintained following World War Two thanks primarily to its devoted base of "higher-status cyclists" (Epperson 2013 9). Attempts to build this type of facility in the UK were tried, but resisted by a group of male, upper-class cyclists – the Cyclists Touring Club – who published a well-read magazine and raised concerns about safety, political and spatial segregation, and limiting certain kinds of (recreational) mobility (Epperson 2013 12, Walker and Rodriguez 2009).[11]

[See Figure 3.4.] As we will see, this debate continued for a long time, both in the UK and in the United States.

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[11] "Cycle paths would tend to degrade the pastime, reduce the number of cyclists, and to strike a blow at the cycle manufacturing and distribution trades from which they would never recover," Stancer huffed in one editorial.[11] (quoted in Epperson 13).

Figure 3.4. Editorial cartoon lampooning a proposed cycletrack network in the UK, c. 1920s.

Within the US and Canada, similar developments meant that riding conditions consistently became worse for bicycling. Dating from the early marginalization of the bicycle in the first decades of the 20th century until the late 1960s, the bicycle was primarily viewed as a toy intended for children (and the occasional unconventional oddball). By the 1940s, fully 80% of bicycles sold in the US were marketed as children's products (Woodforde 1970). At this point, bicycles were seen as a way to train future drivers, and education and instructional programs aimed at children sought to instill the principles of automotive responsibility to increase overall traffic safety and decrease insurance liability (Packer 2008). A typical instructional film from this year encourages young children to "drive your bike," to walk bicycles across roads, and to ride in single file at the edge of traffic lanes (State of Minnesota 1946, Girl Scouts of the USA 1955, Sullivan Company 1955).

During this time, guidelines and principles for planning and traffic engineering evolved from loose early experiments with control devices into a highly ordered and regulated system of infrastructure and enforcement that privileged ever-increasing levels of automobile movement organized around the discourse of safety (Packer 2008, Vanderbilt 2008). This discourse largely viewed bicycles as an obstacle, making sure that bicycling in the US would remain marginalized until the surprising popularity of Schwinn "stingray" bicycle introduced in 1963 (invented in California, and marketed to children and teenagers). The social acceptance of these early bicycles evolved into the "second bicycle boom" during the mid 1960s, and bicycles took on socio-political relevance following the 70s energy crisis, the environmental movement, and countercultural reaction to post-war American land use patterns (Time 1971). Not only did bicycles for adults (primarily 10-speeds, many of which

were affordable because they were imported from Japan) outsell children's bicycles, but bicycles in general outsold automobiles for the period from 1971-74 (Time 1971). This rapid growth led to a series of debates over bicycle planning and safety, what Latour (2005) might call "controversies" which shed light on how social objects are continually negotiated (23).

3.4 The "Third Way" and the Sidepath Debate

The heated American debates over the effectiveness, safety, and audience for bicycle paths in the 1970s were a pivotal moment in North American bicycling history. As bicycle advocates fought amongst themselves, in court and in the media, they revealed differing affective perspectives for understanding bicycling. Though a broader set of concerns has now emerged within bicycle planning today, these early debates still shape the assumptions of bicycle planners in subtle but important ways. While these debates were not new – on the contrary, they repeated themes extending far back into the 19th century – they shed particular light on how different groups of cyclists understood the affective disposition of cyclists. This kind of misunderstanding was important because, particularly in contrast to the institutionalization of automobile transportation, bicycle planning in this era was haphazard, lacking uniform standards, methods, or "stabilization" (Bijker 1995). For example, well into the 1960s, it was still sporadically taught that it was better to ride against traffic on the side of the road, paralleling the safety guidelines for pedestrians (ASCE 1974 563). (Today, we know that this is the most dangerous place to ride a bicycle.) The contrasting approaches of different planners and advocates during this period throw into relief their assumptions about different affects and audiences.

As Epperson (2013) explains, the 1960s popularity of the bicycle was surprising to planners and civil engineers who had spent a great deal of time and capital remaking US

cities primarily for automobile traffic. During this early rudimentary period of US bicycle

planning, there were distinct contrasts between the early efforts to accommodate the

increasing numbers of cyclists on US streets and roadways. Particularly in California, early

designs for bicycle facilities prompted debates and raised questions about safety, style, and

audience for bicycling. Epperson (Ibid) describes a "third stream" approach to bicycle

planning that began around the campus of the University of California–Davis that relied on

a Dutch-style system of off-street cycle paths. Unlike the other two dominant philosophies

of bicycle planning at the time – i.e. the "pragmatic" incrementalist planners, and what

would become known as the "vehicular cycling" school – the UC-Davis approach to bicycle

planning emphasized a philosophy of forgiving design.[12] Spearheaded by a collaboration of

faculty and University staff, and pushed by an aggressive University Chancellor, the

"egalitarianists" began to develop their system in 1963 to accommodate the least experienced

cyclists:

The third-streamers openly advocated policies that specifically targeted the weakest and most

vulnerable bicyclists and involuntary users who rode strictly out of need, not choice. Together,

these comprised cycling's lowest common denominator, and for the third stream planners, they

formed the yardstick by which to measure success or failure. If high-end recreational cyclists

couldn't live with their solutions, well, there were lots of other sports in the world they could turn

to.

    (Epperson 2013 36)

    Part of the difficulty with bicycle infrastructure development at the time was that

Federal money for bicycle paths was tied to the US Land and Water Conservation Fund, and

could only be used for construction projects in parkland (Corgel and Floyd 1979). This

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[12] As Vanderbilt (2008) defines it, the "forgiving road" is where "roads should be designed with the thought
that people will make a mistake" (180). Often this means that roads are designed to be wider, straighter, which
paradoxically increases speeds and decreases safety.

meant that most bicycle paths were limited to recreational purposes, and were of little use for utility transportation. By contrast, the "egalitarianist" approach was modeled after the Northern European cycling philosophy that wedded separated designs of bicycle paths with a geographic system that encouraged utility trips through urban space, in this case, through the sprawling campus of an agricultural university. This key difference – that bicycling was for transportation, rather than recreational or athletic purposes – meant that bicycle planners had to simultaneously design routes for the broadest possible audience ("lowest common denominator"), while placing routes through key parts of the city to link important destinations. Following European models, its planners recommended achieving these goals through restricting automobile movements, in other words, by "placing additional restrictions on motorized traffic, eliminating on-street parking, converting streets to one-way operation, or installing separate traffic-signal phases just for bicycles" (Epperson 2013 34).

The crucial difference between these egalitarian bike planners and the "vehicular" plans that would soon dominate the planning conversation was a question of audience and affect: Who was riding bicycles, and why were they doing so? The answers to these questions shaped how bicycle infrastructures were designed, and what kinds of places that were built. For the egalitarian "bikeway" planners, the needs and desires of "experienced and competent individuals" were not important. On the contrary, designing a bicycle facility meant "crimp[ing] the style" of this group in favor of spaces that would accommodate slower-moving, younger, and less well-to-do people riding for necessity and transportation (Sommer, quoted in Epperson 2013 36).

Perhaps understandably, this philosophy provoked a negative reaction by influential bicycling advocates, who at the time were focused on working through some early attempts at guides for bicycling safety and bicyclist education. For example, one influential bicycle

engineer described "transportation and utility aspects" of cycling as being "only offsprings" of recreational riding and competitive racing (Konski, quoted in Epperson 2013 31). Konski was emphatic about the need for competitive bicycle racing to serve as a model for riding. In 1973, he wrote:

Why is it important to advance the sport of racing if we are to provide bike routes and bike paths? Because if the public understands the sport and learns why the serious cyclist does the things that he does, the individual, though he may not be interested or capable of racing, will be better able to apply this knowledge to his own riding.

(Konski 1973)

According to this philosophy, competitive male bicycle racing was a model for everyday riders throughout the nation. For example, correct posture of the "world's great bicyclists," and riding using aggressive speeds was deemed safer for everyone. Similarly, in a series of safety columns in *Bicycling* magazine (of which he was an editor), an influential advocate for the League of American Wheelmen described cyclists without professional training as "over-aged child cyclists" with "unsafe bicycles" (Delong 1970, 1971, 1972). For Delong, proper bicycling involved an attitude of intensity and competition, either with others or with one's self. The fundamental affect of cycling was one of increasing skills:

Bicycling is a sport of skill – a skill that increases throughout your life. Take every opportunity to test yourself. Then when an emergency comes, your reactions will be correct and automatic.

(Delong 1970)

Delong's columns attempted to shape how cyclists ride, performing critiques of their spacing, posture, and attitude towards riding on the roadway [See Figure 3.5.].

The first, fourth, and sixth to tenth cyclists in this photo are maintaining the cyclists' proper position on this narrow road, so auto-mobiles can proceed in both directions without interference. But cyclists two, three, five and rear are riding too far from the road edge. They'll disrupt traffic and are subjecting themselves to danger of injury if automobiles approach simultaneously from both directions. With heavier traffic, even the first rider should get closer to the shoulder than shown.

Figure 3.5. Educational bicycling illustration depicting good and bad riding placement (Delong 1971).

During this era, advocates used safety as a frame around which to construct a narrative and gradually developed professional courses intended to instruct riders in bicycle skills. Unfortunately, particularly once state governments focused on legislating cycling, separate safety regulations set in motion heated battles over how to ride properly, and derailed the momentum behind the construction of off-street bicycle paths. Most of these arguments centered on John Forester, a prominent bicycle safety advocate and the self-proclaimed leader of the "vehicular cycling" movement. The way that Forester played a role in the history of bicycle planning illustrates how differing understandings of skilled riding, combined with a restrictive notion of the affective concerns of bicyclists, limited the field of bicycle advocacy in important ways for years to come.

Any history of US bicycle planning is bound to include John Forester, likely the individual who has most influenced 20th century bicycle debates in the US. The British-born Forester, son of the military novelist E. M. Forester, was a bicycle advocate and safety

instructor during the 60s who was launched into national prominence after a series of legal

fights at different levels of government over bicycle safety regulations. For example, Forester

challenged the "mandatory sidepath" law in his hometown of Palo Alto, losing in a series of

court battles where he elected to serve as his own lawyer. These kinds of laws, passed in

many cities around the US during this period, declared riding on city streets to be illegal if

there was an off-street bicycle path in the area (Epperson 2013). Based on safety grounds,

Forester's ultimately unsuccessful series of challenges of court decisions about the law were

well-publicized. The popularity of his position led him to sue the Federal Consumer Product

and Safety Commission, which was developing safety regulations for both children's and

adult bicycles, on the grounds that the rules would prohibit importation of high-end

European road bikes. Drawing on the publicity he had garnered from these legal fights,

Forester's subsequent advocacy against off-street and separated bicycle infrastructure placed

him at the center bicycling debates during the 70s and 80s. Particularly through his later roles

as the president of the California Association of Bicycling Organizations and the League of

American Wheelmen (the oldest advocacy group in the US, now named the League of

American Bicyclists), Forester's thoughts on the social and safety benefits of off-street

bicycle infrastructure made him the *de facto* leader of the influential "vehicular cyclist"

movement.

The simplest definition of Forester's vehicular cyclist approach, of which DeLong

and Konski were also key players, is that "bicycles fare best when they act and are treated as

[motor] vehicles" (Furth 2012). This concept, which is still repeated like a mantra by many

bicycling safety instructors, resists attempts to develop separate sets of rules, regulations, or

infrastructures for bicycles and cars. In its most dogmatic form, vehicular cycling will even

argue that bike lanes do more harm than good, and should not be installed within city

streets. Apart from his legal battles, Forester's main influence over cycling policy stemmed from his widely available bicycling manual, *Effective Cycling*, first (self) published in 1975 and now in its seventh edition (Forester 2012). Some of Forester's sprawling book can be easily dismissed: for example, his claims that bicycle planning is a massive conspiracy to "deliberately discourage safe and competent cycling", his *ad hominem* attacks on advocacy groups, or his frequent use of condescending name-calling (e.g. the "safety freaks" or planners derided as "mistaught children") (Forester 2012 664). It's also necessary to point out that Forester is simply incorrect about some of his statements: for example, his claim that "riding to work, done largely on main arterial streets at rush hour, is the safest of all known cycling activities" (Ibid 343). But while the book is filled with dismissible claims, at the same time much of the content is useful, technically accurate, and still taught in bicycle instructor classes. Many of Forester's presumptions about bicycling are commonplace amongst planners and advocates today (Minneapolis Bicycle Advisory Committee Meeting 2012a). Through examining more closely Forester's arguments about how, where, and why people should ride bicycles, key differences about affect and mentality emerge.

Like many of the available bicycle manuals, Forester's *Effective Cycling* goes through a range of topics that might be important to people riding bicycles at different skill levels (e.g. Petersen 2012, Hurst 2006, Haynes 2009). He includes chapters on what kind of bicycle to ride, how to perform maintenance, what to wear, and (most importantly) where to ride on the street. Not entirely unique amongst these guidebooks, Forester claims that his system is "universal," that his approach can and should work for anyone (Epperson 2013). But unlike most guide books, as he builds his case for his style of cycling, Forester bases his claims on argument about human nature, naturalizing the idea that the bicycle and the human body

have a synergistic relationship that dwells deeper than ideology or surface opinion. Forester

goes farther, broadening his claims to include the "natural desires" all of humanity:

We like cycling because its suits our nature. However, our natural desires are not good guides for

enjoyable cycling. We must operate in accordance with scientific laws and human behavior. The

cyclist on a bike is a new kind of creature: part man, part tool, and part process, like the hunter

and the bow or the dancer and the dance.

(Forester 238)

Here, Forester naturalizes the affect and experience of bicycling, in order to align it with or

against a particular set of innate instincts, particular understandings of human body and

capacities.

Forester uses these kinds of naturalistic assumptions to outline an evolutionary telos

of bicycling, to create stages through which cyclists move as they gain experience. According

to his implicit list, untrained beginners are "childish" or "silly bicyclists" and fail to

understand how "the built-in control system [of concern and anxiety] should be overcome"

(Forester 2012 302, 515). Eventually, as people move past the "toy bicycling" phase, the

"facts and reason [of Effective Cycling] are overwhelming." In this way, bicyclists slowly

move to and from distinct categories, from being "people-on-bicycles" to becoming proper

"cyclists […] when they became strong and supple enough to spot out in the gear they

started with" (Ibid 303). Implicit in this transformation is a gradual increase in speed and

progressive upgrading toward higher levels of bicycling technology. At the endpoint of

bicycling evolution, Forester places "the great road racing cyclists [who display] effortless

performance, mile after mile, with no movement other than smooth leg and ankle rotation"

(249). Fully evolved bicycling is thus synonymous with efficiency of time and energy, a

machinic devotion to movement, which might be one reason why Forester claims that

certain male-dominated professions make the best type of bicycling subject. He explains:

Cycle-commuting is more prevalent amongst technically complex professions and civil-service

jobs. If you are technically proficient at a difficult job that requires lots of education or training,

you are the kind of person most likely to see the practicality of cycle-commuting, and your

employer is least likely to think less of you for doing it.

(Forester 2012 503)

Through his development of particular safety criteria for bicycling, Forester engages in an

affective exclusion that eliminates young people, women, and people with less education

from the pool of proper cycling subjects. It is perhaps for this reason that US cycling has

been demographically disproportionate, skewing to older, upper middle-class male riders

(Garrard, Rose and Lo 2008; Garrard, Handy and Dill 2012).

Forester's other key affective assumption hinges on what is commonly considered to

be the largest barrier to bicycling in the US: the role that fear and anxiety plays to intimidate

potential riders (Horton 2007). How Forester suggests overcoming fear, particularly though

how he narrates the decision making process, points to the affective assumptions implicit in

some theories of bicycle planning. For Forester, fear of car traffic is an irrational behavior

that he terms the "cyclist inferiority complex", and he devotes multiple chapters to its role in

the development of proper bicycling technique (Forester 2012 413). Here Forester uses early

safety studies to argue that the fear of being hit by traffic from behind is misguided, and that

these kinds of accidents rarely occur. Rather, the real dangers for cyclists are cars turning

through intersections. For this reason, Forster's key *Effective Cycling* tactic is lane positioning,

moving far out into the traffic lane, particularly around and through intersections. Adopting

this bicycling technique involves overcoming the cyclist-inferiority complex," which can be

done solely through skill building and boosting one's self-morale. In this way, the key to

Effective Cycling is the adoption of a particular cycling affect. As Forester describes:

Changing lanes really highlights the difference in morale and technique between expert cyclists

and those who feel inferior to cars. Morale? Yes. You'll never do it right until you feel deep down

inside that you are as important as motorists. But jumping into traffic with an "I'll show 'em"

attitude and no technique is simply setting the scene for an accident.

<div align="center">(Forester 2012 413)</div>

Forester unambiguously aligns safety with a particular "careful but forceful" affect, and

anyone unwilling to adopt this affect is dismissed as incompetent or childish (Ibid 514).

Extending Forester's logic, the key barrier to increasing bicycling in the US becomes not a

problem of engineering or infrastructure, but a problem of creating a particular affective

subject. As Forester succinctly explains, the "the most important problem in the American

cycling transportation system is the incompetence of cyclists" (Ibid 344).

Exclusionary assumptions are hardly unusual in the small world of cycling. Indeed,

most dedicated riders have strong opinions about how and where to ride bicycles, about the

right and wrong way to approach intersections, choose routes, outfit their equipment, etc.

These discussions are commonplace at bike shops, during group rides, and in online forums.

However, the crucial difference between those assumptions and Forester's is that Forester

was able to leverage his positions as an author, safety instructor, and influential advocate to

translate his agenda into national policy. Forester's normative claims – for example, he

presents his rules as "all you need to know to use your bicycle any day you want to go, to any

place you want, under all conditions" – derive from affective assumptions about how

decisions are made and how he understands the values of bicyclists (Epperson 2013 30).[13]

For example, while many decision making models include different qualitative and

quantitative variables that factor into decisions, Forester argues that time and speed trump all

others (Forester 2012 499). Similarly, people evolve into vehicular cyclists whether they

intend to or not:

This [desire to avoid traffic] may not be your original intention, but you realize soon enough with

regular riding that cycling in traffic is not particularly difficult or dangerous… just like everybody

else commuting, you will attempt to find a better route or shortcut. Your criterion will be speed or

effort, not scenery or lack of traffic.

    (Forester 2012 513)

Forester universalizes his own affective considerations, where environment or comfort are

irrelevant, into a universal experience.

Interlude: Out-of-Place at the Gravel Ride

    Two summers ago, a friend of mine asked me to go with him on a gravel race in a

small city south of Rochester, Minnesota (about an hour's drive). Though I typically shrink

at paying money to participate in organized rides, because my friend was a relatively newer

bicyclist and hadn't ridden very often on gravel roads before, I agreed to go with him. Plus, it

gave me a chance to get out of town and ride around some new landscapes, which is a rare

opportunity for someone without a car.

    Gravel rides are a new trend in Minnesota and around the country. In rural

landscapes, most paved roads are also fairly highly trafficked by cars and thus make for less

pleasant riding experiences. Gravel roads, on the other hand, have very low levels of

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[13] "Testimony of John Forester, Oct. 1, 1993," *Johnson v Derby Cycle Co.*, Superior Court of N.J., ESX-L 16063-89: 13-14. Cited in Epperson 2012.

automobile traffic and have become increasingly popular for organized group rides over the last few years. This trend has intersected with a movement away from high-speed, thin-tired road bicycles and towards bicycles with more upright geometry and wider tires that can more easily tolerate the greater uneven-ness and more relaxed pace of gravel roads. With its thick steel frame and wider tires, the kind of bicycle that I ride most often, a Surly Long Haul Trucker, is ideal for this kind of riding.

My friend picked me up at my house early in the morning, and we travelled down to the small town of Stewartville for the ride. Though I ride frequently through the countryside and on gravel roads during the summertime, on seeing the tents gathered around the starting site in a grocery store parking lot, I immediately felt out of place.

Image 3.6. Tents at the start of the 2013 Filthy 50 gravel race in Stewartville, MN.

For one thing, I was the only one there without a helmet. As I will describe in Chapter 5, since their introduction by safety advocates and vehicular cyclists in the early 1980s, helmets have played a role within bicycling populations to symbolize a particular

relationship with technology. Helmets have become a synecdoche for responsibility, and being the only one without a helmet in any situation is to mark oneself as disobedient and prone to unsafe riding.

Similarly, most of the riders had expensive bicycling equipment and clothing. The tents gathered in the parking lot were from different shops from around the Twin Cities, and the mostly white male group of riders were wandering around in high-tech wool jerseys looking at each others' bicycles. In my ratty plaid shirt, despite being someone who rides dozens of miles each week, I just wanted to find a corner of the parking lot to sit and stay out of sight.

Despite the beautiful weather, the rest of the ride was hardly much of an improvement. After my third flat tire about 20 miles into the race, I requested a ride from the "sag wagon," in this case a small blue pickup truck driven by the father of the race's organizer. Sitting in the back of the truck with my beat-up bicycle, I watched the rest of the riders complete the race. It was hardly the only time I've felt out of place on a bicycle, but it was probably the most scenic.

3.5 Beyond the Vehicle

The affective exclusions characteristic of vehicular cycling have affected US planning policy two primary ways, both of which have limited the construction of a wider variety of bicycle infrastructure in the US. First, by resisting the philosophy of separated bicycle facilities on safety grounds, particularly through institutional positions within advocacy groups, bicycling advocates like John Forester managed to insert vehicular cycling assumptions into official transportation design guides. Most importantly, these policies institutionalized an "effective ban on separated paths" within the highly influential American

Association of State Highway and Transportation Officials (AASHTO) *Guide to the*

Development of New Bicycle Facilities in 1981 (Furth 2012 117). Adopting a doctrinaire vehicular

cycling philosophy, early versions of the document made almost no reference to on-street

bicycle facilities (e.g. bike lanes), implicitly advocating for the vehicular mantra of riding

within the middle of the regular car lane. Not only are these types of Federal guides

extremely influential over transportation engineers at every level of government, once

policies are instated within an official document they are slow to change. For example, the

1999 AASHTO *Guide* (the current version) continues to use "confidence" to describe a

hierarchy of bicyclists, so that,

Basic or less confident adult riders may also be using their bicycles for transportation purposes,

e.g. to get to the store or to visit friends, but prefer to avoid roads with fast and busy motor

vehicle traffic unless there is ample roadway width to allow easy overtaking.

    (AASHTO 1999 6)

Riding in ways that prioritize traffic avoidance is here sign of incompetence, of less evolved

bicycle riding styles. The implicit hierarchy of these kinds of policies implies that advanced

riders require little infrastructure, lessening the need for alternative designs for streets that

might accommodate a greater variety of desires. In this way, Forester's normative

assumptions continue to guide discussions about bicycling in the US, privileging vehicular

affects over others in ways that place limits on the kinds of infrastructures and treatments

that are accepted and implemented within US cities.

The second key way that Forester and vehicular cycling have held influence over

bicycle planning debates is through the inclusion of many vehicular cyclists within city

transportation bureaucracies, influential advocacy groups, and or advisory committees. As

Furth (2012) describes,

In many cases, bicycle planners hired by state and local government have been VC [vehicular cycling] adherents who used their influence to prevent rather than promote bikeways.

(115)

Two examples are Boston and Dallas, both cases where an influential bicycle planner maintaining a vehicular cycling approach effectively banned and curtailed discussions about alternative designs (Ibid 115). Similarly, though the League of American Bicyclists (LAB) has shifted its position regarding on-street and separated bicycle facilities, it continues to adopt an approach that places a great deal of emphasis on bicyclist education over the construction of more "forgiving" bicycle infrastructure.[14] For example, the LAB focuses on the training of "league certified bicycle instructors" (LCI's), who are encouraged to take lengthy classes designed around vehicular cycling techniques, to teach them to other riders in cities (St Paul Bicycle Coalition 2011a). As we shall see, these education-centered attitudes play key roles in official policies of the bicycle planning approach for Minneapolis and neighboring cities.

The influence of vehicular cycling over the debates and direction of US bicycle planning is difficult to over-emphasize, and, despite Forester's age and obstreperousness, continues to this day. The crucial difference between a vehicular cycling approach and that of European-influenced "third way" bicycle planning is the degree to which the responsibility for improving bicycling is placed on the individual cyclist, as opposed to the larger assemblage that includes infrastructure and road design. In his book, Forester focuses on education, so that "the most important problem in the American cycling transportation system is the incompetence of cyclists" (Forester 2012 344). Problematizing a shift in mode-share in this way, stating "that almost all Americans riding bicycles are not competent

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[14] See for example Forester's chapter on "Policies of Cycling Organizations and Bicycle Advocacy Organizations," he rants at length about professional advocates, who have never "openly and conclusively stood for the rights of cyclists as drivers of vehicles." (Forester 2012 757).

cyclists", gives transportation officials at all levels of government permission to neglect or marginalize expensive infrastructure solutions in favor of largely fruitless education campaigns or enforcement debates (Forester 554). Particularly during fights over the allocation of scarce funding resources, this education-first attitude results in the defunding of infrastructure approaches that might accommodate a broader range of affect.

Looked at from the assemblage perspective, the vehicular cycling approach universalizes a affective relationships around the bicycle – safety equipment, aggressive riding, tolerance of car traffic – that are characteristic of white, male, and affluent bodies and attitudes. As we will see in Chapter 6, many contemporary bicycle planning efforts and advocacy groups are attempting to find ways to encourage bicycling while accommodating less vehicular affects, and offering more flexibility around road designs, education, and outreach. Yet within many adopted city or county bike plans, the implicit emphasis remains on bicyclist education, and changing individual attitudes toward bicycling. While these contemporary approaches maintain the focus upon the equipment, skills, and attitudes of the individual bicyclist, this affective focus becomes just one of a series of recommended "elements" that together create a proper bicycle planning approach (Williams and McLaughlin 1993). This more nuanced model of vehicular bicycle planning, known as the "4-E" approach, emerged in the early 80s during a series of bicycle planning conferences, as professionalization and the institution of bicycle coordinators within city bureaucracies became more commonplace (Epperson 2013 personal correspondence). As Matson explains, the evolution of the "4-E" approach stemmed from a determination, largely based on the vehicular cycling critique, that engineering and infrastructure alone was insufficient to increase bicycling mode share in US cities. He writes, in a 1982 *Bicycling* magazine column:

As more bicyclists took to the roads during the past two decades, special bicycle facilities seemed appropriate. It soon became clear, though, that separate facilities alone weren't enough to ensure safety for the bike rider. Education programs became an issue, as did law enforcement and larger implications of public awareness and encouragement. Bicycle planning has evolved from an earlier 'engineering' approach to a comprehensive effort embracing the "Four Es" – engineering, education, enforcement, and encouragement.

(Matson 1982)

Over time, the League of American Bicyclists adopted this language, expanding the balanced elements frame to include six "Es" – education, encouragement, enforcement, engineering, equity, and evaluation – as part of their "bicycle friendly cities" program, which encouraged US cities to apply for awards according to these six criteria. Here, engineering and infrastructure becomes just one of many factors which are weighed together to create the "gold", "silver", or "bronze" ranking for cities (Saint Paul Bicycling Coalition 2011a).

The current Minneapolis Bicycle Master Plan offers a good example of how this language – the mixed "6-E" set of approaches – serves to frame the problem of bicycling in a way that continues to place a burden on the individual bicyclist, rather than the built environment. Minneapolis uses the League of American Bicyclists' "balanced bicycle program " list to organize their bicycle plan (City of Minneapolis 2011 7). The division of "initiatives" into six unprioritized categories has the effect of equivocating the relationships between the individual and the environment (Ibid). Most US bike plans display similar reservations about privileging material changes over educational or encouragement programs, continuing a vehicular cycling trajectory of placing the burden of urban change on the individual rather than on larger social or urban structures.

Despite recent movements within bicycle planning toward a more European approach to bicycle planning that might focus on a broader range of on- and off-street infrastructure designs, the emphasis on individual education within US bicycle planning continues to limit the kinds of treatments that are designed and constructed in almost all US cities. Yet over the last decade, alternative kinds of classification have emerged that have begun to shift the way that new riders are viewed in relation to existing more experienced bicyclists. In particular, a 2006 survey sponsored by the Oregon Bureau of Transportation reconfigured how bicyclists were categorized by focusing on affect rather than skill as basis for classification (Geller 2006). While the classification system, called the "four types of cyclists," was based on a relatively small survey with a basic methodology, the results had a tremendous impact within the bicycle planning community in cities around North America. The Portland classification system identifies four different groups of people based, not on a universal set of skills, but according to affective disposition. According to the Geller, they identify groups of riders in ways that eschew demographics in favor of more affective sets of tastes and preferences (City of Portland 2010). [See Figure 5.] As a result, many of Portland's bicycle planning efforts were aimed at reaching this "interested but concerned" group of people, an undifferentiated majority who differ from the current population of riders primarily through affect (Birk 2006).

Portland's "Four Types"

Four Types of Transportation Cyclists in Portland
By Proportion of Population

Strong & Fearless <1%	Enthused & Confident 7%	Interested but Concerned 60%

Interested but Concerned 60%

No Way No How 33%
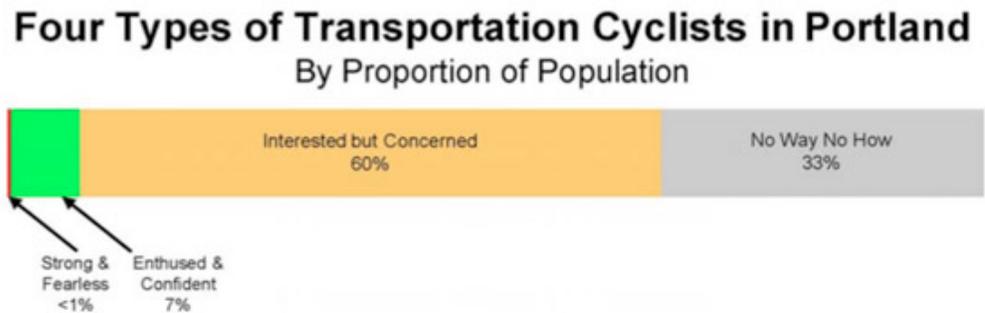
Figure 3.7. Portland Oregon's four types of urban cyclists (City of Portland 2010).

The outsized impact of the Portland classification system points to the tensions that surround the new rider problem for bicycle planning. The key issue here is whether the affective relationships that are common to existing and experienced riders should be universalized to the population as a whole. For vehicular cyclists, the strategies, attitudes, and equipment that they use and enjoy represent the best way to ride a bicycle, and planning efforts have long revolved around making these affective relationships more common in the larger population of potential and actual bicyclists. But re-conceptualizing bicycling bodies according to a more diverse and heterogeneous set of affects, that remain distinct no matter the experience level, changes this approach. Instead, the key question for planners becomes balancing the needs and desires of bicyclists with unresolvable differences. Solving the new rider problem involves predicting what these "interests and concerns" might be, and thinking through how best to accommodate them (see Dill 2012).

At present, the debates around how to de-center policies away from the vehicular approach have become more important. As one recent study from the UK suggests, taking this step is crucial:

Do not base policies about walking and cycling on the views and experiences of existing committed cyclists and pedestrians. These are a minority who have, against all the odds, successfully negotiated a hostile urban environment to incorporate walking and cycling into their everyday routines. It is necessary to talk – as we have done - to non-walkers and non-cyclists, potential cyclist and walkers, former cyclists and walkers, recreational cyclists and occasional walkers to determine what would encourage them to make more use of these transport modes.

(City of Lancaster 2011 19)

Identifying an affective spectrum or typography of different audiences for bicycling is one step toward understanding the different reasons why people ride in urban space. Until US bicycle planners and advocates come to terms with their assumptions about the affects of bicycling, the exclusionary attitudes of Forster's vehicular cycling acolytes will limit the kinds of conversations that take place within US cities at all levels.

3.6 Conclusion

In this chapter, I have shown how the history of bicycling planning evolved around particular sets of athletic, white, male affects that traditionally excluded many other kinds of bodies from being seen as normal within bicycling. I then argued that bicycle planning in North America reached a turning point as bicycling became more popular in the late 1960s and 1970s, where a planning philosophy that emphasized these very same sets of affective relationships – vehicular cycling – became normalized and proliferated through transportation institutions and decision-making processes. Until very recently, this approach,

which placed tremendous emphasis on individualized education and equipment, continued to dominate most North American cities.

Lately, however, particularly when faced with the failure of vehicular bicycle planning philosophies to significantly change travel behavior, alternative ways of thinking about bicycle planning have emerged, most notably with the influential Portland typographic schema which classifies people according to affect rather than skill. Yet while influential, the Portland typography remains a rough measure of affective diversity, as a full 60% of the population is grouped into a single category. Identifying more clearly what these varying interests and concerns might be, and how they might differ, remains a key problem for bicycle planners and researchers. In the next chapter, I draw on ride-along video interviews with new riders in Minneapolis and Saint Paul to examine how bicyclists relate to a heterogeneous urban landscape using diverse spatial practices that begin to explain how different bicycling affects are formed.

Chapter 4: Bicycling Spatial Practices Viewed from the Ground

"If it is true that a spatial order organizes an ensemble of possibilities (e.g. by a place in which one can move) and interdictions (e.g. by a wall that prevents one from going further), the walker actualizes some of these possibilities. In a way, he makes them exist as well as merge. But he also moves them about and he invents others, since the crossing, drifting away, or improvisation of walking privilege, transform or abandon spatial elements. Thus Charlie Chaplin multiplies the possibilities of his cane…"
-Michel De Certeau

4.1 Introduction

In the previous chapter, I outlined the historical trajectory of bicycle planning, focusing on how planning approaches attempt to foster particular kinds of affect. Together with the theory and methods outlined in Chapter 1, the historical context for how bicycles operate within contemporary cities reveals a contingent landscape which bicyclists must negotiate on an everyday basis. In this chapter, I turn to the present moment and examine how bicycle riders negotiate pathways through the changing terrain of the city using creative spatial practices that resist and exceed the abstract representations.

Drawing on philosopher Michel de Certeau, anthropologist Tim Ingold, and urban designer Kevin Lynch, I outline some of the contrasts between the simplicity of the top-down "planned" bicycling city and the complexity of the bottom-up "lived" bicycling city. I then look at how bicyclists employ differential tactics of navigation using specific examples from my ride-along interviews. In particular, I examine how different social capacities for feeling "in place" can combine into landscapes of mobility that hinge around class and race. Finally, I argue that these spatial practices are both products of, and productive of, a nonlinear urban landscape displaying spatial gaps. Rather than being marginal, these gaps

represent disjunctures that are fundamental to developing bicycling habits in different ways, and lay the foundation for affective difference.

4.2 Abstract Representation vs. Lived Practice in Bicycle Mobility

Knowledge is shaped by ways of seeing, forms of questioning, and by institutions that reify and disseminate it through dynamic socio-technological systems. Transportation planning, dominated by the system of automobility, is no exception. Contemporary planning produces its own distinct forms of knowledge that can be difficult to reproduce for non-motorized modes. For example, with their easy statistical measure, traffic counts serve as the empirical foundation for the production of automobility. Typically the first step taken by engineers involves placing digitally controlled pneumatic tubes at key points on the roadway to gain accurate counts of passing cars. These counts, done regularly on almost all roads, produce a massive trove of data that are translated into a relatively accurate map of car traffic throughout the region. These data are in turn fed into models and studies that make precise claims about future traffic patterns, forming the foundation for projected congestion that is translated into productivity losses and monetized to justify budgets. In this way, the system of automobility rationalizes itself, and many road construction studies and projects become self-fulfilling prophecies (Vanderbilt 2008). The traffic serves as its measure, and given the dedicated funding stream for road building in the US, the system forms a self-reinforcing cycle that perpetuates itself across the landscape (Caro 1973, Wells 2013).

Generating data for bicycling and walking is far more difficult. Currently, the most widely spread bicycling data in the US is generated through the US Census Bureau's American Community Survey, which asks questions only about the home-to-work commute, and fails to capture any other kinds of non-motorized trips (US Census 2013). This

inevitable lapse has led many cities to conduct "bike/walk counts" in order to generate statistics of bicycling and walking rates as a key accountability measure providing feedback for institutional legitimacy. However, because of the light weight of human bodies and bicycles, the pneumatic technologies designed for cars are useless in these contexts. Instead, since 2007 the City of Minneapolis has enlisted volunteers to conduct counts of bicyclists and pedestrians throughout the city, who each spend two hours with a clipboard tabulating passers-by (City of Minneapolis 2012). These data are used to promote bicycling and walking rates across the city, for example, to provide context for relative frequency of crashes.

Yet just as the production of automobile knowledge includes forms of blindness (for example, counting individual cars instead of individual people), the production of bicycling and walking knowledge must also produce their own occlusions of the lived reality of the city streets. For example, in 2013 I participated in the first volunteer bike/walk count for the city of Saint Paul. I was sent to an intersection of two busy roads in a poor section of the city near my house, and sat in a vacant lot for two hours one autumn afternoon during rush hour watching the cars go by, and waiting for pedestrians and bicyclists. Few came. Conducting a bike/walk count on a regular street is a meditative exercise in frustration, as minutes drag by filled only with the unceasing whirr of passing cars and trucks. The count's instructions were particularly frustrating because of their limited scale. I was supposed to mark a tally at a time point for each bicyclists or pedestrian who crossed a pair of invisible lines across the two intersecting roads. They read:

- Complete all of the fields of this form as accurately and completely as possible.
- Count all bicyclists and pedestrians crossing the screen line using tally marks in the table.
- Count the number of people riding bicycles, not the number of bicycles (e.g. tandem is two).
- A person traveling using a wheelchair, skates or other assistance is a pedestrian.

- If issues arise (distractions, traffic) and you lose track, make a note on the back of this sheet.

     (City of Saint Paul 2013)

Despite the rigor and simplicity of the instructions, the counting exercise was frustrated by the frequent pedestrians and cyclists who refused to travel along the main roads, and instead cut through the alleyways, parking lots, and driveways interspersed between the neighborhood's buildings. Many people took short cuts and back routes that left them off the map. Unlike the automobile traffic, non-motorized mobility is not beholden to the official routes and designations of the city's transportation network. People display far more freedom and creativity, and particularly in automobile-oriented environments like this one, pedestrians and bicyclists employ creative tactics for safely getting to their destinations.

The example of bicyclists and pedestrians taking shortcuts offers an illustration of how everyday spatial practices, both momentary tactics and broader wayfinding strategies, differ markedly from person to person. These practices depend on individual mental maps, social capacities, and the contrasting affective experience across the urban landscape. In other words, any given street or neighborhood can produce a set of "spatial affordances" that can shift markedly across race, class, age and gender lines. These differential mobilities are amplified by the way that urban spaces are not homogenous when confronted on a bicycle. Unlike the system of automobility, where engineering and the state have focused on the creation of a uniform experience, bicycling offers discontinuous spaces of abrupt disjuncture.

The contrast between the official bike route map and actual people's routes through the city exemplifies Lefebvre's (1991) distinction between the abstract space of city plans and spatial practices of everyday life (38). People's everyday practices reveal dissonance between spatial practices and the intended routes, pathways, and rhythms of the city order. While

Lefebvre is primarily concerned with the production of space for uses by capital, even walking contains social assumptions about gait, speed, proximity, and endurance that can vary greatly across cultures and through history (Solnit 2000). As transportation planning has focused on connection destinations, it elides the interstices of movement, so that time actually spent on the journey becomes "wasted time", the cost of which is often monetized and wielded to garner additional funding (Cresswell and Merriman 2011).

At the same time, the gap between abstract transportation theory and lived practices of movement is exacerbated by technologies that reduce potential connections to the outside world, and simultaneously create automobile spaces devoid of detail or human scale connection (Venturi et al 1977, Kunstler 1993). As Ingold (2007) describes, traveling in an automobile reinforces sensory separation from the environment:

For passengers, strapped to their seats, travel is no longer an experience of movement in which action and perception are intimately coupled, but has become one of enforced immobility and sensory deprivation. On arrival, the traveller is released from his bonds only to find that his freedom of movement is circumscribed within the limits of the site. Yet the structures that confine, channel and contain are not immutable. They are ceaselessly eroded by the tactical manoeuvring of inhabitants whose 'wandering lines' (*lignes d'erre*) or 'efficacious meanderings' – in de Certeau's words (1984: xviii) – undercut the strategic designs of society's master-builders, causing them gradually to wear out and disintegrate.

(102-3)

Ingold uses evolutionary history to describe how movement has traditionally been intricately bound up with perception, how story telling, mapping, wayfinding, and walking reflect the same kind of temporal and spatial continuum. Only with the abstractions of transcendent spatiality, attenuated by increases in speed and technological complexity, have patterns of movement become unmoored from this linkage. Much like de Certeau's (1984) examples of

the "efficacious meanderings" of sidewalk strolling, bicycling retains a strong interpolation between movement and perception. This relationship means that, for many bicyclists, riding a bicycle breaks down the 'destination vs. travel' divide. In other words, while bicyclists are attempting to reach their destinations, this goal-oriented determination is simultaneously tempered by the enjoyment of movement for its own sake. While there are some modes of automobile travel that offer similar blends of journey and goal (e.g. motorcycling, cruising in a classic car), for much of daily movement patterns, the quantitative measure of travel has been divorced from its environment.

These two modes of movement are what Ingold (2007) calls "modalities of travel" (81). On the one hand, spatially abstract goal-oriented movement is simply "transport." On the other hand, rhythms of movement that couple action and perception, movement and sensation, are termed "wayfinding." Ingold (2007) describes it as a type of meandering: Like the line that goes out for a walk, the path of the wayfarer wends hither and thither, and may even pause here and there before moving on. But it has no beginning or end. While on the trail the wayfarer is always somewhere, yet every 'somewhere' is on the way to somewhere else.

(81)

Ingold's description fits with research that describes how bicyclists actually move through and circulate through cities in ways that differ from automobile drivers (Blue 2013). Not only do bicyclists wend and wind their way depending on topography and traffic conditions, but because of the lower speed and ease of parking, bicyclists are likely to stop more frequently along their journeys. This type of movement reflects a greater degree of engagement with the environment that undermines the distinction between destination and journey laying at the heart of transportation planning.

As Ingold alludes, one of the primary types of engagement for bicyclists comes in the form of the type of complex spatial practices famously described by de Certeau, whose essay on "walking in the city" also undermines the spatial abstractions of planning representations. For de Certeau (1984), planning is trapped in a "view from above", while a city street filled with people becomes a "space of enunciation" (97). As Jones and Burwood (2012) suggest, de Certeau's descriptions of pedestrians works well to describe the intense experience of bicyclists exposed to their environment. But while Jones resists the "overly heroic" description of bicycling practices as resistance, the importance of Lefebvre and Certeau's description of does not depend on walking and movement being read in a political sense, rather that, particularly from the street level, Certeau's analogy describes a kind of complexity. Following Ingold, pedestrian movements are compared to speech acts (Ingold 2000). Moving through urban space is like language, and the rhythms of people walking mirror a "long poem" in the sense that all language continually re-shapes itself reciprocally alongside its structures. In other words, space is not top-down or hegemonic, but always a negotiation between everyday practices, spatial abstractions, and the built environment.

For planning, this means that walking and bicycling are impossible to understand from an abstract vantage point. The multiplicity of feeling and attention that walkers on the street display is only considered resistance if one assumes that perspective of control. From the street level such complexity is invisible and unintentional, a "spatial acting-out" that composes a field of desires resistant only the simple abstractions of planning (Certeau 98). For example, Certeau describes these practices using the example of Roman drivers:

> There is a skill that has its connoisseurs and its esthetics exercised in any labyrinth of powers, a skill ceaselessly recreating opacities and ambiguities -- spaces of darkness and

trickery -- in the universe of technocratic transparency, a skill that disappears into them
and   reappears again, taking no responsibility for the administration of a totality.
(18)

Because of the proliferation of potential "spaces of trickery" accessible by bicycle, any given bicyclist must inevitably display more of Certeau's skill when compared to an automobile driver.

For bicyclists, the classic example of a Certeau "ceaselessly recreated ambiguity" is the mundane stop sign, which because of its affordability and safety record has become a staple of the North American traffic control system. Stop signs are designed to clarify right-of-way and intersections and to slow cars down to sub-fatal crash speeds (less than 30 miles per hour). Yet neither of these goals works particularly well for bicyclists, who rarely exceed 15 miles per hour, and for whom the conservation of momentum is a key variable controlling overall effort. As a result, the majority of bicyclists seem to ignore the majority of stop signs. Yet bicyclists do not simply ignore them; rather, they individually develop a skill — what Certeau would call a "tactic"— about how and when to stop or roll through stop signs.[15] For example, Sara, a twenty-something woman, here describes her stop sign philosophy:

I usually obey them, especially stop lights. Stop signs especially if nobody is coming I'll usually do a rolling stop. But stop lights I usually obey them except, the ones I hate are the ones that seem to be like weight sensored or something for cars, so they don't change unless there's a car there, or if somebody will go push the walk button. So then I'll go through the red light, which, I don't really like doing that because I know a friend who got a ticket going through the red light. But if it doesn't change I'll just go through it. But otherwise I usually obey the stop signs and stuff,

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[15] Most bicycling narratives dance around this fact in a variety of ways, often due to concern over the perceptions of others or of encounters with police.

lights. I do like if there's a line of cars at a stoplight and you're in a bike lane you can just zoom up to the front.[16]

Here, Sara offers a typical explanation. While she admits to "usually" obeying the traffic rules, she offers the "rolling stop" as a compromise position that better fits the physics and safety concerns specific to bicycles. However when it comes to actual rides, most bicyclists display far more leniency toward intersection treatments and deploy tactics that vary depending on the situation. For example, during his five-mile ride from work to home, James displayed at least four different approaches to encountering stop signs. [See Figure 4.1.]

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[16] Ride-along interview with Sara.

Figure 4.1. Four views of approaching stop signs during James's ride. Clockwise from top left: At a low-traffic intersection where cars were present, he slowed down almost to a stop and offered the car a chance to take its right-of-way before continuing through the intersection. At a high-traffic stop sign, James displayed great caution and waited until no cars were around before continuing through the stop sign. At a bicycle-only intersection, James didn't even slow down around the stop sign. And at a low-traffic interaction without any cars present, James slowed down slightly and looked before cruising through the intersection with only minimal loss of speed.

This kind of behavior is not only typical, but during none of my ride-along interviews did I ever encounter a bicyclist who obeyed the letter of the law at each intersection. (This is rarely true for car drivers, as well.) These practices make sense because bicyclists' overwhelming concern is personal safety, followed by things like efficiency, conserving effort, and the desire not to be harassed by police or drivers.

Bicyclist behavior at red lights is just one example of the contrast between the abstract space of official behavioral regulation and the spatial practices of everyday bicycling. The range of tactics includes a variety of treatments toward red lights, shortcuts through sidewalks or fields, the use of pedestrian infrastructure (e.g. sidewalks), lane positioning, hand signals, and bicycle lights. These diverse practices pose problems for planning narratives that rely on the production of uniform codes and the reification of a legal framework that treats all users as equal "vehicles." For that reason, bicycle enforcement and education has long been a prime concern for bicycle research and planning (e.g. Petesch 2013). During meetings, education campaigns and the creation of a bicycle education curriculum is a common concern of police and public safety officials.[17] On the other hand, following the contrasting approaches outlined in Chapter 2, bicycle advocacy groups diverge about whether or not encouraging bicycling by accommodating diverse spatial practices ought to outweigh concerns about education and enforcement strategies aimed at creating "compliance" (Krizek 2009, Petesch 2013).

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[17] Field notes, Bicycle Advisory Committee Meeting.

For example, in 2013 I attended a meeting hosted by the Minnesota Department of Public Safety aimed at getting feedback about bicycle and pedestrian safety strategies, Twin Cities bicycle advocates chose to emphasize different kinds of solutions for fostering traffic safety around bicycles. The meeting revealed a range of approaches to bicycle safety from people who have contrasting positions within the bicycle planning and safety instruction fields. In one interaction, Shaun Murphy, the Public Works Bicycle and Pedestrian coordinator for Minneapolis, has an exchange about bike lanes with a more vehicular cyclist:

Shaun Murphy: I have my bucket list [of safety options]. I'm just brainstorming here. Mirrors for large trucks, gonna be able… education on bikers is really important but not everyone is gonna listen. So truck drivers, some of the tools they need to be able to see the bikers in their blind spots… green pavement markings on bike lanes at intersections and at trail crossings. We're been getting quite a few of those in Minneapolis lately, and had positive results of motorists yielding to bikers…

Vehicular Safety Instructor (VSI): [interrupting] How about when you have the green but you don't have a bike lane? There's quite a bit of that on Hennepin. Biker thought it was a bike lane he passed a truck on the inside. Not knowing the truck was turning right. It squished him right there. It wasn't even a legal bike lane. Now he's in deep trouble.

Shaun: [interrupting] I'm just talking about bike lanes.

VSI: So… I don't trust paint for my safety. You need to learn how to do it right.

Shaun: Well our data is showing that it makes it safer.[18]

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[18] Field notes, Department of Public Safety meeting.

Here bicycle advocates break down into two groups. On one hand, vehicular cyclists promote mandatory education policies to a Public Safety Department reluctant to delve into infrastructural matters that fall under the jurisdiction of the Department of Transportation. It's worth adding that many of these advocates might also personally profit from an education and enforcement strategy by serving as LAB certified bicycle instructors or safety consultants, offering classes aimed at police departments, schools, or the general public. On the other hand, advocates who work for cities or non-profits restrict their concerns to infrastructural approaches. This split parallels the historical framing of bicycling and bicycle planning as a vehicular or Epperson's (2013) "third-way" off-street bicycle plans described in the previous chapter. Safety and enforcement advocates universalize one particular affective disposition while design-centric advocates recognize the existence of a diversity of affective capacities, bodies, and styles.

This basic 'universalist vs. pluralist' tension about relative affective capacities necessitates more accessible bicycle infrastructure and different legal obligations.[19] When taken to their limits, advocacy approaches that embrace both affective pluralism and bicycle specificity challenge the legal and structural framework for the road system as a whole. The stop sign is just one of the many examples where the spatial practices of bicycling disrupt the abstractions of automobile-centered spaces; others include the ways that drivers encounter bicyclists and the relative enforcement practices of police and prosecutors.[20]

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[19] For example: Minnesota Statute 169.06 subd 9., which focuses on the rules for unchanging or automobile activated red lights. See (Kolsab 2010).
[20] Field notes Minneapolis Bicycle Advisory Committee meeting.

4.3 Nonlinear Space/Time and Creative Tactics

One of the crucial differences between non-motorized transportation and its alternatives lies in the reliance on the human body, and individual capacities for exertion. For bicycles, this often distills down to one variable: topography. Due to the historic differentiation of their two river valleys, the two core Twin Cities have markedly different geologic landscapes. Minneapolis is largely flat, situated on a plateau at the bend in the Mississippi River north of its confluence with the historically larger Minnesota River. Saint Paul, on the other hand, sits alongside a wide river valley and is separated by a series of tall bluffs that rise in elevation for over 100 feet in all directions coming out of downtown.

This simple fact makes bicycling in Saint Paul a different type of exercise than its Western neighbor. To travel from downtown to any of the adjacent neighborhoods involves a climb of over 100' (and double that amount if you begin along the Mississippi River flats). This natural barrier is compounded by the density of auto traffic that surrounds the downtown like a moat, a discomfort made worse by the slow progress of uphill climbs. The lack of easy routes out of the city center means that many bicyclists in Saint Paul have unique approaches to negotiating the inevitable uphill climb. There are a few different routes to choose from, but all of them involve tradeoffs. For athletic bicyclists who don't mind dense traffic, the most direct route is Ramsey Hill, which rises 121' at an extreme 10% grade. There are many less direct approaches, offering varying degrees of complexity and steepness, and most bicyclists choose one of them depending on their personal comfort level

and capacity for exertion. How one ascends from the downtown is one of the sorting mechanisms that separate out different riders, and catalyze individual approaches to bicycling in the city.

Each ride can offer a variety of these responsive tactics, and reveals how bicyclists display creative approaches to negotiating the spatial environment. For example in her ride-along interview, Sam, a 20-something white female, adopted creative tactical responses at large and small scales. Her 10-mile trip from her home in South Minneapolis to her workplace at a restaurant in the southern suburb of Bloomington displays many of the tactics that bicyclists often employ during their trips, and going through the ride at in detail will offer a case study of how bicyclists shift their wayfinding tactics through the uneven urban landscape.

From the perspective of the official bicycle route map, Sam's route itself is unorthodox, and because it crosses three municipal boundaries, is an example of one of the key challenges of wayfinding. [See Figure 4.2.] Most official bike maps either stop at city boundaries, or neglect to offer the level of detail required for the fine-grained navigational decisions that bicyclists have to continually make. As someone who has a desire and commitment to bicycling to work, amplified by the purchase (from her boyfriend) of a new bicycle, Sam learned her route through a combination of the everyday trial-and-error of most riding and a using Cyclopath, an online crowd-sourced mapping program where bicyclists share shortcuts and advice about bicycle routes and road conditions. Unlike many bicycle maps, Cyclopath evaluates its routes using a crowd-sourced filter, so that bicyclists may select routes that match their individualized comfort levels, a stand-in for the varying affective capacities that

mark each individual body-bike assemblage (Priedhorsky et al 2007, Preidhosky et al 2012). Thus, even at the most broad scale of route choice, Sam's ride illustrates the creativity of finding one's path through the city.

More than most of the ride-along interviews in this study, Sam's journey can be split into three distinct urban geographies, each with their different set of "spatial affordances," or capacities for movement provided by the built environment (Ingold 2000). [See Figure 4.3.] She began this particular journey, on a warm summer day at her home, and spent the first two miles winding through low-trafficked Minneapolis side streets with few or no markings. Here she rides in a very relaxed way, noticing but ignoring stop signs, not paying much attention to the small number of cars and noticing details in her neighborhood. From there, she passes into higher speed and higher traffic urban commercial streets (with and without bike lanes), where she has to pay more attention to her placement within the street, and where she encounters a few high-volume intense intersections where she has to be particularly attentive. These "arterial" roads can have quite different environmental characteristics. Sometimes they run through parks or along lakes, through urban neighborhoods with single-family homes, or along commercial corridors with shops and curb cubs. But in each of these cases, her bicycling manner remains similarly wary. From there, she continues southward past over three different freeways (State Highway 62 and 77, and Interstate 494). The urban design and land use patterns of these areas are very different. The roads are far wider but, particularly near the massive Minneapolis-Saint Paul International Airport, traffic volumes are far lower than the width of the streets would ordinarily call for. Here she listens to her iPod, rides along the "gutter" of the 4-lane street, and at busy intersections and freeway onramps, encounters and

passes through the automobile-dominated traffic patterns using a variety of cycling

techniques and approaches. In each of these settings Sam adopts different tactics

approaches to riding. Her attentiveness to stop signs is only one dimension. At times

listening, she will use or ignore hand signals, insert or remove her iPod earpieces, or

move farther or closer toward the edge of the roadway depending on the exact

circumstances or the street design, movement efficiency, and traffic patterns.
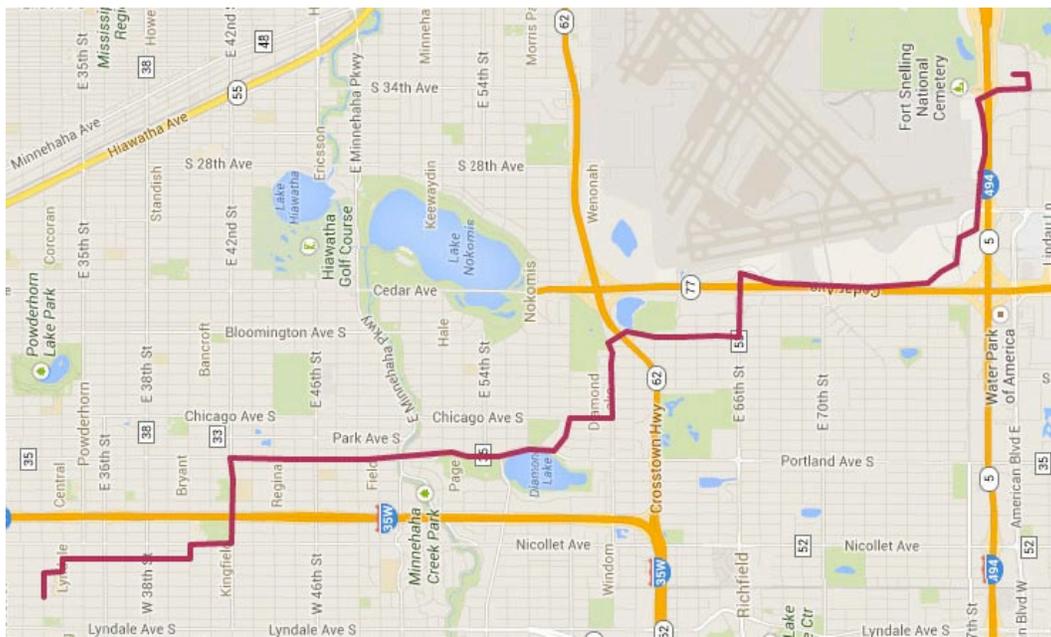
Figure 4.2. Map of Sam's ride:10 miles from home to work, through three different cities and past the airport.

Figure 4.3. Four kinds of urban spaces on Sam's ride. Clockwise from top: An arterial street without bike lanes, an arterial street with bike lanes, a low-traffic residential street without pavement markings, and a high-volume 4-lane road without bike lanes.
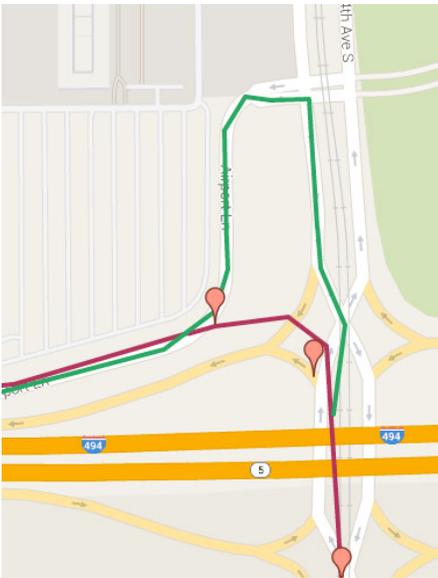
Figure 4.4. One of Sam's shortcuts. Here "on-road" route is represented by the green line, while her "off-road" short-cut is represented by the red line. The short-cut eliminated almost .5 miles from her trip.

Figure 4.5 [below]. Images of Sam's shortcut: Clockwise from top left, dismounting and riding down the embankment to the sidewalk and intersection.

Image 4.6. Sam climbing onto a narrow curb to complete her journey to work.

A half-mile later toward the end of the ride, Sam displays a similar creative tactic by riding her bicycle up onto the decorate brick sidewalk in order to make a left-turn alongside the light rail tracks, in order to avoid bicycling in the middle of a busy four-lane road by the large Mall of America (which generates a lot of high-speed car traffic). [See Figures 4.4-4.6.]

Bicyclists routinely make creative use of these sorts of surplus spaces during their rides, often with the goal of increasing safety, curiosity, exhibiting skill, overcoming an obstacle, or reducing effort. These kinds of tactical deviations from

expected pathways (e.g. the street, the bike lane) occur differently for different

cyclists, and often for reasons that can vary dramatically.[21]

These kinds of capacities shift depending on who is riding, and what kinds of

experiences they are attempting to foster. Linda, a 50-year-old white woman,

regularly commutes on a four-mile mile trip home from work. Her route, right

through the middle of a busy university campus and a light rail construction zone, is

a continually varying node of activity that shifts in intensity throughout the day and

the year. [See Figure 4.7.] Because of this variation, Linda chooses to leave the street

and ride on the sidewalk at a number of key points. [See Figure 4.8.] The first time is

through a construction area, where she hops on and off her carefully-chosen "step

through" bike in order to negotiate the ever-changing maze of fences, signs, and

pedestrians. The second time is at the end of her journey, when the bike lane

disappears from the busy roadway and she has to continue for three blocks to her

home. More than any of the other participants, Linda narrated her ride as we

progressed South through the city, offering her thoughts and observations along the

way. For example, she took care to notice the kinds of paths the she went through:

[My ride] is very pretty. I like mostly, it's the transformation of the streets. Just a major
zip-off to the freeway where people leave their parking. And I like that little road.

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[21] For example, a friend of mine is a former bike-messenger and mountain bike enthusiast, and enjoys making a
great show of bicycling down stairs. Lacking both skill and daring, when I ride along with him, I have to
dismount and walk my bike down the staircases along his path.
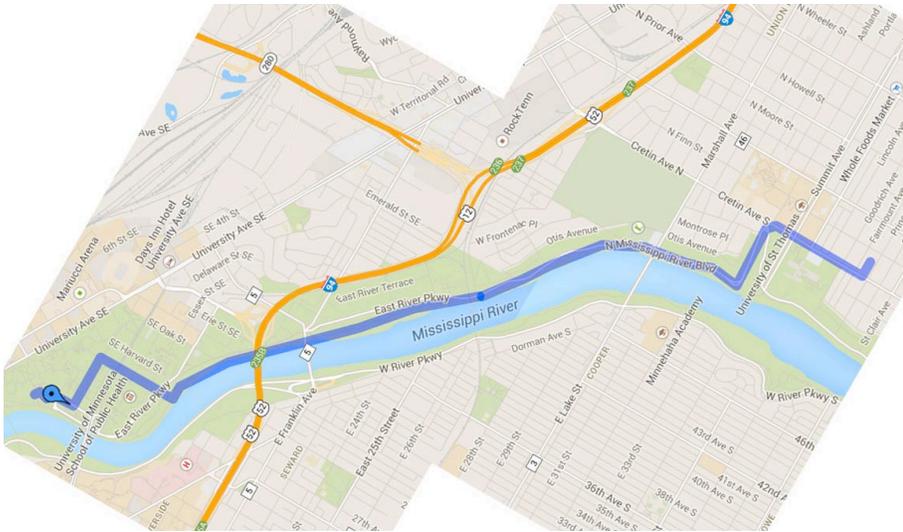
Figure 4.7. Map of Linda's ride: 4-miles from her office in Minneapolis to her home in Saint Paul. Most of the ride takes place on an off-street path along a river valley, however there are a few moments of intense interaction with surrounding car traffic that demand improvisation.

Image 4.8.: Linda negotiating a construction site. Clockwise from left: riding up onto the sidewalk and walking her bike through a series of fences.

Figure 4.9. James taking a shortcut through a previously existing street right-of-way to avoid an intersection near the University campus.

Figure 4.10 [below]. Map of James's shortcut. The green line represents the official street route and bike paths; the red line represents a previous street right of way that has become a series of parking lots and pedestrian curb cuts.
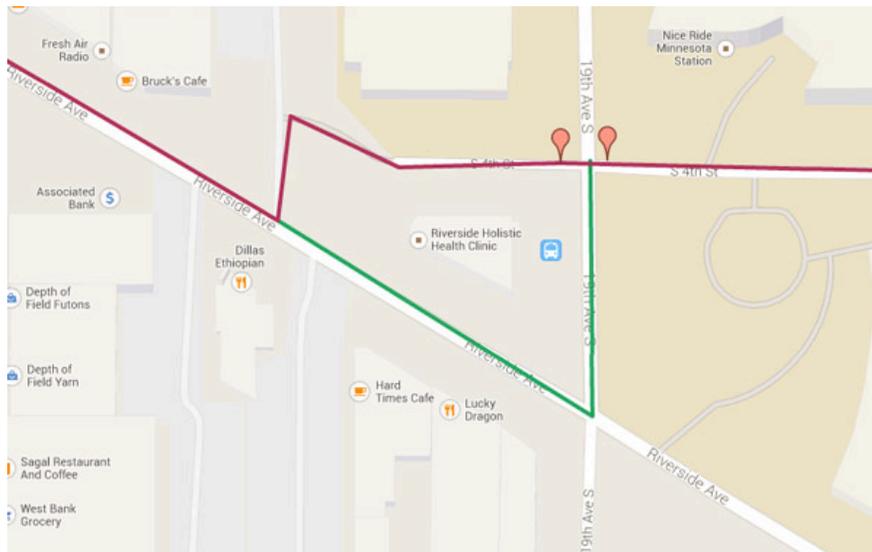
Her journey marks a number of distinct affective spaces, and her responses reveal how engaged with the changing environment she becomes while moving through the city.

Linda: I love that garage. … They just don't make garages like that any more. … So this is something I always think about when I go this way. Coming up, there's a slight incline and now I'm having to change my gears. [Going over a busy freeway.] Coming up here, "I can think I'm not stuck in that traffic!"

       Q: Do you get *schadenfreude*?

       Linda: I do. [Passing up a hill.] I always go slowly over this hill. [22]
Linda's tactical creativity comes in response to her environment, rather than from an innate need to display skill or pre-existing preferences or a certain kind of bicycling engagement.

Sometimes these bicycling "desire lines" trace old routes, as in the example from James's ride where he continues through a parking lot, driveways, and sidewalks that had formerly been a public street right-of-way prior to the 1950s. [See Figures 4.9 and 4.10.] Taking this shortcut in order to avoid a stop light or a congested intersection is a common practice for bicyclists traveling around the university campus, and reveals how bicycling routes deviate and resist the planned spatial order of official bike representations. The Univeristy of Minnesota campus, which has not had a systematic bike plan for many years, is full of these kinds of

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[22] Ridealong interview with Linda.

tricks and detours where bicyclists routinely travel through "dismount zones" or across rights of way technically intended for other uses (e.g. parking lots, sidewalks).

As de Certeau describes in the epigraph, urban space always "organizes an ensemble of possibilities and interdictions" that are not uniform across populations and technologies. Not only can bicycles access space off limits to cars, the kinds of shortcuts and tactics employed by riders varies depending on the particular bodies and bicycles of each individual bicyclist. The practices of bicyclists continually exceed the abstract possibilities of official maps and routes, and taken as a whole, illustrate the often surprising potential of urban space for social becoming. While the creative routes of BMX riders and bike messengers lie at the extremes of this kind of "enunciation," the rigid structure of the built environment designed around auto mobility means that even the most mundane bicycle commuter employs a create set of tactics.

4.4 Differential Modes of Wayfinding

If the spatial practices of bicycling mirror de Certeau's synchronic organization of space, there also exists a more diachronic form of movement differentiation whereby memories and navigational strategies shape the possibilities of the city at larger scales. Here the potential tactics of individual bicycles and bodies combine with urban space to form a structure of legibility that manifests differently for different people. In their legibility and accessibility, different urban spaces provide affordances that mirror how nonhuman environments offer "niches" for different creatures (Ingold 2000). These niches are not simply neutral spaces, but rather serve as

105

fundamental material that shapes how actors (in this case, bicycling humans) create

meaning from their surroundings:

For the human, by contrast, the web – and the relations of which it consists – are

inscribed in a separate plane of mental representations, forming a tapestry of meaning

that *covers over* the world of environmental objects.

(177)

Just as any given environment opens up spatial affordances, the built environment

combines affordances with Ingold's "tapestry of meaning": individual memories,

bodily capacities, social practices, and structures of understanding. In other words,

the same street might be perceived, accessed, or experienced very differently

depending on the individual's memories, bodies, perceptual filters, and technological

connections (Ingold 2007).

For example, using the example of walking, Ingold applies phenomenological

concepts to describe how temporal patterns become rooted in the body, and emerge

as, for example, the creative "techniques of footwork" described so elegantly by de

Certeau (Ingold 2004 331). These kinds of patterns and practices are not merely

reactions to conditions, but represent ways of understanding urban space that can

shift according to experience, perspective, or disposition. Together these form what

Wastenys (2012), drawing on Bordieu (1990), terms the bicycling "habitus": socially

latent, embodied knowledge that allows bicyclists to "navigate their way through the

'fields'" of urban space. One example, drawing on Wastenys' research on bicyclists in

Australia and Canada, shows how bicycling habitus differs across gender and age

lines, so that certain routes or paths are less accessible to women or people of color.

For example, in Minneapolis, concerns over sexual violence along the Midtown Greenway, the city's most well-known off-street path, have made that space differently accessible to men and women (Hoffmann 2013).

In much the same way, the wayfinding practices of bicyclists depend on memories, cognitive maps, affective dispositions, and spatial practices. Because networks of official "bike routes", bike paths, or bike lanes are often fragmentary and vary in quality despite their official designations, they present challenges for bicyclists learning their way around new cities. For example, at the most basic level, urban geography varies according to topography. Other examples abound: parks, shops, trails, landscapes, freeways. Thus the experience of bicycling becomes punctuated with the spaces of stark contrast that Jones (2012), drawing on bicyclists riding in London, describes as intensities. For example, locations of accidents, often marked by "ghost bikes," become nodes of intense reaction for bicyclists. In London, these morbid intensities become a landscape for bicyclists, which,

[Creates] a strong emotional resonance to different sites around the city for the individuals who have been injured. This map could be read as representing a landscape of fear. Alternatively we can read a landscape of resistance against the dominance of auto mobility.

(Jones and Burwood 2012 19)

Bicyclists thus bring with them mental maps of cities, topologies of intensity that form into personal landscapes populated by spaces differentiated by fear, nature, alcohol, topography, speed, potholes, mailboxes, feeling "in place", or social connections (Cresswell 1996). As Jones (2012) reveals using "mobile audio diaries"

107

where bicyclists narrate their trips as they experience them, these differential landscapes are experienced as a nonlinear geography of mobility, so that particular intersections or portions of the journey stand out as difficult or threatening, while other parts of the trip are experienced as smooth uncontested spaces.

One example from Minneapolis reveals how these intensities can operate across demographic, age, and gender lines to create affective comforts and discomforts. Within the most commonly bicycled spaces of the city, Franklin Avenue, a key East-West street located approximately one mile South of Downtown that travels through a very diverse and often impoverished part of the city, has long been considered the key problem spot for bicycling. As one of the few streets that crosses over the two freeways dividing South Minneapolis, it is variously designed as a "three-lane" street with bike lanes, and a four-lane street without bike lanes. As a result, both the City of Minneapolis and the Minneapolis Bicycle Coalition, the main advocacy group in the city, have identified Franklin as a spot of conflict, with "a long history of safety problems that have received too little attention" (Fawley 2014).

The street, maintained and designed by less politically responsive Hennepin County, is a textbook example of spatial intensity, a place that is experienced differently by, and offers affordances to some types of riding while foreclosing others. These affordances shift depending on the sets of memories, affects, and bodily capacities that different bicyclists bring with them. For example, Maria, a thirty-something Latina woman describes Franklin in starkly negative manner:

Maria: But you know I avoid Franklin. Fucking hate Franklin.

Q: Why?

Maria: 'Cause its full of potholes and its full of assholes. It's a combination that's over…. I've had two car accidents on Franklin Avenue within two months of each other. One where my car got totaled. One that was a fender bender. It was enough to make me think people drive like idiots on this road for some reason. They're all in a hurry. They're all anxious because of everything you see around them. I just think there's this dynamic, and the roads are just terribly maintained and if you're cyclist, it's like [makes bumps sound] the whole way. And I feel like there are enough ways around to avoid Franklin. I don't think its necessary to go on Franklin.[23]

Similarly, John, a 50-something African-American man describes the street in similar terms:

> Q: Are there any roads you won't go on?

John: Not yet, I haven't seen any yet… I don't ride on Franklin, no. You cross the Highway at 35-W. I'm not sure. And go around the back and ride parallel with Franklin, but I won't ride on Franklin. I try to stay out of the main flow. I'm sure it's because that's how I started riding, out of the main flow…[24]

Here John shares Maria's negative reaction to Franklin Avenue, and seems almost guilty about not adopting a more vehicular affective disposition that would permit him to ride on Franklin Avenue. Franklin here becomes a pivotal site within Jones' "landscape of fear," one reinforced by the ghost bike memorials that have appeared along the street following recent bicyclist deaths (McKinney and Walsh 2014).

> Yet at the same time, because of its spatial efficiency, many bicyclists will take Franklin Avenue during certain times of the day. Rebecca, a 30-year old white female describes her reasons for occasionally riding on the street.

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[23] Ridealong interview with Julia.
[24] Ridealong interview with John

Rebecca: So I don't like to ride on Franklin rush hour. I'll only do it if I can leave between 7 and 9 o'clock.

Q: I hate riding in rush hour

Rebecca: I hate it as well. Same goes for getting home. I like to take Franklin home sometimes but don't like to ride in rush hour.[25]

Here the convenient efficiency of Franklin, and its proximity to shops and bustling neighborhoods sometimes outweigh its danger and unpleasantness. The street is recognized to be continually in flux, shifting its affordances throughout the day. Franklin Avenue illustrates how the everyday geography of bicycling cannot be treated as having a simple and unvarying set of characteristics, but must be considered more topologically. In other words, as streets combine with bicyclists bodies and different bikes, the affective capacities shift depending on a set of conditions that range from weather to season, time of day, traffic conditions, road construction, individual mood, level of intoxication, or group dynamics.

In this way, navigating the city by bicycle represents a continually varying tactical response to a continually varying urban environment, and bicyclists learn to apply different "mental maps" in ways that can vary across race, gender, age, and cultural lines. Bicycling cities thus come to resemble the "images" that Lynch (1961) famously described, where physical streets of the city are perceived or "read" differently by different people depending on the kinds mental maps and "images" that they carry with them. Just as cities have landmarks, hard "edges" such as rivers

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[25] Ridealong interview Rebecca.

or freeways, paths and "nodes" of activity that come together to create an "image" according to which people inhabit urban space, so too bicyclists learn to read edges, paths, and landmarks in ways specific to the capacities of the bicycle.

As Sam's Cyclopath-aided attempts to find a "good route" to her workplace illustrate, crafting network of bicycle routes legible to different bicyclists is difficult. Bicycle planners have increasingly attempted to be more inclusive of differentiated affective capacities, adopting more flexible system of routes that more closely mirror the forgiving "third way" bicycle infrastructure discussed earlier in Chapter Two. For example the official bicycling transportation goal of Saint Paul is to create a continuous network of paths that offers continuity and equal accessibility to those with less experience, so that for example, "generally bikeways should be no more than a half-mile apart, and arterial bike lanes and/or off-street trails should be no more than one mile apart" (City of Saint Paul 2010). This kind of flexibility is difficult to depict on maps, however, which tend to treat bicycle routes as equal (abstract "green" spaces of bicycle convenience) even when they can be remarkably different in reality. Similarly, the great variety of published bicycle maps reveal paths and networks at different scales and using varying criteria for selection, ranging from the long-published Twin Cities Bicycle map (now in its 12th edition) to system maps for various governmental jurisdictions (e.g. city, county) to maps sponsored by business groups. [See Figure 4.11.] Particularly in newer editions, these maps have begun to offer pathways that are coded according to affective concerns such as comfort level or traffic volume (City of Minneapolis 2013b). At the complex end of the mapping spectrum, examples like the Cyclopath wiki bike map or route choice discussions that take place on online message boards point to the fine degree of

complexity that these kinds of route considerations can assume (Priedhorsky et al 2012). As they gain experience, the physical maps and mental maps evolve as bicyclists swap stories and debate the merits of riding on different streets at different times of the day.

Figure 4.11. A close up of the key for the new city-released Minneapolis Bicycle Map, which highlights a "low stress network."

Lynch's systems of legibility play important roles because, most bicyclists tend to be very cautious about wayfinding through the city. For even the most experienced bicyclists, bicycling continues to take place within a threatening system of automobility. In his interviews with pedestrians in navigating downtowns Lynch describes the importance of landmarks as "point references" that are often used in place of spatial "continuities," such as maps or simply counting distance using street numbers (Lynch 1960 78). The same kind of navigational techniques operate for bicyclists, particularly for riders with less experience negotiating the city. For example

Kofi, a 30-something Nigerian man, describes his wayfinding strategies as a careful process of exploration.

Q: How do you know where to go?

Kofi: Sometimes it's not easy initially, because I'm not familiar with the city. Initially I will just, I know how to, where to go. I know this is south. I know that I see those high rising buildings, when I look towards that direction I know this is downtown and I don't care which road I take. I just look at those high rising buildings and I'll be going towards that. So…[laughs]

Q: Does that work?

Kofi: Perfectly well. When I'm riding I feel I'm continuing toward that direction of the building until I get there. And once I get there I know I'm downtown, and Target is around the corner. I will see familiar places… Initially that was how. But now I am able to understand. Up till now it still works for me. I just go straight and I'll follow that direction,. I know i'm going towards downtown. And coming back again. And come this way, I know I'm going south. … I look at those tall Somali buildings [a series of high-rises with mostly East African residents], and I know when I look at Somali buildings, I know my place is this side.

Q: Good thing we have skyscrapers.

Kofi: [laughs] Exactly.[26]

Kofi's navigation strategy involves trial and error guided by a rough geography that combines relations with the surrounding automobile traffic with landmarks and cardinal directions. While this experience of exploration might seem restricted to

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[26] Ridealong interview Kofi.

newcomers to cities, bicycling is a practical experience, and navigating the city is less

a manner of finding the perfect route than of discovering something that works well

for safety and efficiency.

Social accessibility, or the fear of visibility by both authorities and car drivers,

also plays a large role in wayfinding, particularly across race and class lines where

police harassment has traditionally been an issue. In the example of John, the first

ride we went on was only about a half-mile long, and ended abruptly because of the

density of traffic and people in downtown Minneapolis during rush hour. As he

explained during the interview, John has been harassed by police for riding in bus

lanes during ruch hour in the past, and the way that class and race code how

bicyclists are viewed plays a key role in the experience of many people of color as

they move through the city (Hoffmann 2013). For example, on our rush hour ride,

John decided that the exposure of traveling through a highly visible, congested

downtown (no doubt, made worse by the accompanying video camera'd geographer)

was not worth continuing. [See Figures 4.12 and 4.13.]

On subsequent (non-videotaped) rides with John, we proceeded at a

more relaxed pace and without much of the nervousness that followed the ride

through downtown. John' experience illustrates how wayfinding techniques can be

particularly difficult for people of color that may have different sets of social

capacities to overcome spaces differentiated by race and visibility, particularly within

the spatially segregated Minneapolis African American community. For many people

of color, bicycles are viewed differently, as part of relationships of gentrification,

mobility, visibility, and culture than about utilitarian transportation (Hoffmann

114

2013). Spaces that appear neutral or accessible on a bike may be places of intensity and fear for certain bicyclists for reasons that have little to do with the actual infrastructure, but center on the kinds of social and racially coded meanings, memories, and expectations that are present in the landscape.
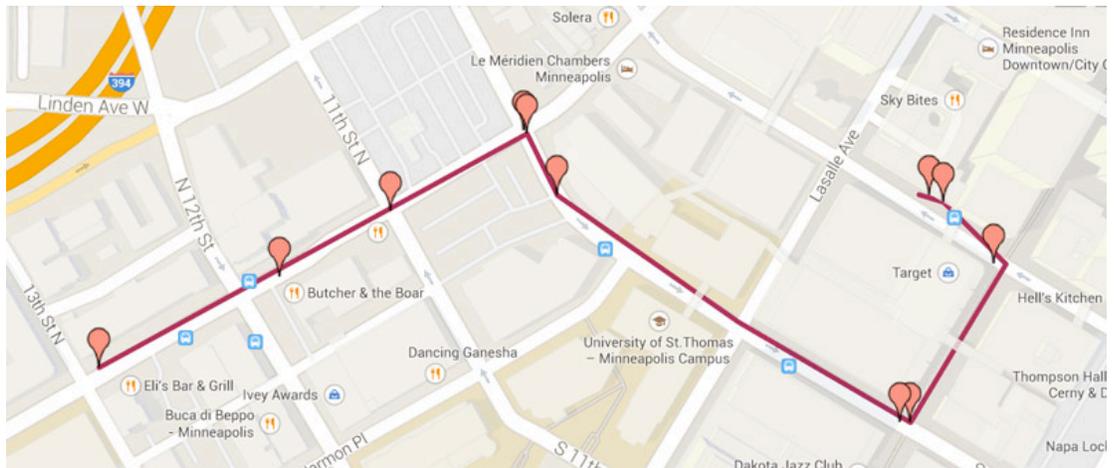
Figure 4.12 Map of John's ride, one mile from the Subway sandwich shop to a cell phone store through downtown Minneapolis.

Image 4.13 The end of the ride with John. Clockwise from top left: Negotiating through busy downtown Minneapolis at rush hour, on and off crowded sidewalks.

For example, one of John's most frightening experiences of bicycling in the city was riding on one of the city's off-street recreational trails, far from the cars that are otherwise perceived as the biggest obstacle for bicycling.

John: [Someday] I got till get to ride that bicycle trail one of them here, that go up Chicago… go all the way over to Lake Calhoun or something.

Q: Yeah?

John: I'm gonna try that. I haven't done it yet.

Q: Why not?

John: I'm a little fearful.

Q: Why?

John: I don't want to get out there in the middle of somewhere and not know which turn to take cause that bicycle trail sometimes… I was on one and it had eight forks, eight branches coming off of one, and it was a little overwhelming, and you know, that's how I winded up in Golden Valley. I'll just stay on this main strip and see where it goes.

Q: Don't know where you were?

John: And I didn't. And like I said it was scary. It was over here off Glenwood, going this way, I crossed the bridge and a body of water, and I looked to my right and there was this lane going out, so I said I'll go over there. I thought it was a park. I started riding and riding and the next thing you know I was in the middle of some woods, and all I could see was top of trees, and I don't know which one to take, and was like, "O my lord", and I said I'll just keep straight on this and see where it goes and it took me over… [long

pause] I get like that sometimes. It scared me a little bit, so I aint' dealing with it no more since.[27]

John' experience of the city's off-street trail system reveals how the affective assemblage of bicycling and urban space exceeds the simple material designs of physical spaces. For John, the spatial affordances of the city are largely restricted to a small area where he felt comfortable moving: roughly five-square miles between the homeless shelter, the convention center, downtown Minneapolis, and his apartment near Franklin Avenue. For others, for example Linda's or Nicole's detours onto sidewalks at certain points during their journey, urban spatial affordances might be governed by feelings of safety and comfort in relation to traffic or perceptions about crime. [See Figure 4.12.] For Linda, spaces might be read according to navigational landmarks, while for Mark, a 40-something experienced bicyclist, spaces might be more linked to historical landmarks, topography, or designated routes. In each case, moving through the city consists of a combination of creative tactics and wayfinding strategies that develop over time through memory, mental and physical maps, and the affective social dynamics that make spaces differentially accessible depending on race, class, gender.

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[27] Ridealong interview with John.

Image 4.14 Two moments where Nicole (left) and Linda (right) opt to ride on the sidewalk instead of the street.

Interlude: Lost in the Suburban Night

In the fall of 2012, a friend of mine invited me to his house to watch the World Series. He was a die-hard Detroit Tigers fan, and the Tigers had finally made it to the October Classic. The Tiger's ace, Justin Verlander, was starting on the mound for the Tigers against the San Francisco Giants' lowly Barry. It was a tremendous mismatch, and my friend was really excited. Despite the oncoming late-fall chill, I was really looking forward to spending time with a fellow baseball fan

The only catch? My friend lived in Saint John Park, a Minneapolis suburb, and I wasn't quite sure how to get there on my bicycle. When you get around a place like the Twin Cities without a car, you have to bring with you a bag of tricks. Bicycling is the best way, as long as the weather isn't too dangerous and you don't have to ride far into the auto centric suburbs. The bus works well for certain trips, and offers very poor service for others. The most expensive option is to rent a car using my car sharing membership, or borrowing a car from someone, which involves some of what Hardt and Negri (2004) might call affective labor. I

was at an impasse, but after I looked up the exact address of my friends' house, I discovered

he lived just only a block or so away from one of the Twin Cities' best suburban bike trails -

the Cedar Lake Trail. So I decided to brace the impending rain and nightfall and ride my bike

to the suburbs.

Having ridden a bike around Saint Paul and Minneapolis for almost a decade, I sould

have better known my way around the city's bike trail system. But, particularly when you're

going someplace new, any bike journey can quickly turn into an epic adventure. Somehow

when navigating Minneapolis' suburban off-street bike trails, I took a wrong turn and wound

up on the wrong path. Searching for the an address I'd scrawled in my notebook, I found

myself in the wrong, out-of-the-way suburb of Hopkins before turning around. (This was

before I upgraded to a smart phone.) The sun set and I was riding my bike in the suburbs, in

the rain, lost at night: a trifecta of gloom. Somehow I got it into my head that my friend still

lived nearby, perhaps on the other side of the nearby freeway. So I wound up crossing a

series of busy onramps in the dark in the rain, going down the wrong cul-de-sac, completely

lost.

By my soggy revoking, it was around the 4th or 5th inning that I gave up. I found my

way carefully back to the bike path, going slow down the narrow suburban sidewalks as car

headlights sped relentlessly around me. Cold and miserable, I eventually biked the five miles

back to Uptown where I found the nearest tolerable bar and watched the Tigers lose to the

upstart Giants. It took over an hour, but I took the bus home.

The point of the story is that, even for experienced bicyclists, sometimes

riding a bike in the city can be a miserable affair. It's easy to sugarcoat bicycling, to

pretend that even in the wintertime, riding a bike in the city is invigorating and fun.

It's tempting to focus on the positive parts of bicycling because, taken as a whole,

bicycling is a great experience and most people that I know who ride regularly would never trade their bikes for the drudgery of driving. But the truth remains that bicycling can be miserable from time to time. And, to be honest with myself, I have to remember those moments.

4.5 Circuits of Habit Formation

While learning to ride a bicycle often serves as a synecdoche for kinesthetic knowledge, developing the tactics and strategies of traveling through the city takes time and effort. Repetitive movements build on each other, and habits form over time. For example, drawing on Lefebvre's rhythmanalysis, Edensor (2011) describes automobile commuting as a practice that offers a "balance between tedium and liberation" that challenges the assumptions of linear time and space. Travel through the city takes place in dynamic spaces that,

Continually pulse with a multitude of co-existing rhythms and flows. Certain cross-cutting rhythms might be particularly evident on a journey, such as the different paces of other mobile machines and bodies, the rhythmic gusts that tug at vehicles and surrounding vegetation, or the flow of a river passing underneath the road or railtrack.

(200)

Compared to the automobile, the rhythms of bicycle trips are less regular, more flexible and more dynamic. On a bicycle, topological space trumps linear distance. In other words, some miles seem far longer than others; some minutes fly by, while others slow to a crawl and draw themselves out, "punctured, disrupted or even

curtailed by moments and periods of arhythmy" (Ibid 193). These rhythms of intensity, danger, effort, or relaxation build on each other to form memories that shape each bicyclists' individual patterns of movement.

The rhythmic practices of bicycling are not just guided by mental images but are embodied in the landscape, by the social guidance of streets, guard rails, potholes, curbs, paint, street lights, and stop signs. As Latour points out, the social practices of bicycling are material, punctuated by the gaps that have become the focus of bicycle planning.[28] Yet these gaps are not straightforward, not easily seen from the spatial abstractions of maps and plans. As Aldred (2014) describes, bicyclists in London often have to negotiate places of extreme danger:

There are still so many places like this, including places supposedly designing for cycling. Riding to Brixton and back last night for a meeting (on designated or recommended cycle routes, for most of the journey) I experienced around four near misses, where two seconds could have been fatal, including a Northbound junction on Cycle Superhighway Seven where left hooks are invited: motor vehicles swing left across the cycle lane, with the turning radius positively encouraging them to continue at speed.

For all bicyclists, but doubly for new riders, these near misses occur with intensities that can affectively dominate the rest of the journey. Much as the perceived distance for pedestrians

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[28] Latour repeatedly uses the material and semiotic (ideational, through signage and policing) constraints on bicycle travel as an example to illustrate the difference between traditional concepts of "social" and "non-social" ways of shaping behavior. For example, he describes how traditional social theory "abandons" the material built environment:

> To carve out a little niche for themselves, they had abandoned, early in the 19th century, things and objects to the scientists and engineers. The only way to plead for a little autonomy was to forsake the vast territories they had given up and stick forcefully to the shrinking plot allotted to them: 'meaning', 'symbol', 'intention', 'language'. When a bicycle hits a rock, it is not social. But when a cyclist crosses a 'stop' sign, it becomes social.
>
> (Latour 2005 83)

does not map neatly onto abstract space, and perceptions of waiting for transit users does not map neatly onto abstract time, perceptions of bicycling can hinge on small moments of intense conflict (Horning, E-Geneidy, and Krizek 2007, Fan and Levinson 2014). The creative practices of cyclists are simultaneously tactics of avoidance and productive habits of movement that develop into the kind of idiosyncratic urban images explored by Lynch's (1961). In this way, the spatial tactics and wayfinding strategies emerge from out of the bicycling assemblage. Moments of conflict within the landscape become disjunctures, intensities that shape the way that individual bicyclists feel about the city. Affect thus forms around an inseparable combination of emotion and space to create capacity for movement, and eventually the habits of bicycling become more ingrained to emerge as a form of bicycling identity.

4.6 Conclusion

In this chapter, I have shown how the spatial practices of bicyclists differentiate not only across space, age, race, and class lines – for example the "fear" of visibility experienced by people of color – but also through the affective capacities of the bicycle-body-city assemblage. The set of potential tactics and wayfinding strategies available to each bicyclist varies along with the choice of bicycle, and what Spinoza famously termed "what a body can do" (Spinoza 1994).

Yet the spatial practices of bicycling do display many commonalities. As these differentiated tactics and strategies play out within the everyday urban landscape, certain patterns, parallels, and shared practices emerge to form groups and communities of shared skills. Particular kinds of spaces offer affordances that foster bicycling styles, and these styles create affective dynamics that can foster strong solidarities within groups of bicyclists. In the

next chapter, I will explore some of the dynamics of these various affective assemblages,

looking at how social dynamics of bicycling filter through the individual experience of the

full affective assemblage.

Chapter 5: Socio-Taxonomy of Bicycling Affect

"The world of cycling is like a big bowl of Lucky Charms – it's full of lots of goofy-looking figures in different colors and shapes, but they all come together to be delicious. Furthermore, different people partake in the world of cycling in different ways. Some like to pick out the marshmallows one at a time, while others like the crunchy stuff, and still others like to let the bowl sit there for an hour so they can eat the whole thing in one soggy mass."

-Eben Weiss, aka BikeSnobNYC

5.1 Introduction

In the last chapter, I analyzed some of the ways that the everyday spatial practices of bicyclists form ways of perceiving the urban environment that coalesce into the habits and patterns of identity. In this chapter, drawing on crowd theory, I outline how these patterns form around particular pieces of the bicycle assemblage. For example, the bike helmet, lycra, or off-road abilities can often signify a larger set of relationships between the body, the bicycle, and the built environment. Together, these affective connections represent combinations of emotional attitudes and capacities for action.

I then introduce an affective taxonomy where I elaborate on the rough classification system mentioned at the end of Chapter Three. Here I draw on spoken and ride-along interviews to examine how different modes of experience and capacities can sort bicyclists along affective lines. I identify and describe four distinct affective assemblages that emerged from this set of interviews and experiences before finally offering a theory of how individual bicyclists negotiate these different nonhierarchical social intensities. In this way, I

use the concept of affective taxonomy to illuminate some of the diverse spatial practices of bicycling in the Twin Cities.

5.2 Helmet Use and Intensities of Concern

The social landscape of Minneapolis bicycling was thrown into relief during the summer of 2012. The city had been making steady progress increasing the amount of bicycle infrastructure and the number of bicyclists on the streets. The most recent sign of the increased municipal support of bicycling was that the city had hired a new "bicycle and pedestrian coordinator" for the first time, a position aimed at fostering institutional changes within the city's traditionally automobile-centric Department of Public Works. Finding room in the city budget for the new position was a noteworthy accomplishment because it had happened over the objections of the Fire Department, who had recently experienced layoffs, and who used the new position to foster debate over city priorities (Jackson 2012, City of Minneapolis 2012). Despite the outcry, the City Council retained the funding for a bicycle-specific position, and soon after, the state's largest newspaper conducted a lifestyle interview with the new hire, Shaun Murphy:

He takes buses and trains, walks wherever he can. When he does bike, he doesn't wear a helmet because he doesn't want the activity to appear dangerous or scary.

"I just want it to be seen as something that a normal person can do," said Murphy. "You don't need special gear. You just get on a bike and you just go."

(Jackson 2012)

The article included a photo of Murphy riding helmet-less down the city's Midtown Greenway, a large and popular off-street trail, and quickly after the piece was published,

Murphy's helmet practices became a hot-button issue. [See Figure 5.1.] The Star Tribune

printed a critical op-ed and letters to the editor, and eventually Murphy received a

reprimand from the city requiring him to wear a helmet during work hours (Tevlin 2012).

Figure 5.1. Illustration from the 2012 Star Tribune article on Shawn Murphy. Original caption read "Minneapolis bike and pedestrian coordinator Shaun Murphy, right, took traffic engineer Allan Klugman for a ride along the Greenway bicycle/pedestrian path."

Murphy's example is typical of the role that helmets have traditionally played within

bicycle culture since their rise in popularity during the 1980s. Of all the debates about

urban bicycling, none is more contentious than the conversation over helmet efficacy. Yet

the research itself is unclear; many dozens of studies exist, making all manner of arguments for and against the efficacy of helmets. Some argue that helmets reduce head injuries by 80%, others suggest that they have negligible effects, while a few even suggest that helmet use increases the risk of neck injuries (e.g. Bambach et al. 2013, Zeegers 2011).

Yet the heated contestation over helmet use goes beyond debates over research methodology. Instead, I argue that the intensity of the helmet issue has more to do with their crucial role within the affective assemblage of bicycling equipment, bodies, and urban spaces. Helmets, and indeed all components of bicycling, should not be considered abstractly as discrete technologies stripped away from their social, economic, and emotional connections. Rather, each aspect of bicycling can only be accurately understood within a relational context. For example, here the helmet becomes a focal point of social differentiation through which bicyclists are evaluated and sorted, both within public discourse and in the lived practices of bicycling. Often this takes place within media narratives, as helmet use becomes a litmus test for responsibility. Alternately, from a technological standpoint helmets mark inclusion within a regime of equipment that aligns closely with race and class, serving as a shibboleth for acceptance within, and of, dominant cultures within the broader cycling community.

However important it has become over the past decades, the helmet is just one example of how affective assemblages are marked by points of intensity that shape and sort the population of bicyclists. There are also different kinds of bicycles (type, age, etc.), clothing, riding styles, bike shops, and route choices. Within the larger context of environment, equipment, and safety variables, helmets are merely one (particularly intense) point within a larger assemblage that offers a diversity of potential expressions, and combines along particular lines to form distinct groups of bicycling.

128

Murphy's incident points to a fundamental tension in the bicycle advocacy community between normative abstractions of bicycling (for example, always obeying the letter of the law) and the various compromises of everyday practices of bicycling outlined in Chapter Four. Reconciling the ideal world of theoretical bicycling behavior with the actual world of everyday urban bicycling, as Murphy attempted to do in this incident above, typically results in often-counterproductive debates that fail to reconcile these two worlds. Instead, these debates illustrate how groups of bicycling sort themselves and emerge through their practices. To continue with the helmet example, helmets are typically sold, marketed, and regulated through the existing safety and advocacy institutional structures. To wear a helmet is to signify the adoption of a defensive posture toward the city and its status quo of automobility. Helmets signify that a bicyclist has invested in equipment, and adopted an attitude that emphasizes safety over utilitarian needs.

Twice during my ride-along interviews, participants admitted that they had only brought along their helmets because they had thought that I had wanted them to wear them, and admitted afterward that they did not normally use them. (I conducted my interviews and videos without a helmet, myself, though I did wear one during certain rides where it was required.) Most riders choose not to wear them for a variety of reasons: their cost and inconvenience can be a burden, they are not considered comfortable, and they can clash with the style of different riders (in both the fashion and attitudinal senses of the word).

Yet most riders that I encounter, even those without much investment in bicycling technology, have a definite understanding that they are important social markers. Broadly, helmets signify participation within the discourse of shared responsibility, playing a key role in differentiation the bicycling population into distinct groups. Choosing not to wear one is

thus often accompanied by feelings of guilt. For example, during one interview, Maria, a 30-year old Latina explained:

Maria: I don't necessarily need to be able to see the road. I don't like biking blind, but it scares me to think that cars can't see me at all. I think that's reasonable. Like I'm not wearing a helmet, I don't wear a helmet.

Q: Why not?

Maria: Cause I'm lazy and I like it. I don't like the way it looks. Really I'm serious. Helmets are ugly. It's stupid, and I had this discussion with [my roommate] about this. Cause I was like, you know, we should really be wearing helmets. And she's like whatever. And I said it's the equivalent of not wearing your seatbelt, and I would never get into a car without wearing my seatbelt. [long pause] But … I just don't like them…. I'm not a very… I'm generally not a very meticulous person either. I don't take care of my bike.[29]

Importantly here, Maria's self-analysis of her helmet use is not reducible to a single logic, but reflects broader connections that run through the entirely of the affective assemblage. Helmets enter into her everyday practice of bicycling through clothing and fashion, through her technological (lack of) familiarity with the bicycle as a machine, and also play a role in her consciousness of being perceived as a safe or responsible bicyclist. These things are taken together as a whole, so that the helmet symbolizes individual distance from a position relative to mechanic skill, helmet use, bicycling style, among other things.

In this way, individual components of bicycling practice can offer points where the capacities to bicycle emerge and coalesce to form a given assemblage of mobility. In Maria's case, her ability to use the bicycle in the lived city unfolds in along a specific line to create a capacity for action, albeit one that sorts her into the (self-described) category of neglectful

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[29] Ridealong interview with Julia.

or "not very meticulous." Similar examples occur frequently in research about the role of bicycles: for example Lugo's (2013) descriptions of the role of clothing and fashion in bicycles, or Lindsay et al.'s (2006) connection between bicycle trails and income levels.

Differentiations do not emerge for each individual bicyclist in isolation. Rather, as with Maria's roommate, these practices emerge through social negotiations. Distinct affective relations between bicycles, bodies, and the city form through groups: for example, bicycle messengers, bicycle racers, or a great variety of specific types of bicycle (e.g. fat tire bikes, commuter bikes, bike polo players). Often this social sorting occurs intentionally, for example, around specific group rides: the African-American bicycle clubs (e.g. the Major Taylor Bicycle club), clubs for older women riders (e.g. the Minnesota Hot Flashes) or rides organized around types of bicycles (e.g. a group of riders that all own custom-made Rivendells, or the Scallywags, a punk group who ride DIY tall bikes). (See for example, the role of bike messenger fashion in Kidder 2005.) Alternately, as Krizek and Johnson (2006) describe, also using Minneapolis and Saint Paul as an example, bike shops can serve to sort bicyclists into groups through how they interact with, and attract, different kinds of customers.

More often, however, bicyclists are implicitly sorted through their riding style, clothing, speed, route choices, and many more subtle aspects. While these differences can sometimes be superficial, they offer a contrast to the automobile system that largely treats motor vehicles as operating according to a uniform set of laws and standards. Instead, bicycles display a dizzying array of social practices and social codes, often in ways that expose individual bodies and make them more vulnerable to intimate forms of social communion.

Interlude: My first proper Peloton

Like most people who become full-time bicyclists, I own a lot of bicycles. Most of them have been gradually accumulated: three were given to me by people moving away, two were purchased very cheaply from used basements, and one was unearthed from the back of an old barn. But I have only purchased one brand new bike, and it's worth more than the rest of them put together. A few years ago, after many long conversations with friends at the bike shop hearing stories of tours up the West coast or across the great plains, I purchased a brand new touring bicycle. It was a brand new bright blue Surly Long Haul Trucker, specifically designed for carrying equipment on long trips. After buying the bike, I invested in a rear rack, a pair of panniers (bicycle-specific carrying bags), and expensive bicycling shoes. I was as ready as I'd ever be for a bicycle touring adventure.

A few weeks later, I got my chance. On a whim, I booked a campsite at a state park near Duluth, Minnesota, about 120 miles north of Saint Paul. The next morning, I packed my tent and drove my bike up to the beginning of the Willard Munger trail, a state-run off-street converted railroad path that ran directly to the park. Flying along that trail through the countryside was exhilarating, knowing that I had everything I needed -- food, water, tent, map, bike tools -- attached firmly to the back of the bicycle. Sixty miles later, I found myself walking my bike to my campsite just as the sun was going down. Mission accomplished.

The next day, though, the strange clicking noise that I'd been hearing from the chain on my brand new bike grew louder. Early in the morning, just as I was about to begin riding South back to my car, the chain snapped. I didn't know what to do. I didn't have a

"chain tool", which you need to re-connect the broken links, so I improvised with a small twig that I found in the woods, and somehow managed to get my bike moving (very slowly) down the path again.

I had no plan, and began to get worried. I felt completely isolated. Eventually, I decided I'd find the nearest bike shop, 15 miles away, and somehow get my new bicycle (laden with a dozen pounds of gear) fixed. But then I spotted a group of riders coming down the trail, and just as they were passing by, shouted "Do you have a chain tool?" One of them did a U-turn and came back. Quickly he kneeled down and said, "I'm a bike mechanic," and began fixing my bike. I chatted with the four men, and after a few minutes my chain was back to proper working order. Then they asked if I'd like to ride South with them.

The next few hours were a fascinating experience. It was windy that day, and the five of us began riding in a line -- what bicyclists often call a "peloton" -- where each of us would take turns breaking the wind at the front while the others followed in the vacuum behind the leader.

Travelling in a peloton pack are viscerally aware of the rider in front of them, the sounds of their wheel and derailleur blend into the background of wind noise. Similarly, bicyclists in a pack have a sense of the invisible rider behind them, their breath still audible at speed, only a few feet away. Within the group, communication happens through subtle hand gestures and the exchange of short words. As hours and miles pass by, individualism is gradually replaced by a collective solidarity felt elsewhere only by musicians, athletes, or dancers. (This collective identity takes some getting used to. On a group touring ride a few years later, I made the cardinal error of braking suddenly without warning when a nearby

garage sale caught my eye. The rider directly behind me almost hit me, and it could have been a serious accident. I learned my lesson: pelotons come with added responsibilities.)

We averaged 16 miles per hour heading back to Hinckley, and after my near disaster in the woods, I'd never felt so relieved to be riding in a group. I began to think that maybe bicycling was best experienced with others.

5.4 Three Scales of Socio-affective Sorting

Compared to the affective dynamics of the automobile, the social intensity of bicycling displays a range and depth that challenges the methodological individualism within most affect or mobility literature. There are many reasons for this: bicycling is inherently exposed to the environment, bicyclists experience a greater learning curve that almost always requires social coaching, bicyclists have more intense interactions with other street users (e.g. cars). Finally, particularly during early habit formation, group dynamics can play a profound role in developing the capacity for movement. Together, these levels overlap and comingle to form capacities for action that shape individual experiences; in other words, they come together to produce affect.

The key difference between this version and most previous attempts to use affect as an analytic tool is that here affective capacity is viewed as inherently relational, social, and forming through extra-individual dynamics. While it is true that much affect literature retains a strong foundation in relational ontologies, particularly in the more Spinozan conceptualization of affect that emphasizes capacity for action, much of the discussion around affect remains centered on the formation of emotional experience at the individual level. For example, affect is used to describe how moments of decision (Gallagher 2005),

perception of language (Bianco 2002, Massumi 2002), or the experience of empathic bonds (Ducey 2002) emerge in ways that retain a devotion to methodological individualism. Despite calls for relational ontological commitments, much of the time affect remains predicated on a discrete embodied subject (Thrift 2007).

This methodological individualism poses difficulties for considering bicycling through an emergent sociality, where the capacity for movement emerges out of the way that bicycling (and automotive) bodies assemble at different scales. Most obviously, group riding plays a large role within bicycle racing, where groups of bicycle riders form a collective super-organism called a "peloton." At its basic level, the peloton is defined as the "the large, aerodynamically efficient, and extremely fast pack of riders near the front in a road race" that ride in a collective mass in order to "shelter in each others' draft" (Brown 2014). The word peloton itself comes from the French world for "rolling up into a ball," but retains the visceral and embodied meaning "to cuddle", suggesting an intimacy and collective becoming that fits with Cannetti's descriptions of the pack as a "unit of action" that is continually moving toward a direction or a goal (Canetti 19789 94). On a bicycle, air becomes solid and resistant, materially pushing back, buffeting, or pulling forward (in a slip-stream) bicycles and riders to literally form them to form a group, bonding them together despite the competition. In races, this is crucially important; as one former racer describes a finish:

I was racing without teammates, but I profited from the other teams' tactics. On the next to last lap there was a big acceleration and the pack split in two. I was in the second group, but we caught the front runners just before the final turn. I saw one of the big team leaders eye the other and there was a moment of hesitation. I took off. It felt like diving off the high-board and being alone in mid-air. I got a gap and went all-out toward the finish. I could feel the pack

approaching from behind, and as I neared the line some riders appeared in my peripheral vision, but I crossed the line first. I won!

(Reid 2010 154)

The strategy and tactics of bike racing hinge around assemblage of the pack, and the almost predator-prey linkage between individual riders and air resistance.

The proprioceptive sensation of being within the pack transforms group bicycling into a phenomenon where the collective crowd assumes an emergent identity larger than any individual rider. Emergence is a phenomenon where, as Ball (2004) describes, the "local perception" of each relationship between bicyclists translates up across scales to form a collective behavior of the larger mass. In a sense, bicyclists entrain themselves to each other much like marching soldiers (De Landa 1991).

No aspect of bike culture illustrates the catalytic social dynamics of bicycling's better than Critical Mass, the leaderless group rides that emerged out of San Francisco during the 1980s (Furness 2010). At one level the ride is self-organizing and apolitical; in theory, the ride's only politics revolves around the change inherent within bicycling itself. Critical Mass assumes from the outset that city streets contain a latent potential, that the physical and political relationships between cars and non-motorized transportation can be easily transformed. All that is required for this change is a critical mass of bicycles, an argument that parallels statistics seen in cities in Northern Europe and the US (City of Minneapolis 2013a). As Furness (2006) describes, critical mass rides represent a "collective spatial practice" that conducts a "performative critique" of spaces of automobility. As one Milwaukee participant describes the experience, these events re-appropriate physical space to create ideological spaces of possibility.

I began to truly appreciate seeing the city of Milwaukee at street level, moving more quickly than walking, but without any glass or the sound of an engine between the buildings and me. I started noticing things I'd never seen before and felt the city in an entirely new way. I could feel the streets. I could feel the pavement.

(DeBruin, quoted in Furness 2006)

Here the larger assemblage is transformed through the collective re-representation of the bicycle-city relationship. The transformation becomes visceral, "felt" in ways that point to the everyday intensity of the assemblage itself. The body, the pack, the bicycle, and the pavement retain a vital connection that belies the abstractions of individuated experience. In this way, the critical mass event distills the social function of bicycling into one repeatable experience. Most group bike rides operate along similar lines, even rides with two or three friends, because they dramatically change the way that bicyclists interact with cars.

Critical Mass rides are one example of the emergence of social affect, but bicycling is inherently social in at least three ways: as a process of habituation, as a synchronous relation between moving bodies, and as part of a diachronous assemblage of the built environment and its social practices (e.g. traffic laws). Protevi (2010) describes these dynamics as "compositional and temporal scales" that, while remaining "imbrications" of each other at any given instance, can be meaningfully analyzed as "dynamic … patterns" with distinct characteristics (37). Just as the pack reveals an emergent collective during movement, at the long-term scale cities display emergent behavior that changes the dynamics of traffic patterns themselves. Within bicycle planning literature, this is known as the "safety in numbers" effect, where the presence of bicyclists in general across the city changes the perceptual habits of drivers in general, and leads to dramatic decreases in

137

accidents in cities that achieve a critical level (e.g. Jacobsen 2003, Center for Transportation Studies 2011, Pucher et al. 2011). This effect, which is inherently social, challenges the individualistic norms of decision-making and safety assumptions and points to the importance of considering even the most individualistic bicycle trips as a socio-affective relation. In a sense, the political practice of "critical mass" rides illustrates the collective dynamics of the built environment in a non-metaphorical way, offering a concrete example of the potential flexibility of the emergent behavior of the everyday street.

Likewise, at the individual scale, because of its minoritarian status, individual social networks are often crucial to habit formation for new bicycle riders. Much as air resistance forces riders to group together, the hegemony of the system of automobility cultivates solidarity amongst bicyclists in ways that would not happen if rates of bicycling were higher. Almost all the bicyclists I interviewed began riding only as their social network began introducing them to the equipment, routes, and tactics of urban bicycling. This social side of the bicycle experience is a crucial component of attracting new riders, so that, for example, as part of its bicycle advocacy program Minneapolis employs "bicycle ambassadors" tasked with demystifying bicycling for less experienced riders.[30] The city, in partnership with a suite of different bicycle advocacy groups, employs these ambassadors in a series of bicycle-related events: as neighborhood events such as Saint Paul's annual Rondo Days Parade or Minneapolis Aquatennial festival, two annual Bike/Walk to Work weeks, and, for three years, "Open Streets" afternoons modeled after other city's car-free events. Occasionally, these events play a role in overcoming some of the social, material, or physical barriers for new riders. For example James, a thirty-year old male, describes his transition to bicycling to work:

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[30] Informant interview with David.

Q: Why did you start [riding a bicycle to work]?

James: A few different things. [My office] has a fairly committed biking crowd. There are about six people in [my office] who bike commute. There's only about thirty of us, so that's about twenty percent right there. One of the guys in my office has lost a decent amount of weight biking. Granted he goes farther than me, but I'm just out of shape so I realized I needed to do something and, Why not bike?

The trade off is, I talked to various people about this to get psyched up to do it, and it's like twenty or twenty-five minutes to bike to work. And it's like the bus takes like fifteen minutes plus the time to walk to the stop, wait at the stop, and walk to my office. So excluding changing of clothes, it's pretty much even. If I drive, it's like ten to fifteen minutes depending on traffic, plus the walk from the ramp to my office. So it's pretty much even. Why not get some exercise and have the opportunity to go with friends to work who happen to bike places? I mean we, it's been a while, but we'll occasionally bike to the Birchwood for lunch, or Hot Plate, or the Bryant Lake Bowl for breakfast.[31]

In this quote, James narrates his decision process, and points to a few of the common motives that are often given to describe bicycling intentions: weight loss issues, clothing style, personal health, time concerns, camaraderie, peer pressure. But James's narrative remains dominated by the social networks. For most people, friend and co-worker networks, rather than the state-sponsored events or activities, often prove to be the key to getting new riders to participate. Much of the time, rather than being an individual decision, even when literally alone, bicycling can be experienced as a social act.

Within most discourses, for example on the popular online message board Minneapolis Bike Love, these social dynamics are subsumed under the broad term "bike

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[31] Ridealong interview with James.

culture" (Minneapolis Bike Love 2013). Narratives about the contemporary bicycle boom treat culture as a seemingly homogenous social field with a coherent identity (e.g. Jones 2007, Scherer 2013). As practiced in the real world, however, there are many different bike cultures that reveal a diverse social practices ranging from bike polo leagues, velodrome racing teams, annual bicycle-themed art shows, to senior citizen "slow rides." Bike culture in a city like Minneapolis/Saint Paul has many centers, for example the Twin Cities Bicycling Club, which boasts thousands of members and leads guided tours across different "skill levels" from "advanced" to "beginner." The local website Minneapolis Bike Love organizes rides and events, but its most popular feature has long been serving as a medium for people to exchange photos of bikes seen around the city (so called "bike porn"). Alleycat rides such as the (aforementioned) Stupor Bowl winter ride, the all-female Babes in Bikeland race, the all-day marathon Powderhorn 24 race, or the monthly "no name" races attract hundreds of riders to their events. These social events typically cluster around specific bike shops throughout the city, each of which caters to smaller subsets of the larger bicycling population (Krizek and Johnson 2006).

At the same time, social and cultural aspects of bicycling are included within some attempts at bicycling advocacy. For example, as part of its bicycle encouragement program, Portland offers volunteer guides to guide new riders along often confusing bicycle routes on their way to work (Birk 2006). Minneapolis has a similar set of social advocacy techniques, intended to provide a framework for how to get started bicycling for transportation purposes. For example, James, a thirty-something white male, tells a story about "Bike/Walk to Work Week," Twin Cities' longest-running official social advocacy event:

Q: So you just decided to try [the new bike] out?

James: I was very excited. I don't think I'd started commuting to work at that point. I had [my bicycle] for about three weeks before I started commuting to work. I had this apprehension about biking to work, like the route seemed straightforward enough, but it was Bike/Walk to Work Week and there was a breakfast at the green institute up on the greenway and 28th and a couple of co-workers were like, let's just do this. So, like OK.[32]

This anecdote illustrates precisely how the city's outreach programs are supposed to operate, catalyzing the social experience necessary to overcome the "apprehension" that lingers over a travel mode perceived to be dangerous. Along these lines, the NTP federal funding administrators paid for the city to hire four full-time "Bike/Walk Ambassadors" to attend events, and travel around to different businesses and community groups offering classes on topics like "winter biking", "basic bike maintenance", and "riding in traffic.[33] Similar programs operate using federal money in every city in the US through Federal Congestion Mitigation and Air Quality program funding, providing information aimed at convincing downtown commuters to ride bicycles, and offering incentives to businesses to provide bicycle facilities like shower or lockable parking.[34]

All of these approaches operate through the assumption that bicycling remains a largely personal decision, working thorough what Komanoff (cited in Furness 2006) calls "pragmatic appeals to environmental health, community ethics or physical fitness that are commonplace in formal bike advocacy" (League of American Bicyclists 2004). While the role of the ambassadors attempts to stand-in for the role that socialization typically plays in social life, the temporary inclusions that take place with a visit cannot replace the way that "bike cultures" affect people. Instead, in almost all interviews I conducted, it was a social

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[32] Ridealong interview with James.
[33] Informant interview with David Peterson.
[34] Informant interview with Andrew Rankin.

relationship with a partner, friend, or relative that was the reason cited for beginning to ride bicycles in the city.

Taken at a larger scale, individual bicycling moments coalesce and affect each other through more longitudinal affective connections. Bicycling practices form patterns, clusters of concentration and nodes of intensity where cultures develop. From the outside, viewing these patterns against the hegemonic backdrop of automobility, it is all too easy to subsume bicyclists and bicycling into a homogenous grouping. Phrases like "those people" or "bike people" become all-encompassing ways of describing anyone crazy enough to ride amongst deadly cars. Yet even the shortest conversation with a bicyclist reveals the assumption of homogeneity to be false. From the inside, the perspective of the bicycling subject, the world of bikes is fraught with difference. There are multiple points of difference between types of bicyclists, bicycles, and urban spaces. These points of dissention lead to the myriad derisive names, the most common being the term "fred":

A person who spends a lot of money on his bike and clothing, but still can't ride. "What a fred -- too much Lycra and titanium and not enough skill." Synonym for poseur. Occasionally called a "barney."

(Brown 2014)

Fred is one of many such terms; others include the acronyms MAMIL (Middle Aged Men in Lycra) and BOB (Bridgestone owners' bunch, referring to a high end bicycle brand), and a great variety of slang: "hammerhead", "posenger", "pathlete", "grape smuggler", "weight weenie", "retro-grouch", "lone-wolf", and "critical masshole" (Weiss 2010). Viewed from atop a bicycle, seemingly small differences between riders and bikes magnify in importance.

Among bicyclists, these intensities are often subsumed within the term "bike

culture," which broadly refers to the way that individual subjectification and perception of identity becomes entangled with the act of riding a bicycle. Bike culture in this sense has a double-edge. On the one hand, it plays an important role in attracting and developing new bicyclists in the first place. Because bicycles are perceived to be marks of fitness, counter-cultural status, technological expertise, or environmental consciousness, they attract people, the tantalizing signification justifying any initial embarrassment. Though this initial transition is usually challenging, bike culture is one of the ways that new riders overcome obstacles through their connections with friends, family, partners, or co-workers who catalyze these early habits.

On the other hand, different forms of bicycle culture can be deeply alienating. Inevitably, the act of bicycling represents particular social identities – principles, class positions, cultural assumptions – and bicycle culture can often serve as a barrier to the formation of bicycle habits. For example, Maria, a thirty-something Latina, nicely illustrates how perceptions about culture and symbolic expression of one's identity as a bicyclist can play a role in fostering alienation:

Maria: Honestly bike culture here really annoys the shit out me sometimes.

Q: What do you mean?

Maria: When I first got here I had a huge pet peeve with the pant leg rolled up thing, people very very far away from their bikes. Walking around with one pant leg up.

Q: I just rolled mine down. I don't know why.

Maria: You just knew that I'd be really annoyed. It annoys the shit out of me because you start to get this coercive subculture. You know it has its signals and its not inclusive, it doesn't really like… This is gonna sound dumb, but I'm a girl who likes to wear big skirts and high heels. And

I wanna be able to do that on my bike, and I do do that on my bike now. But the bike culture here is sort of… I… I moved here from London and I had a hard time with a coercive slovenliness that I found really obvious.[35]

In this example, a small detail – the rolled-up pantleg – dons significance far beyond its seeming importance to an outsider. The rolled-up pantleg stands in for a suite of cultural behaviors, an entire affective assemblage dividing this bicyclist from others in the Minneapolis population. For some, the function of the rolled-up pantleg is simply to keep chain grease from marking one's clothing, yet here it represents perceived attitudinal differences, particularly in contrast to London's cosmopolitan bicycling culture, that demarcates a point of intensity from which Maria wants to separate herself (see Aldred 2013). The rolled-up pantleg connotes a younger, middle-class, and (typically) white male body, marking a certain disposition as someone comfortable intentionally identifying themselves as a bicycling body. This small detail prefigures larger differences in bodies along lines – particularly gender, class, clothing, and riding style – marking (as Maria explains) a particularly alienating "coercive subculture."

Contrast the rolled-up pantleg to someone riding a European-style bicycle that features a chain guard, a body wearing bicycling-specific spandex shorts, or the greasy attire of the bicycling punk scene. While seemingly minor details, the bicycling experience is full of such moments of differentiation. Particularly in the US, the limited adoption of bicycling tends to foster cohesive counter-cultures within the bicycling community. These differentiating bodies, bicycles, equipment, and behaviors continually distinguish bicyclists from one another in ways that often appear alienating, not just to non-bicyclists on the outside, but to the population of current and potential bicyclists.

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[35] Ridealong interview with Julia.

5.5 Affective Taxonomy

When faced with the complexity of "bike culture" and the great variety of bicycling subjects, bicycle planning approaches have typically adopted a minimalist approach to characterizing the population of bicyclists. As described in Chapter Two, different bicyclists are typically classified according to a normative standard of skill. For example, most bicycling clubs offer group rides aimed at different skill levels, grading rides for different groups of people according to a very detailed code that ranges from Grade A ("Very Strenuous - Fast Paced, most difficult terrain, or longer distance. Riders must have advanced cycling skills; spare tube, patch kit, pump") down to Grade C ("Relaxed - Easier, for a more "laid-back" time, perfect for newer riders, slower pace and flatter terrain, shorter distance. Riders must have Entry level to intermediate cycling skills; spare tube, patch kit, pump") (Twin Cities Bicycle Club 2014). Even though bicycling has become more of a social and political focus during in the twenty-first century, these descriptions have only begun to embrace a combination of skill, trip purpose, and basic assertions about the subjective disposition of the individual bicyclist.

For example, the 1999 US bicycle planning guide that serve as the de facto national engineering standards divides cyclists into three categories: "advanced", "basic", and "children." The former are described as seeking efficiency:

Generally using their bicycles as they would a motor vehicle. They are riding for convenience and speed and want direct access to destinations with a minimum of detour or delay. They are typically comfortable riding with motor vehicle traffic; however, they need sufficient operating space on the traveled way or shoulder to eliminate the need for either themselves or a passing

motor vehicle to shift position.

(AASHTO 1999 6)

On the other hand, the same document describes the other categories as having less defined needs:

Basic or less confident adult riders may also be using their bicycles for transportation purposes, e.g., to get to the store or to visit friends, but prefer to avoid roads with fast and busy motor vehicle traffic unless there is able roadway width to allow easy overtaking by faster motor vehicles. Thus, basic riders are comfortable riding on neighborhood streets and shared use paths and prefer designated facilities such as bike lanes or wide shoulder lanes on busier streets.

(Ibid.)

In contrast to the skill-level hierarchies, these descriptions make (admittedly vague) assumptions about the affective assemblage. For example, here the bicycle plan connects certain kinds of desire ("to visit friends") with types of riders, bicycles, and urban spaces. However, at this point the division and description of these connections are not only rudimentary, but remain problematically normative. As shown in Chapter Two, these kinds of hierarchies universalize teleological assumptions about affective demeanor ("comfortable riding with motor vehicle traffic"), desire ("speed") and the proper urban environment for bicycling.

As described in Chapter Two, recent attempts to come to terms with affective difference have formed along lines of the Portland classification system that divides potential cyclists along affective, rather than skill-based, lines (Geller 2006). The influential typology uses broad descriptions of broad affect of affect, combining emotional states and capacity for mobility, to classify cyclists: "strong and fearless", "enthused and confident",

and "interested but concerned." This classification vaguely connects these affects to different riding styles and environments, attempting to link affective dispositions to different qualities of experience. Most importantly, this classification scheme removes Forester-style vehicular cycling affective assumptions from its typically central position, stating explicitly that "riding a bicycle should not require bravery. Yet, all too often, that is the perception among cyclists and non-cyclists alike" (City of Portland 2010).

Further attempts to refine this broad four-part classification have begun connecting these dispositions directly to specific types of bicycle infrastructure, linking categories of riders to specific types of roadway designs (Dill 2012). Dill's survey-based research links the Portland typography to different purposes, experience levels, and demographics (i.e. gender and age groups), suggesting for example that women and older riders are more likely to have concerns about safety that express themselves in route choice. (See also Minneapolis' "low-stress" network mentioned in Chapter Four.)

Dill's (2012) research suggests that the original Portland-style classifications conflate groups into categories that remain overly broad, for example failing to account for "invisible cyclists", who are often people of color and/or bicycling out of necessity. But as used by city bicycle plans throughout the country, attracting the "interested but concerned" group, a form of "silent majority" who desire to ride bicycles, is often the goal of advocacy and planning efforts (Ibid). More fully understanding the variety of "interests" and "concerns" within this large group cannot occur without grappling with how the affect links subjectivity, purpose, equipment, experienced comfort, and different infrastructure designs into distinct assemblages in complex ways. In other words, not all concerns are created equal.

For example, bicyclists divide themselves broadly around motive, most obviously around the difference between recreational bicyclists and transportation bicyclists. The former are riding for exercise or enjoyment; the latter ride to reach a particular destination. (Though often, this division is not simple at all!) Planners and professionals have long separated these two groups, designing off-street and park trails for recreational riders and on-street bike facilities (e.g. bike lanes) for "commuters" (e.g. Krizek, Handy, and Forsyth 2009; Mineta Transportation Institute 2012).

These two groups further subdivide around equipment and experience levels. Even within the group of recreational cyclists, there is a big difference between "racing-style" road cyclists and slower moving "Sunday cyclists." Road bicyclists, whose spandex clothing and expensive carbon fiber bicycles occasionally have served as the dominant image of bicycling (e.g. Lance Armstrong), need little introduction. This is the affective model outlined in Forester's descriptions: competition, endurance, technology, and training. In contrast, less athletic recreational riders often treated as "basic" by early planning documents – picture a family on a Sunday in the park or tourists cruising on a waterfront should hardly be expected to evolve into athletes – proceed at a slow pace, often less than 10 miles per hour, often in groups or families, along park-like paths typically separated from automobiles. Both these groups are classified as "recreational cycling," but their experience, gear, expectations, and environmental needs are vastly different.

Unlike these classification schemas, here I distinguish groups based on a holistic examination of the affective assemblage, all the ways that bicycle trips blend bodies, machines, and worlds. It is important to point out that these affective types are not essentialist, uniform, or comprehensive. On the contrary, individual bicyclists may rapidly transition between affective modes on the same ride, or on different days, depending on

context. For example, it is precisely this desire to shift one's bicycling affect that motivates people to purchase multiple bikes. (It is common for more experienced cyclists to own a road bike for fast athletic riding, a mountain bike for anything involving hills or off-road versatility, and a "cruiser" bicycle with more upright geometry and practical equipment for local rides around one's neighborhood.)

Figure 5.2 The 2011 Minneapolis Tweed Ride, standing on the sidewalk and admiring outfits and British-style bicycles.

One small illustration of how bicycle groups have begun to play with these affective shifts is the growing popularity of "tweed rides" in different US cities. During a tweed ride, bicyclists dress up in Victorian-era wool outfits and assume the affect of English upright bicycling as best they can, often riding "English style three-speeds" (bicycles without derailleurs, with chain guards that prevent grease from marking one's clothes). [See Figure 5.2.] In the Twin Cities, the ride occurs around Halloween and prizes are given for

"dapperest gent" and "most fetching lady." One of the less obvious effects of the ride is to reinforce an affective disposition. The Tweed Ride creates an event around an entire mode of bicycling, rather than around destinations or distance, and does so by operating at the level of affective assemblage rather than around a particular geography or goal. As they always do, clothing (tweed), bicycle type (old British 3-speed), riding style (upright, relaxed), a particular imaginary of identity (turn-of-the-century Victorian) operate together. There are many such examples: tandem rides, bike polo, fat tire bike rides, "bike parties" led by bicycles set up as portable sound systems. Even without adopting an explicitly performative role, bicyclists often experience their ride through a posture, an affect relationship between social habit, bicycle, clothing, and urban space. These points of intensities thus display commonalities, and can be loosely described.

Affect	Bicycle	Body, equipment	Urban Space
Athletic	Road bike (carbon fiber, many gears, forward geometry)	Fitness, exertion, monitoring one's pulse, expensive high-tech clothing, clipless shoes/pedals	Straight rural routes, few intersections, shoulders of roads
Fear	Anything well-maintained	Attentiveness, Emphasis on visibility (lights, reflective clothing), helmet, hand signals	Bike lanes, arterial roads
Meditative	"Dutch-style" urban bike, vintage bike	Everyday clothing, relaxed posture, iPod	Off-street trail, low-trafficked streets
Invisible	Anything that works	No bicycle-specific apparel, slow speeds	Sidewalks, low-trafficked streets

Table 5.1. Affective Taxonomy of Minneapolis/Saint Paul Bicycling.

Athletic-Affect

From lingo to clothing to images, affects of bicycling have been dominated by athletic competition. Within most media narratives and casual conversations, the dominant perception persists that bicycles are ideally used for various forms of racing, from time-trial sprints to mountain bike competitions (which demand an entirely different set of muscles and skills). Yet within this field, the dominant image of athletic bicycling is the road racer, a young male in spandex clothing on an ultra-lite carbon fiber bicycle (e.g. Lance Armstrong). This is the affective model outlined in Forester's descriptions from Chapter Two, describing a mode of riding dependent on competition, endurance, technology, and training. For example, Spinney (2006) describes the athletic affect in his embodied ethnographic description of climbing France's Mount Ventoux, a famous mountain along the Tour de France route. Spinney's diary from the ascent reads like a clinical account of torture:

Breathing, staying in the saddle, getting out of the saddle, using different muscles, starting to hurt, but not unbearable, just going into the shade...calves starting to hurt, trying to find a rhythm, entering the shade, breathing very laboured, breathe, 9 mph, into second gear, one gear left ... out of the saddle, corner coming up, looks like a ramp, all I can see is road ... thighs burning.

(Spinney 2006 724)

Here, the exertion of the body dominates the experience of riding. Particularly when climbing, the horizon of experience shrinks to a small window – painfully repetitive churning of the feet, slow movement up a seemingly infinite slope, breathing, sweat dripping from one's forehead, eyes focusing only on the patch of pavement beneath the

front wheel – so that the experience of bicycling reduces to the most basic relationship between weight, muscles, and the exertion of the breathing body.

Generally, how the athletic-affect treats the built environment itself is less important as a landscape than as an abstract topography. The key questions involve distance, elevation change, and speed, and large amounts of cycling lingo are devoted to these metrics. For example "a century" or a "double century" refer to 100-mile increments of ride length, or the term "KOM" (king of the mountain) refers the first person to climb to the top of a hill. Athletic riders often spend a lot of time before or after rides standing around and talking about distances, routes, hills, and technologies associated with exertion. Discussions of athletic riding take many different forms, and often include types of experience that would be unfathomable to other cyclists (let alone non-cyclists). For example, I recently spent half an hour listening to bicyclists exchange various term and narratives about accidentally defecating in their shorts (e.g."being bitten by a cornback rattler", "having a bingo dot", or an "oopsie poopsie".)

Within this assemblage, bike shops sponsor various rides that amplify the technological fetishization at the heart of the athletic-affect. Knowing details of bicycle design – exact weights, the composition materials, company origins, precise design specifications – and debating which of them are best for which kinds of conditions forms a seemingly endless pastime, so that bicycle races and events are often book ended by these kinds of milling around. Likewise, online message boards or social media exchanges like Strava (a way for bicyclists to compare racing times via smart phones) expand the reach of this kind of social exchange beyond the physical event.

Yet even for those who do not self-identify as racers – people who don't wear lycra,

ride road bikes, or keep track of their training regimen – the athletic-affect can serve as a key part of the bicycling assemblage. Broadly construed, the athletic-affect includes the practice of using a bicycle for exercise, something many people state as one of their goals state in surveys (City of Minneapolis 2011). Yet in my research, the idea of bicycling for exercise, while appreciated by a few of the participants, was rarely offered as a primary motivation for new riders. Rather, people describe their motivation for bicycling as something less goal oriented, and more about changing their experience, getting outside, relaxing, or not driving.

At the same time, the athletic-affect expresses itself in ways not explicitly about exercise, but more related to the co-evolution of the bicycling experience and the bicycling body. In practice, the athletic-affect is experienced as a competition with oneself, an awareness of one's increasingly intimate connection between the body, the bicycle, and one's environment. Here's one example of this experience from Linda, a fifty-something white woman:

Q: What was it like during that first period there? [riding a bicycle after many years of not riding…]

Linda: Well you know, I have a really nice bike. It was just fun, it was a fun bike to ride. So there was no… You get weaker during the winter, then in the summer you sort of build your strength, and suddenly realize that you can go farther faster, and up hills, and you aren't just weary at the end of things.[36]

Here, Linda explicitly narrates the co-evolutionary experience of how the body, bicycle, and one's capacities within the built environment gradually evolve. Regardless of how "athletic"

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[36] Ridealong interview with Linda.

one seems from the outside, what kind of body image they project, or how much equipment they might have, this athletic-affect can express itself through the changing awareness this capacity. Here is another example of precisely this sensation from Sara, a twenty-something white woman:

I thought of a moment, though, the first question, "What is a good moment on my bike?" I really hate biking up hills. For some reason, I just never seem to get any better at it. But last year I biked up Ramsey Hill for the first time, and that was really awesome. That's been one of my goals since I moved here. Like, someday I'm gonna bike up that hill. And I did last summer, so that was really cool... It's scary even to go down, and it's hard even to walk up. I've walked my bike up it... I don't know if I'm even in shape to do it again...[37]

Here again, the athletic-affect expresses itself through a sense of accomplishment, a sensitivity to one's changing sets of capacities and a fulfilled desire to improve them. This is particularly important in the way that topography operates within the world of bicycling. For many people that spend most of their lives walking or driving cars, most topography is invisible; but for bicyclists, the experience of hills dominates perception of a trip. Molehills become mountains as people struggle to go up and down unfamiliar terrain. Here, the mere fact that Sara had (only once!) climbed the steepest hill in the city serves as a testament to her increasing capacities.

Lastly, athletic-affect is not necessarily explicitly tied to speed or power. Rather, the athletic-affect can be any kind of change in the sensitivity to the capacity of body, bike, and environment. Common examples include agility (for example, the off-road and performative abilities of BMX bicycling) or even something seemingly small, and un-noticed by anyone but the bicyclists him or herself. Here is an example from Jess, a twenty-

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[37] Ridealong intervciew with Sara.

something white man:

Jess: I ride no-handed a lot, by the way.

Q: That's cool

Jess: Sometimes I have a contest with myself, like, how long can I do it? But uh… or just I like to see how long I can do. So I've been pretty… riding no handed for a couple years, and just for the very first time did someone actually yell at me for it. Yesterday, leaving work at 12:30 (AM) there was an old guy standing by the side of the road waiting for the bus. And he was like, "put your hands on your handlebars, son."

[Stranger yelling from the sidewalk:] Yeah, get outa here![38]

Jess's anecdote illustrates a further dynamic of the athletic-affect specific to bicycling, what you might call the agility-affect. Here the elaboration of capacity exists not so much within the body and bicycle alone, but expresses itself only in combination with the environment. Most famously, this affective expression has spurred the sport mountain biking, a variation of athletic bicycling which rewards the rider's skill in navigating twisting bumpy forest trails. Agility is prized above speed. The goal is to overcome obstacles as elegantly as possible, and mountain biking demands a completely different kind of bicycle, posture, skills, and bodily capacities than road racing.

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[38] Ridealong interview with Luke.

Figure 5.3. A screenshot from the film Premium Rush, showing a visualization of the decision making process demonstrating bike messenger agility in New York City.

Within the urban environment, the agility-affect expresses itself in similar ways, becoming all about the ability of the bicyclists to overcome obstacles and navigate the city with agility and grace. Most famously, films of bicycle messengers such as Quicksilver (1986) and Premium Rush (2012) hinge on the messenger's ability to out-maneuver automobiles using tricks such as riding up or down staircases and navigating back alleys. [See Figure 5.3.] As Jess's "hands-free" game illustrates, while still a form of athleticism, the particular environment is central to this kind of affective challenge. The alleyway behind a bike shop in Minneapolis's warehouse district is (in)famous for being the place where bike messengers hang out while they wait for the dispatch to call them. One common activity (besides consuming intoxicating substances) is to test ride bicycles around the alley doing tricks, or testing out the agility of different bicycles.[39] Another famous example of the

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[39] For example, here is a narrative of riding through a crowded University campus from a bicycle delivery person working at a sandwich chain known for quick bicycle delivery:

> My favorite challenge was speeding through the dense pedestrian traffic on campus during the school semester. It was like a real-life Pacman game where you had to focus on where each of the 30 or so

156

agility-affect in action are the aforementioned alleycat races, modeled after a typical set of bike messenger jobs a series of checkpoint stops that can be completed in any order. This kind of flexible race is thus as much about one's ability to navigate the city as it is about speed, suggesting a second kind of cartographic agility tied into the knowledge of shortcuts, one's ability to flout traffic laws, weave in and out of traffic, etc.

Fear-Affect

Because increasing capacities through the co–evolutionary mastery over the bike-body-city assemblage takes time to develop, the athletic-affect in its various forms requires time to cultivate. A recurring theme in conversations about bicycling is to relate it, at first, as an experience of terror. The surprising defiance of gravity is the first encounter with the bicycle, and in some ways, this initial tingle of fear never quite dissipates: the fear of falling, the fear of losing control, the fear of being hit by a car, the fear of irreversible injury.

A sense bordering on paranoia, the fear-affect persists within the bicycling experience even for the most experienced and everyday riders. Through the fear-affect, the body tenses uncontrollably. Even off the bicycle itself, this is the circuit through which the bicyclist focuses on safety equipment. When riding, the bicyclist cultivates defensive postures and riding styles intended to minimize risk of accidents. Yet despite the tendency within planning circles to normalize safety behaviors, the fear-affect is not a specific way of riding or a specific type of equipment. Rather, this affective pattern describes how the body, bicycle, and routes through the urban environment co-evolve along lines of concern.

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pedestrians were headed and find where the gap would be by the time you reached them. Also you can take more chance dodging pedestrians than trucks because if you fuck up typically they don't kill you.

(Pudd'nhead 2011 33)

The fear-affect expresses a powerful sense in which bicycling always occurs against the world of deadly machines that forms a hegemonic culture of automobility.

In a way, the fear-affect doesn't even require bicycling experience to begin its work. Bicycle safety campaigns and drivers' fears of hitting cyclists imbue the perception of the bicycle and bicycling, instilling the small machine with deeply held concerns. Here is a moment from an interview with Sam, a twenty-something Asian-American male, from the middle of a commute home from work:

Sam: I feel like, if you don't have a helmet, it's not my job to respect your life.

Q: Huh…

Sam: Why should I respect you if you're not going to respect your life? I feel really strongly about that, because I had a couple of bike racing friends who have had way too many accidents, and I've seen how easy it is to crack a skull. It's just so easy. I feel the same way. I saw someone without a seat belt, and it's the same story. If you're not going to play by the rules, you should be…

Some of my friends like to think, well, I want to get everyone [riding a bike] on the road. But it's so easy to wear a helmet, and it makes a difference. Maybe I've seen too many cracked skulls. It happened three times: cracked skull, exposed brain. My friend. So...[40]

In this way, even (and perhaps especially) outside of the bicycling experience itself, the fear-affect circulates through the assemblage. Once people begin riding, each injury or moment of doubt leaves a visible or invisible scar. Each moment of a bicycle's inevitable mechanical failure (particularly common with cheaply-made bicycles) erodes trust in the machine, creates a fissure in the assemblage that lurks underneath the experience of movement. Each

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[40] Ridealong interview Sam.

sudden lack of control, surprising encounter with an obstacle, or near-miss with a car driver not paying attention hovers over the experience of riding and constitutes a circuit through which the fear-affect enriches itself.

This kind of doubt is made worse by the fact that the exact number of bicycle accidents occurring annually in cites remains a mystery. Bicycle advocates and planners can only guess at the precise number because at least half of all accidents go unreported and undocumented by auto-oriented, insurance-driven statistics (City of Minneapolis 2013). Even near misses have profound effects on the experience of bicycling and remain with bicyclists long after the moment has passed. Here is one example from Laura, a white woman in her late 20s:

> Laura: So OK one time I got rear ended by a taxi.

> Q: Here in town?

Laura: Yes. But we were I was stopped at a stoplight at the front. Just hanging out at the side, like not in the gutter but not in the middle, although often at stoplights I will move to the middle of the lane just so cars don't think they can sneak around me,

Q: Yeah?

Laura: And this taxi he was on his cell phone and wasn't paying attention and was just creeping forwards, and just bumped me. It didn't hurt me I didn't fall. I just got super angry.

Q: So what did you do?

Laura: I got off my bike and started screaming at him and shouting "Who do you think you are? You have to stop. There's no hitting cyclists!" Blah blah blah. And he was like terrified. He was like "I'm sorry I'm sorry sorry sorry." And then I'm like, I started crying and the light turned green, and he was like "What am I supposed to do I just hit this person?" And I was like "Just

159

go!"[41]

It is difficult to understate the effect that these kinds of encounters have on bicyclists. Laura's story is a relatively mild incident; most people have heard far worse tales. A woman once told me a story about spending years in litigation to be compensated for a small amount of the medical bill after being struck by a woman with bad eyesight. Another woman recounted to me a story of having her bicycle crushed underneath a truck, barely escaping with her life. In many of these stories, the drivers are apologetic, insisting that they did not see the bicyclist. Sometimes, these stories are hit-and-run incidents, bicyclists who are struck by cars that may not even have noticed the collision. These excuses hardly assuage the hold of the fear-affect; rather, their very unaccountability and randomness feed its circulation.

Taken most literally, the fear-affect shapes behavior and equipment: for example, day-glo vests, or riding on the sidewalk to avoid a busy street. But even beyond the visible signs of concern, the fear-affect expresses itself in an internal sense of an ethic of safety that can take on symbolic resonance, shaping the subjective image of the cyclist. For example, many bicyclists believe that safety is incumbent on presenting a particular image, and that any sign of flouting the law will result in retribution. The fear-affect transforms the assemblage into a self-reflexive concern over the perception of the bicyclist by the other. Bicyclists foster an image of the other, attributing anger, frustration, or even jealousy to the cars that continually surround them. For example, Mike, a thirty-something white man who has been riding bicycles exclusively for a long time, describes his projections of emotions onto passing cars:

Mike: One of my favorite memories is when I used to ride on Park and Portland [two streets in

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[41] Ridealong interview with Laura.

Minneapolis with bike lanes]. One winter there was a pretty big snow event, and I was cruising

down Park towards Downtown from the Central Neighborhood and was flying by cars. I wasn't

going that fast of course. But cars were barely moving, were stuck, and I was just cruising down

the left lane no problem and I could sense you know animosity. Jealousy.

Q: How can you sense animosity?

Mike: I think I do. Maybe it's all in my head.[42]

While this offers an example of a more positive valence of the fear-affect, more often the

perception of the automotive other is one of concern or hostility. Bicyclists assign an

almost collective consciousness to automobile drivers, so that negative interactions with

cars become part of a personal karmic balance. Through the fear-affect, bicyclists presume

a complex of victimization, blaming themselves for the dangerous conditions through

which they travel. Here is an extreme case from Laura:

Q: Tell me about your policies about stop signs and stop lights?

Laura: Stop signs I will roll through if there's not traffic. Or I will make a good effort at slowing

down enough as if I were a car. Because its gonna take me more time to just slow down and

look that it is for a car to pull up stop look and go, it takes me more time to just slow down so I

just slow down. I never actually pull to a stop unless there's a lot of traffic. Stop lights I stop at,

unless there are no cars in sight, even behind me. And the reason is that I don't want to piss

them off. Cars hate cyclists. And I want them to think I'm a law-abiding cyclist. So if there's a

car behind me, I'm waiting.

Q: So it's not really about safety.

Laura: No it's more about, the attitude that drivers have towards cyclists. Because it's

technically safe to run a stoplight, but if there's cars around I don't want them to hate me. And I

161

actually will yell at cyclists that will run stoplights.

Q: Oh really? Wow.

Laura: [laughs] I'm trying to chill out the rage, because I don't need to be the police, right? They can make their own decisions. But I feel like if I'm sitting there stopped at a stop light and there's a car waiting with me and a cyclists in spandex blows through, like c'mon man you're undermining everything I'm working for here, I don't care if its safe, I'm trying to do the right thing, and this car is thinking wow this cyclist is stopping and you come and along like thanks a lot buddy. That's how I feel.[43]

In both these cases, fear-affect transcends decisions about individual safety and becomes a broader subjective field through which the bicyclist views not only her relations to automobiles, but to other bicyclists. Projecting onto bicycling in general is a way that the fear-affect expresses itself, fostering an (illusory) sense of control. Reflectively structuring one's own behavior in a way that makes it seem like the thousands of automobiles are responding directly to one's behavior, represents an attempt by the fear-affect to reclaim some sense of capacity within a world that remains hostile.

The everyday concerns of bicyclists pose problems for the safety narrative of bicycle studies. The problem hinges around the fact that bicyclists' first priority is their own personal safety, rather than strict compliance with the law. Often these two values come into conflict, if responsible bicycling is perceived as more dangerous than flouting some of the laws (by, for example, proceeding early through an intersection). Few studies that focus on traffic law compliance of bicycles make concessions to the fact that individual safety can be compromised (e.g. Mineta 2012, Petesch 2013). Exceptions, like Wolfe et al.'s (2006) study of an intersection redesign in Portland, show that most bicyclists will choose a safe

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[43] Ridealong interview with Laura.

and complaint alternative if it is offered. Yet as the tactics illustrated in Chapter Three reveal, this is often not the case.

Meditative-Affect

If the fear-affect represents attempts to assert control over a situation that continually escapes such gestures, its opposite is also common within the affects of bicycling. The meditative-affect represent a willed forgetting, a posture of ignorance that often results in a form of transcendence of surrounding automobility. Meditation has long been linked to walking. Rousseau stated: "I can only meditate when I am walking. When I stop, I cease to think; my mind only works with my legs." (Rousseau, quoted in Solnit 2000). While the speed is doubled, the same sense of calm is a widespread experience for bicyclists, where as Illich (1971) describes, the bicycle "allows people to create a new relationship between their life-space and their life-time, between their territory and the pulse of their being, without destroying their inherited balance." At one level, the meditative-affect is precisely the adoption of "confidence" described by Forester in Chapter Two. This affect encourages the bicyclist to, as one Twin Cities' bike blogger puts it, "ride boldly" and not be cowed by the honking cars and revving engines on the surrounding street (Kolsab 2012).

For many people, however, the meditative-affect is not necessarily about courage and bravery. Rather, the meditative-affect expresses its opposite: relaxation, and pleasure. Maria offers a good example, where bicycling is focused not on a destination, but on clothing and attitude:

Maria: You know, it's sort of like I don't want this [riding a bike] to cramp my style. Not

because my style is so important to me, but its part of how I enjoy being in the world. So I was just like, ok I can either wear a longer skirt or not ride my bike or ride my bike in a short skirt, so I'm gonna ride my bike in a short skirt. It's more me than like… than you know giving in to whatever … [long pause] Actually I'm probably a very unsafe biker.

Q: Do you think about it?

Maria: I should think about it a lot more. I like weave in and out. I get really annoyed when a car doesn't see me. So here's the stoplight and there'll be a car here, and I'll just be like… instead of stopping and making sure they can see me, I'll just go right up to there, and then I'll run the light if its red.[44]

Here the bicyclist attempts to ignore the world of cars around her, intentionally dismissing behaviors associated with safety. Again, this example reveals how the affective assemblage operates: clothing, style, and subjective experience work together to foster a particular form of bicycling capacity. The short skirt is connected to a carefree attitude, fostering the meditative-affect through which the entire assemblage evolves as a whole.

The meditative-affect does not necessarily involve a disconnection from the environment, but rather a disconnection from a goal-oriented engagement with the bicycle. Here, the bicyclist daydreams, bird watches, people watches, or window shops. As one participant put it, "I like biking because it's really the only time in the day where I can like zone out completely. I'm on the greenway [a grade-separated bike trail], and I can zone out completely. And it's just really nice."[45] This kind of affective circuit becomes a form of forgetting, a way to escape the exertion or danger presented by other modes of bicycling. Additionally, the meditative-affect motivates route choice, leading people to prefer

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[44] Ridealong interview with Julia.
[45] Ridealong interview with Sam.

particular streets because of their aesthetic properties or potential for sensory stimulation. Here is another quote from Laura describing how embeddedness within a particular kind of world shapes the experience of bicycling:

Laura: I notice all the people who are out and about at the time of day I'm riding. Like, OK it's 10:00, who's out doing things? Oh it's kids waiting for the school bus. Or, oh, it's moms getting groceries and that's kind of fun. Or like when I'm coming home there are a whole hordes of teenagers hanging out by the Peavey Park place by Chicago and Franklin, and often if traffic is thicker like it is a little earlier in the evening, I'll take a left there at Chicago, because I like riding on Chicago now that they'd done that repaving…[46]

This description reads just like Jane Jacobs' (1961) famous narrative of the "urban ballet," and points to how bicycling offers a degree of engagement difficult to reach from behind the windows and metal of fast-moving automobiles. To ride a bicycle through the city is to become attuned to rhythm and quality of observation. Sensation is wrapped up in the technology of movement, so that on foot, shop windows and hand-fliers are visible, detail invisible to anyone in excess of two or three miles per hour. Similarly, automobile drivers travelling thirty or more miles per hour can only notice rudimentary details of the buildings that surround them, leading to a gradual increase in signage size, intensity, and a erosion of detail (Ventui, Scott, and Brown 1977).

This kind of intensive difference of engagement can be deeply soothing to bicyclists, particularly when placed in contrast with the norms of the system of automobility. It is perhaps for this reason that so many bicyclists describe the experience as a form of freedom, liberation from the affective circuits of traffic, horns, and freeways. As Mike, a thirty-year old male, describes, it is this very difference that proves to be a primary affective

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[46] Ridealong interview with Laura.

pleasure of bicycling:

Q: Tell me more about that. You just got sick of driving, or why did that happen?

[…]

Mike: [Bicycling is] a lot more mentally healthy. I feel more mentally healthy doing it, just because I'm not in … You're able to notice what's around you, you're moving at a speed that allows you to safely do that, not in a box with metal and glass that so you have to notice what's around you, as part of a thing… And in a car, places that are built for 50 mph, I read a Jan Gehl quote recently talking about it. It's made not to notice where you were, it's made to move through because you can't really notice people inside of cars either… Especially when they're going fifty. But you notice people on bikes, you notice that's a person there. You're going at a speed, you're not all cased in. So you feel more connected to the world, less removed from it…[47]

This type of affect describes a rich connection between bicyclists and their environment, a slowness that presents an escape from the confinements of speed. The eyes are liberated from their linear fixity, the body is liberated from the seatbelt and upholstery, and the mind is liberated from a strict sobriety. The circuit of beer and bicycling (to offer just one form of narcotic) amplifies the meditative affects, chemically catalyzing a transcendence of the hostile urban environment. (For another description of intoxication and bicycling, see the bike 'zine Pudd'nhead 2011).

The power of this affect is well known by beer company marketers. Observing my first Stupor Bowl alleycat race one cold early afternoon in January of 2010, the first person I encountered at one of the ride's "stops" happened to be a company representative for Pabst Blue Ribbon. He was planted there at a small bar in Northeast Minneapolis handing

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[47] Ridealong interview Mike.

out free drinks to participants, part of that company's viral marketing efforts. Group rides and bicycle events are often sponsored by beer companies; for example, the annual "Tour de Fat" is a bicycle-and-beer themed festival that tours the country touting New Belgium bicycle-branded beers. Craft beer bars and local brewing taprooms take great pride in their bike racks, placing them out front and attempting to catalyze the connection between bicycling groups, DUI-free transportation, and intoxication.

For the most part, bicycle riders treat the affect of intoxication as part of the more general form of meditative experience, just another form of urban bicycle relaxation. In one of my interviews, a Jess, a twenty-something male who works as a bartender, describes his night-time ride home as a mixture of contemplation and the vague guilt over its potential dangers:

Jess: I like [riding at night] more than riding in the daytime typically, just because there are less people on the road. It's usually cooler, quieter, I mean. I would say its slightly more dangerous because there are less people on the road and there are reckless drivers and drinking is more involved in people's cognitions at that point…

Q: [laughs]

Jess: I mean, myself included. There are times when I've had a little more than I probably should have and I've ridden my bike, and my judgment has lapsed and I've been lucky. Just gotten out in front of the cars…[48]

Intoxication instills a reluctant nonchalance with the meditative-affect. In both cases, the bicyclist believes that he or she is acting dangerously, but admits that they prefer not to worry, a guilty pleasure.

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[48] Ridealong interview Mike.

Finally, considering the meditative-affect as part of the whole assemblage, we can extend it to a feigned or real ignorance of the bicycle's workings. Many riders don't even care to understand how bicycles work, and remain unable to perform even simple tasks like changing a tire. This lack of capacity is not necessarily negative, but can also express a positive ignorance of the intentionality that often surrounds the bicycle. Much like riders who ignore the traffic swirling around them, some riders choose to ignore the technical workings and details of the bicycle itself, leaving them for mechanics at the local bike shop or acquaintances who more readily self-identify as bicyclists.

Through this affect, the feeling of the bicycle as 'liberation from automobility' rises to the fore. Bicycling through the meditative-affect offers an escape from the systems of attention, traffic frustration, and care that are required by drivers, who even if they are relaxing inside the automobile are continually liable for the lives of others around them. Particularly as mobile internet has proliferated, the problem of attention and distraction has become a marked safety problem for the automobile system (NHTSA 2012). While the bicycle does not offer the same degree of freedom to be inattentive that transit or walking can provide, the bicycle provides a high degree of flexibility around spontaneous activities that mirrors networked culture. Bicyclists are more likely to stop frequently and shop during their daily commutes and practice "trip chaining" around walkable commercial nodes (Maus 2012). Bicycles offer freedom from car and gasoline payments, and it is a common refrain in media narratives that the millennial generation is more willing to give up driving than part with their smart phones (e.g. Maynard 2014). The affective assemblage revolving around bicycles, and the kinds of opportunities and restrictions that it provides, thus offers a more flexible lifestyle and a less regimented pace of life than the system of automobility. Given the reluctance of planners to discuss pleasure or desire (Solnit 1987),

the meditative affect is an often-overlooked way that bicycles reshape the urban freedoms of everyday life.

The Invisiblity-Affect

The last form of bicycling affect identified here is the invisibility-affect, the desire to disappear and remain un-noticed by the city. One former bike messenger explained once to me that he calls this style of riding "stealth mode," and is premised on the idea that the most defensive style of riding is to assume that nobody can see you at all times. As he described it, stealth mode involves riding as if one is invisible: without lights, at night, doing anything necessary to avoid cars. This often involves sticking to low-traffic side streets, pulling out of the traffic lane at the approach of a car, or taking sidewalks, short cuts, or side paths along which automobile traffic cannot follow.

Less dense cities like Minneapolis and Saint Paul are particularly accommodating to this kind of unseen riding because of their spread-out housing and streets that are extremely quiet at nighttime. During late night rides, even over significant distances, it is unremarkable to travel without encountering automobiles. In conversations and observation, a recurring theme emerges where bicyclists feel as if he or she is the only one in the city. The invisibility-affect cultivates this feeling of ghostly presence, the desire to escape notice. This kind of riding is not about pleasure, but about practical movement. Many of these rides involves trips serving basic necessities, as in this example from John, a fifty-something male:

Q: Do you ever ride bike to get groceries?

John: Yep. It's kinda hard

Q: How do you carry stuff around?

John: I put it on the … I was putting the bike on the bus and then I got these tote bags. I only use them when I go grocery shopping though. […] It's a lot, it's a lot to do. Be as safe as I can, you know, make it do, make it happen.[49]

This kind of riding involves a "making do," a survival based partly out of practicality and partly out of the desire to escape notice. In many of the interviews, the presence of the police serves as a deterrent, a fact particularly true across racial lines. Profiling, harassment or fear of police pressure push in opposition to the typical mantra of bicycling safety, which continually encourages visibility (League of American Bicyclists 2012, City of New York 2013). Invisible bicyclists are continually making do with short cuts, and finding back streets, back alleys, sidewalks, or less trafficked routes through which to navigate towards their destinations. [See the examples of tactical shortcuts from Chapter Three.]

This type of riding is the hallmark of class difference; sidewalk riding serving as the dominant way that many people ride for necessity, despite the dangers often mentioned in studies (Wachtel. and Lewiston 1994, Moritz 1998). For this reason, bicycle advocates typically aim outreach efforts at ending the invisibility-affect, calling for increasing visibility and attempting to encourage bicyclists to ride in the street.

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[49] Ridealong interview with John.

Figure 5.4. Cyclists riding on the sidewalk on Minneapolis' Franklin Avenue.

Yet the invisibility-affect remains pervasive in city spaces that lack accommodating bicycle infrastructure. One the chief appeals is the escape that the invisibility-affect offers from the position of conflict with automobiles. Similarly, the perceived safety and shelter of sidewalk routes helps with navigation for people less familiar with the urban environment. John offers another example, where he explains why he avoids a main street:

John: I use the skyline as the main direction, because a building on a corner. So that's how I navigate. I remember certain things on the corner. When I first started riding, I'd be going down a street, and then I'm on an avenue, then I'm going the same direction as I was going, and then I got turned around. And so this is too much, so I saw you know, I may have to go against the

traffic or my own way. But I remember what's on this corner, so that's how I ride.[50]

Here racialized and class-defined bodies combine with (often low quality) bicycles and city streets where visibility can be synonymous with police power, profiling, or racially coded defensible spaces. Around the country, cities are often bifurcated along these lines of (in)visibility. For example, in New York City, the figure of the bicycle delivery man and his particular bicycling practices – helmetless, using the sidewalk, using plastic bags to carry items on the handlebars, ignoring one-way streets – derided by the often wealthy, white, and technologically savvy bicycling advocacy community (Weiss 2012).

Invisibility is thus not simply a way of riding, but a political problem where groups of cyclists become "invisible to the bike movement" (Lugo 2013). Or, as Hoffmann (2013) describes, "poor and working class riders utilize the bicycle in different ways" that resist the kinds of environmental frames typical of bicycle advocacy campaigns (48). In other words, bicycles carry with them different meanings that problematize the often reductive logic of advocacy. Invisibility is thus a way of riding and a posture towards authority that poses problems for engagement and political representation.

The relationship between narrative rationalization and affective capacity is a complex one, and this particular taxonomy of affective modalities should not be seen as either exhaustive or exclusive. At any given moment, a bicyclist may be expressing some or none of these different affective modes. Rather than a strict taxonomy, this one should be considered as one particular set of points of intensity within the field of potential bicycling experience. Each social category expresses one potential assemblage of bicycling practices and technologies, a way that bodies, bicycles, and urban spaces can combine to create an

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[50] Ridealong interview with John.

experience within a hegemonic automobile landscape. These categories can serve as access points for bicyclists and planners, and help to reveal the complex and broad set of possibilities that exist around riding a bicycle in the contemporary North American city.

The relationship between narratives of bicycling intention and the lived experience and practices of bicycling have long perplexed policymakers. The gap between expressed intentions to increase bicycling and actual behavior and statistics is intractable. Banister (2006) calls this a persistent "policy behavior gap, referring to the discontinuity between 'assumptions underlying policy measures on the one hand, and the behavioral responses by individuals on the other'" (71). Others call this problem by other names – "implementation" issues, or a tension between "values" and "behavior" – but most descriptions of the problem do not fully account for either the social experience of bicycling, or the way that embodied experience can frame and mold linguistic expressions of intention (e.g. City of Lancaster 2011).

For many bicyclists, these kinds of intensities matter because it is the embodied experience of bicycling that is primary, while the expression of intention that comes afterward rushes in like floodwater to fill the void of bodily experience with a conscious rationale. Within the affective assemblage — the lived encounter with the city, one's body, the elements, and the bicycle – is experienced not as an abstract expression of intention, but as a particular set of capacities that constitutes a feeling in excess of expressed desires. For example, drawing on neuroscience studies that show bodily action preceding conscious decision, Massumi (2002) describes this relationship as fraught with potential dissonances:

What we think of as "free," "higher" functions, such as volition, are apparently being performed by autonomic, bodily reactions occurring in the brain but outside consciousness, and between

brain and finger but prior to action and expression.

(29)

The decision to ride a bicycle is one of these volitions where the affective assemblage is primary. The lived experience of bicycling becomes a "substrate of bodily responses, often autonomic responses, in excess of consciousness," so that the experience of bicycling precedes the conscious awareness of the experience (Clough 2007 2). Narratives of the situation, the acknowledgement of feelings, or justifications for bicycling function as "the sociolinguistic fixing of the quality of an experience which is from that point onward defined as personal" (Massumi 2002 28). This is not to say that linguistic capture of bicycling is a mere effect of the experience, but that narratives and rationalizations can display resonances that feed back on the affective assemblage, amplifying or dampening relationships into the kinds of intensity represented here by the taxonomic categories, around which these feelings and capacities circulate.

The situation with helmets offers one example of the relationship between narrative and embodied experience operates. During my rides around the Twin Cities, often wearing only a ball cap or toque, no conversation is more fraught with emotion than the one surrounding helmets. A typically encounter goes like this: someone sees me, and exclaim, "Where's your helmet?" Usually, I will sheepishly stare at my shoes, but occasionally I will attempt to defend my decision. I have said things like "Actually I have read all the helmet research, and it's entirely inconclusive." Or I might say, "Helmets don't actually impact safety, there are far more important variables." Or I might say, "The social effects of helmet usage outweigh their safety benefits." Almost always, my interrogator replies with a story about someone who was in an accident and "the helmet saved their life." Often this

174

retort is delivered with extreme intensity, an insistence on the encounter.

The key point here is not to debate the benefits or drawbacks of helmet use or their regulation – a discussion I go to great pains to avoid – but to point to the way that the experience of anxiety, the story about the helmet's life-saving properties, and the helmet itself (worn, carried, bulky, sometimes sweaty) interact with each other to form a point of intensity within the affective assemblage of bicycling. While it remains common practice to shift between various affects on different rides, or even during the same trip – for example, from the athletic affects to the neurotic affects as one moves to and from heavy traffic – the way that language and embodied experience feed back on each other and resonate into deeply personal intensities begins to explain some of the reason why the world of bicycling and the bicyclists within it have such heated debates over bicycling, equipment, or infrastructure design.

5.6 Conclusion

In this chapter, I showed how affective difference can emerge and coalesce through social interactions on and off the bicycle. References such as "bike culture," which refer to parts of the workings of the bicycling assemblage, show how affective difference can begin to coalesce around particularly intense relationships, such as ways of riding, types of bicycle, clothing, or routes. Drawing on in-depth interviews with new riders, I then outlined a taxonomy of different bicycling affects in the Twin Cities, placing particular focus on new riders.

When considering the larger assemblage, these kinds of differentiations within and amongst bicyclists reflect sets of shared capacities, mobilities, and technological

connections. Even if an individual bicyclist spends most of his or her time bicycling alone, the way that the socio-affective landscape of bicycling and its practices have been shaped through technology, geography, and the architecture of the built environment suggest directions for policymakers who have long focused on the goal of attracting "new riders." By becoming attentive to the range of difference that can exist between and among cyclists, planners, engineers, and advocates are beginning to develop spatial infrastructures that better accommodate these different bicycling styles and practices. Yet because these various planning approaches are attempting to cultivate new constituencies, rather than bolster already existing groups, they face numerous political challenges surrounding the new rider problem. Exploring exactly how different constitutive planning approaches encounter structural, institutional, and political obstacles in practice is the goal of the next chapter.

Chapter 6: Improvisatory Politics Confronts Automobile Hegemony

"Control is not discipline. You do not control people with a highway. But by making highways, you multiply the means of control. I am not saying this is the only aim of highways, but people can travel indefinitely and 'freely' without being confined while being perfectly controlled. That is our future."

-Gilles Deleuze

6.1 Introduction

The previous chapter discussed how the affective assemblage – the specific relationship between the bicycle, the body, and the built environment at any given moment – can coalesce into more long-term habits and patterns through the social dynamics of bicycling and its various cultural ties. The current chapter takes these affective differences between bicycling groups, and examines how current planning policies have attempted to appeal to new riders in varying ways. In each of these cases, all taken from the 2007 Non-motorized Transportation Pilot (NTP) project list, the specific goal was to create an infrastructure, event, or program aimed at appealing to new riders, which sometimes required circumventing the needs of existing bicycle riders and advocates.

In this chapter, I examine how designs aimed at new riders within the system of automobility open up some possibilities while foreclosing others. As decision makers have begun to recognize the limitations of traditional bicycle planning, they have gradually begun experimenting with a still loose set of design and policy approaches aimed at diversifying the potential affective range of bicyclists in the hope of attracting new riders. While these newer treatments and strategies better accommodate a diversity of bodies, bicycles, spaces, desires, and attitudes, how they operate in practice is limited by both political and institutional

constraints and the affective assumptions made by advocates.

After outlining some of the existing structural barriers within the system of automobility, I examine three NTP case studies that were aimed at broadening the appeal of bicycling by appealing to new riders. For each project, I identify some of their challenges and opportunities that they presented as they were planned and implemented on the ground. With each case study – bicycle boulevards, "open streets" events, and bike share systems — I argue that, in different ways, these policy approaches open up possibilities for a broader degree of affective relationships to emerge around the bicycle. In particular, the way that each project attempts to engage with new riders circumvents traditional automobility logics in specific ways: rethinking the temporality or permanence of infrastructure, focusing on embodiment, or attempting to evoke potential action.

6.2 Barriers of Automobile Hegemony

As Furness (2010) argues, the problem of increasing bicycling in North American cities begins with the system of automobility, and the way that this system presents political and spatial limits on attempts to change the urban environment. Particularly in the US and Canada, some of the most automobile-saturated countries in the world, automobility has become deeply ingrained within the logics and institutions of cities (World Bank 2014). As Urry (2004) describes, automobility represents a complex "non-linear system", composed of multiple relational elements: "cars, car-drivers, roads, petroleum supplies and many novel objects, technologies and signs" that has proved to be "remarkably stable and unchanging for over a century" (Urry 2004 27-32). Yet these logics, institutions, and narratives play an important role within reifying and channeling more material factors so that the ubiquitous

spatial patterns of automobility form a self-reinforcing cycle. In this way, the system of automobility has grown according to a logic guided by ever proliferating consumer needs to saturate older (pre-war) American cities through processes such as of "urban renewal." Meanwhile new spaces are produced that conform to the needs of the car and form a seamless spatial logic that reinforces the necessity of automobile travel (Fogelson 2001, Hayden 2003).

This stable political-spatial system poses two specific difficulties for bicycling advocacy, one political and one economic. First, as with bicycling, the automobile assemblage provides an affective relationship between the subjective perception and cognition of the driver, the driving body, the interior of the car, and urban space. As Thrift (2004) points out, this relationship is internalized by drivers in a way that amplifies the frustrations of the "smooth space" of automobile travel to form a "technological unconscious." Drawing on Katz's (2000) psychology studies, Thrift describes driving as: Profoundly embodied and sensuous experiences, though of a particular kind, which 'requires and occasions a metaphysical merger, an intertwining of the identities of the driver and car that generates a distinctive ontology in the form of a person-thing, a humanized car or, alternatively, an automobilized person' (Katz, 2000: 33) in which the identity of person and car kinaesthetically intertwine.

(Thrift 2004)

The fusion of the driver's identity with the exoskeletal body of the automobile transforms physical movement into affect where a "rich … stew of emotions… constantly on the boil" contains "all manner of meanings that other drivers cannot access" (Thrift 2004). Given the driver's isolation, drivers' narratives acquire high degrees of emotional power, what Protevi

179

(2009) describes as a "felt intensity" with potential for political action (116). These automobility intensities result in a "considerable level of frustration and anger" when imagined and experienced narratives are "forcefully undermined" by inevitable conflicts of the automobile system — for example, a traffic jam or an accident (Thrift 2004 47). The affective logic of the driver's experience begins to explain the otherwise irrational phenomena like road rage, and the potential political power of automobile politics more generally (e.g. the political unpopularity of gas taxes) (Seiler 2008).

The second key political dynamic of the system of automobility is its persistence as an "industrial complex" linking together construction industries, political leaders, and bureaucratic institutions in self-perpetuating circuits that have remained largely resistant to change over the past half-century (Urry 2004). In addition to the material human and non-human bodies described by Urry, the post-War system of automobility includes complex networks of institutions and social relations:

Gatekeepers, regulations, bylaws, codes, bureaucratic timidity and unexamined public attitudes … [and] heavy government subsidies and the influence of those with powerful interests in maintaining car-friendly transportation policies and land-use regulations.

(Wells 2013 293)

Automobility thus represents an industrial complex that perpetuates itself through economic and political networks closely linked to local growth coalitions (Fogelsong 1986). In addition to the broader policy structures that support land-use patterns that catalyze automobility, the key to the system's rapid growth is a dedicated funding stream whereby revenue stemming from car use is directly linked into the expansion of the system. For example, in Minnesota the gas tax is constitutionally dedicated to road expansion and (unlike in other countries)

cannot be spent on anything other than the road system.[51] As Caro (1971) famously described using the example of Robert Moses' New York City, this system politically insulates transportation bureaucracies from budget fights, providing rare political independence to the automobility system. Additionally, because Federal transportation funding is heavily weighted to new construction rather than ongoing maintenance, the economic and political incentives of the automobile system continue to grow despite the saturation of demand for automobile travel (Marohn 2012).

When combined with a political-economic system firmly embedded within regulatory and funding structures, the political potency of automobility poses problems for attempts to shift travel towards other modes. In particular, efforts to expand bicycling must overcome four broad challenges stemming from the hegemonic relationship between the automobile, the North American built environment, and its institutional frameworks. These are 1) the inflexibility of the existing urban planning processes, 2) the risk-averse institutional culture of transportation engineering, 3) design standards at different governmental scales, and 4) the intense competition for municipal funding. The barriers amplify tensions around the new rider problem, such that appeals to new riders often occasionally become mired in the struggle to define this vague constituency. Yet at the same time, the example of Minneapolis/Saint Paul's NTP projects reveal how planners and advocates have attempted to overcome or circumvent these barriers of automobility in their efforts to appeal to these new riders. In a way, these efforts point to a shift toward a more improvisatory politics for non-motorized transportation that stems directly from the political impasse presented by the system of automobility.

The first of these barriers is the lack of flexibility embedded within the political system

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[51] Informant interview with Chris Wells.

of automobility that emerges from the interaction between common civic engagement methods and the gatekeeper function of transportation engineering. As Urry (2004) points out, the way in which the system of automobility "reconfigures civil society" occurs in both the public and private realms, in the material built environment and within the institutional representation of political desires (32). The embodied bicycling tactics of Chapter Three illustrate how, within a dominant automobile culture, alternative modes of transportation are literally constrained, cramped, and marginalized within the city. With surprisingly few exceptions, North American urban streets have already been devoted to car travel and storage, so that projects that add bike lanes or other kinds of infrastructure rarely come without a loss of some other use for the street. In other words, while certain streets that have been over-built for cars might become "low hanging fruit" for bike lanes, these kinds of spatial and political opportunities quickly become rare, leading to more contested debates over bicycling (Birk 2006). In most cases, decision makers pushing for improved bicycling infrastructures must always do so over the objections of existing constituencies for parking or moving car lanes, which in the absence of a vocal lobby for alternative transportation, requires difficult political calculations.

These challenges result in a fragmented landscape for bicycling, where infrastructure is plentiful in some neighborhoods while missing in others that lack the right political relationships. This inequality makes it difficult to, as one advocate puts it, construct an "understandable network", which was a primary goal of the NTP project.[52] In particular, space remains at a premium along main "arterial" and commercial streets through the city, which are often sites of overlapping jurisdictional responsibility more prone to intractable political situations. These streets and spaces epitomize the constrained choices facing

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[52] Informant interview with Joan Pasuik.

182

bicycling.

Second, as the previous quote illustrates, the complex jurisdictional relationships of the urban built environment, and the road hierarchy in particular, combines with the central role of engineering design standards to create a bureaucratic landscape resistant to change. In most US cities, different streets are designed and governed by different agencies; for example, municipal public works departments control the design for most residential streets, while county and state agencies own, design, and control the design of key arterial urban highways. (These larger jurisdictions technically lease out the maintenance and construction of these roads to individual cities.) In addition to the added difficulty of fostering institutional change across different spatial scales, and within the bureaucratic cultures of distinct departments, this hierarchical relationship poses problems because of the role of design manuals as guides. As the head of the Minneapolis Bicycle Coalition described, these strict "state aid" standards (design rules for roads that receive state DOT money) are the primary hurdle preventing the construction of accommodating bicycle infrastructure:

The state aid standard is probably the single biggest problem. We haven't changed them yet, but we're working on it. … We've been building the expectation that they have to change, and there's a proposal to change them. It's not everything I would like it to be, but it's a step in the right direction. It has to go through the process of rule making because we have our standards in rule [i.e. written in state statute].[53]

Here, Fawley points to the difficulty facing advocacy groups that are not only required to generate constituencies to lobby political and neighborhood groups, but must also develop institutional capacities at a very deep level (e.g. in state statute) in order to promote changes

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[53] Informant interview with Ethan Fawley.

across spatial and institutional scales. In this case, in order to allow cities like Minneapolis to more easily opt-out of restrictive design standards, bicycle advocates must focus on engineering standards at the state level, requiring a completely different set of political networks, relationships, and tactics.

Because of the jurisdictional complexity the built environment, advocacy politics rather quickly escalate beyond city borders and spiral out into a complex network of sometimes conflicting engineering guidelines. The politics of these efforts can even reach national scales, so that for example, coalitions of cities join together to create alternative engineering standards that better accommodate bicycling in urban areas (e.g. NACTO 2014). Similarly, cities like Saint Paul and Boston are developing "complete streets" design manuals aimed at broadening the ways that city staff measure the quality and level of service (LOS) for streets (City of Boston 2012, City of Saint Paul 2014). The overlapping jurisdiction problem requires advocates to be aware of institutional complexities at very different institutional scales simultaneously. This degree of political capacity for both minutiae and breadth is understandably rare, and therefore make it a challenging political effort for institutions grappling with everyday politics.

The third political barrier of automobility stems directly from these rigid design standards: the risk-averse institutional culture of transportation engineering. In general, as a discipline, engineering does not foster a culture of experimentation but of careful adherence to precedent. Within applied practice, this disciplinary respect for historically applied approaches to problem solving combines with a conservative reluctance to innovate that is characteristic of city departments and bureaucracies in general, to create an institutional situation where change typically proceeds slowly and incrementally. As one Minneapolis City Council aide describes, city departments are inherently risk-averse:

These designs are considered risky, because they [engineers] haven't done it before. So what if somebody gets hurt? Then it's my [i.e. the engineering department's] fault because it's back on me. [But] what if someone gets hit by a truck in the bike lane? In the current situation with no bike lane, it's not that engineer's fault.[54]

In this case, adopting bicycle infrastructures that have not previously been built within a city — in this case, buffered bicycle lanes — is made more difficult because how the lack of precedent relates to municipal liability and the way that risk is distributed by the built environment. In Garwood's hypothetical truck example, an existing bicyclist using a street without accommodations would assume the risk for an accident. Whereas, if a street was somehow re-designed to be safer for more risk-averse bicyclists, more of the responsibility for safety would fall on the road designer. Because cities are facing legal frameworks where litigious liability is a pressing issue, there remains a great degree of resistance toward changes that might be unprecedented within a specific institution, or less supported by the various layers of design guidelines. At the same time, building new types of infrastructure amounts to a tacit admittance that the previous design situation — in this case, the lack of an existing bike lane — is dangerous or poses problems for its users. In other words, there is a structural bias against changing the status quo that is intensified in cases involving new design ideas.

However, as the NTP project has progressed and questions about design problems for bicyclists have been repeatedly asked within various public and private settings, conversations within city departments are beginning to change. For Garwood, the Minneapolis City Council aide, the biggest success of the Minneapolis NTP was seeing the city's Public Works Department implement an unprecedented "green paint" bike lane

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[54] Informant interview with Robin Garwood.

treatment at a dangerous corner without any public meetings or coaxing from advocates or

elected officials. As he describes it:

Robin: We've gotten to the point where we've built up this level of comfort with innovative

bicycle infrastructure that I've been wanting us to get to for a long time. Public works has just

institutionalized this great sort of "we can try different stuff" problem solving mentality… That to

me is the biggest success story of the whole NTP program.

Q: That's not even an NTP project.

Robin: I know. The point of NTP was to demonstrate that you can shift mode share… But for me

another big key goal of the NTP program was to change the culture within Public Works, within

the city generally, and get us to the point where we're more comfortable doing innovative things

that we haven't tried yet in order to accommodate bicyclists.[55]

Here, Garwood is not necessarily focused on new riders, but rather is identifying as a

broader tactical objective the changing institutional cultures and processes within city

engineering and planning departments. This kind of experimentation with a "problem

solving mentality" relies on the internalization of values, questions, and practices that

represent a shift from engineering routines that have dominated the twentieth century.

The challenge of multiple jurisdictions and separate political institutions remains a

distinct barrier to changing urban street designs, because separate jurisdictions multiply the

challenge of developing less rigid practices. As the Minneapolis Bicycle Coalition Director

explained to me, particularly given the professional flexibility around both design and

implementation within institutions, these specific cultures can play a crucial role:

Generally we have pretty good relationships with everybody but the [Hennepin] County staff.

They have a broader jurisdiction, so the amount of focus they have on Minneapolis is less. Their

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[55] Informant interview with Robin Garwood.

roads are higher-level roads, they see them more on moving cars. They have a complete streets policy in Hennepin County, but it doesn't mean that it's always implemented like you might hope. You try to work with staff as much as possible to get solutions without bringing in the elected officials, but there comes a point where you spend so much time, its just time to …

That's one thing about bureaucracy, you just keeping talking and talking and talking around in circles. That's one thing that was happening in [the] Riverside [Avenue re-design process]. We were just like, forget it. We're done. We're going to go to the City Council and have them tell you what to do because you're unwilling to see reason. You know of course, I wish that wouldn't happen. You try to build a positive relationship with the staff, because they're so important to making this happen.[56]

Here Fawley, the Coalition Director, illustrates how these various barriers can reinforce each other to create stalemates for advocacy groups. The county-level jurisdictional scale, agency culture, and design standards combined create a practical inertia that can persist within the system of automobility. For example, each larger scale of decision-making accentuates the political challenge faced by advocacy efforts, particularly as land use and transportation patterns shift spatially as geographic scales increase. For example, while an engineering design decision at the City of Minneapolis level (population 400,000) might involve constituents who experience a particular range of density levels and car dependency, decisions at the Hennepin County level (population 1.4 million) might dilute the currently existing bicycle lobby to the point of political irrelevance when compared to the daily counts of automobile drivers and commuters across a larger spatial scale. These scalar barriers are just one reason that that, as Fawley describes, advocates and engineers end up "talking and talking around in circles." Yet these disconnections also represent sometimes fundamentally

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[56] Informant interview with Ethan Fawley.

different ways of framing street design, safety, and transportation goals between engineers and bicycling advocates at different scales.

The fourth barrier of automobility is the process by which civic engagement revolves around, and reflects, the automobilized citizen. For decades, elected officials and city staff have historically viewed bicycle advocates as outliers to the normalized, automobile-driving population. As one Saint Paul City Council Member put it, advocates' explicit status as self-identified bicyclists made it "easy to marginalize them from the public works perspective" because it seemed like bicycle advocates "don't really represent the city."[57] The dominant image of the automobilized citizen operates in ways that make it difficult to compete for limited funding resources within governmental budgets. The challenge of decision makers has been to seek ways to normalize bicycling, so that bicycle infrastructure is not viewed by city decision makers as a fringe benefit but as a key piece of everyday infrastructure. A former Saint Paul bicycle planner described the problem by looking at the everyday nature of bicycling in Europe:

Anything that makes [bicycling] normal is important. One of the things that the [visiting] bike coordinators from Europe said was, he talked about the vacuum cleaner. It's not that you identify as a cyclist, it's just a tool in your house and you use it to get where you want to go.[58]

Here the political image of bicycling and the self-identification of its advocates — their equipment, specialized language, and in depth knowledge of design debates — works against their efficacy as a political group. As described in Chapter Four, the very cultural connections that generate identity and fuel habit formation can serve to undermine the political reach of bicyclists as they push for different infrastructures. Overcoming this feeling of exceptionalism has been one of the key challenges for advocates and decision makers in

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[57] Informant interview with Russ Stark.
[58] Informant interview with Emily Erickson.

both Minneapolis and Saint Paul over the past few years, in particular as they attempt to identify and appeal to still hazy ideas of "new riders."

For example during the past five years, both Minneapolis and Saint Paul independently reorganized their bicycling public engagement approaches to shift from *ad hoc* advisory groups toward officially appointed committees that carried with them a more legitimate institutional imprimatur.[59] According to one advocate, these new groups fostered more geographic and gender diversity which has translated into a greater perception of normalcy of the advocates, and translated into more political efficacy for the advocacy communities. These more official groups have, at the same time, improved the political coordination between the bicycling advocacy community, city staff, and elected officials. As one advocate put it, this shift in representation and the image of bicycling has allowed it to "start to feel normal and cool and acceptable and accessible to people who aren't currently [riding a bicycle]."[60]

In this way, when faced with the resilience of the system automobility, the problem of new riders place bicycle advocates into a kind of double-bind. On the one hand, relying on explicitly self-identified bicyclists as advocates or representatives of the bicycling community undermines their ability to connect with new riders (as described by the alienation of bike cultures in Chapter Four) and elected officials. Yet at the same time, advocacy groups rely on existing riders for membership, fundraising, and volunteer efforts, and efforts to attract new riders can sometimes alienate existing bicyclists whose affective relationships with their bicycles and urban space might be shaped in different ways.

Thus the new rider problem reveals the tension between advocacy and representation. While existing bicyclists have particular needs and concerns that tend to dominate existing

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[59] Informant interview with Russ Stark; informant interview with Ethan Fawley.
[60] Informant interview with Robin Garwood.

public engagement processes, the goal for cities is often to attract potential future bicyclists who do not yet exist as bicyclists *per se*. For existing advocates, learning to speak for future bicyclists yet-to-come poses epistemological challenges that attenuate the already problematic tensions within planning between future and present environment-society relationships. As one bike advocate put it, designing bicycle infrastructure for new riders is a "catch twenty-two chicken and egg thing" because new riders do not yet exist, and therefore cannot advocate for infrastructure that they might desire in the future.[61] As another advocate describes, the key challenge is for "those of us doing this work have to think about people other than ourselves and use a lens other than the one we have" to advocate for bicycle infrastructure.[62] As they shift from representing themselves to representing bicyclists-to-come, advocates can struggle with some of the affective dissonances that emerge around thinking about the "people other then ourselves." It is precisely this problem that poses challenges for North American advocates as they attempt to develop spaces that appeal to new riders.

Interlude: The relaxation of the boulevard

The first time I ever enjoyed the experience of a Twin Cities bike boulevard I was cruising through South Minneapolis. Bike boulevards are bike infrastructure that bypasses cramped main streets in favor of quieter residential side streets. [See Figure 6.1.] They are designed to slow and reduce car traffic to the point where drivers yield to bicycles, providing a comfortable and relaxing space where cyclists do not have to worry about passing cars. In Portland, the city has built a constituent network of these kinds of well-marked streets,

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[61] Informant interview with Ethan Fawley.
[62] Informant interview with Robin Garwood.

where cars seem to be absent and you can cruise through the city North to downtown.

Yet often the final designs become compromised to the point where the "calming" effect of the boulevard is lost, and they seem like just another city street. In the Twin Cities, the bicycle boulevards that have so far been constructed vary widely in quality, and often fail to meaningfully improve the bicycling experience.

Except on one summer day, as I traveled south down Bryant Avenue passing a handful of other bicycles along my way, the boulevard design seemed to be working. The experience of traveling on a bike boulevard, having a car behind you and not worrying about getting out of its way, is rare and pleasing. The cars having to stop repeatedly at stop signs or roundabouts, while bicycles travel along at a steady ten miles per hour, means that there is very little to be gained for car drivers in passing any cyclists. And that, it turns out, can be a big relief.

Within the bicycling world, self-reflexive awareness is a common theme. I repeatedly have conversations with people about what drivers might be thinking, how they might perceive bicyclists or act in response to different kinds of bicycle behavior. But on the bike boulevard, a tremendous freedom opens up for bicyclists who no longer have to attend to how the car drivers might or might not perceives you. The liberation from wondering what drivers might be thinking, or how impatient they might be getting, is a welcome change for anyone riding through the city. Many cyclists, myself included, often dwell on these kinds of questions, worrying about getting out of the way or making a good impression. But once a bike boulevard achieves its goal of minimizing automobile traffic, I felt liberated to simply experience the environment of the street and the city passing by, to notice the trees and houses and nothing else seemed to matter.

Figure 6.1. A family bicycling across a bicycle boulevard median in Minneapolis.

6.3 Saint Paul's Jefferson Avenue Bicycle Boulevard

The bicycle boulevard debates that took place in Saint Paul from the years 2008 to 2013 offer an historic example of the challenges of building bicycle infrastructure explicitly aimed at new riders. The proposed bicycle boulevard was Saint Paul's first and most significant attempt to receive some of the NTP funding awarded to Minneapolis in 2007, and disbursed through a local non-profit advocacy group in the following years. The controversy that erupted over the project illustrates the challenge around public engagement that occurs with attempting to design spaces that accommodate potential future behavior. The debate ended up exacerbating the tensions that city staff, planning, and public works

departments encounter around the new rider problem.

Figure 6.2. A woonerf-type street in Germany, (Pucher 2009).

One of the prime difficulties of the bike boulevard concept is that it remains difficult

to explain simply. As Birk (2010) describes, the boulevard idea comes from Northern

Europe via Portland, Oregon, and involves creating slow streets (in Dutch, a *woonerf*) where

cars are slowed through a wide range of environmental design approaches such as medians,

bumpouts, chicanes, speed humps, traffic circles, or pavement treatments (Pucher and

Buehler 2008, 2009, 2010). As a result, drivers travel at cycling or walking speeds, and

through traffic is minimized to the point of irrelevance for bicyclists. [See Figure 6.2.] Once

new infrastructures like bike boulevards become commonplace, the general public is more

easily able to understand, categorize, and classify them using existing examples. However, as

this case study illustrates, introducing a new type of infrastructure for the first time can be particularly difficult because these ideas garner the opposition of both those who understand and dislike the project, and those who have a difficulty comprehending how the project might look and operate before it is built.

The background for the Jefferson Avenue Bike Boulevard illustrates how infrastructure projects can develop long timelines as they encounter political and logistical hurdles. The concept of a bike boulevard in Saint Paul was first proposed following the announcement of Minneapolis as one of the NTP pilot cities, after project proposals were opened to Minneapolis and its neighboring cities. In order for a project to qualify for the pool of Federal funds, it had to offer a geographic connection to bike routes in Minneapolis. In Saint Paul, this requirement left few options for potential routes: near either of the two bridges over the Mississippi River, and towards the North of the city by the University of Minnesota campus. City staff quickly targeted the Southwest quadrant of Saint Paul near the Ford Parkway Bridge to Minneapolis, as a destination for a new East-West bicycle route through Saint Paul.

One of the key requirements for designing a bike boulevard was a continuous East-West street that was not also a main arterial with high traffic volumes. Only a few streets met these qualifications; the initial site targeted Highland Parkway, a calm residential street with a continuous median lined with trees. Plans were drawn up in 2008; however, quickly during the public input process for the proposed Highland Parkway Bike Boulevard, neighborhood opposition coalesced around a series of concerns, including traffic and safety. At this point, city staff quickly began considering other options, and settled on Jefferson Avenue as a backup option, a more-trafficked but still continuous residential street. Apart from its continuity as one of few streets bridging the freeway and railroad corridors, Jefferson also

had the added benefit of fronting an elementary school, a church, a city park and a playground, all places that might benefit from traffic calming. The proposed route would stretch from West 7th Street on the Southeast side of the city all the way to the Mississippi River on the southwest Side of the city, before continuing on to the bridge to Minneapolis.

Three different types of improvements, including Bike Walk Streets, Shared Lanes, and new Bike Lanes, are included in this concept plan. This view of the Jefferson Avenue project area shows the types and locations of potential walking and cycling improvements.
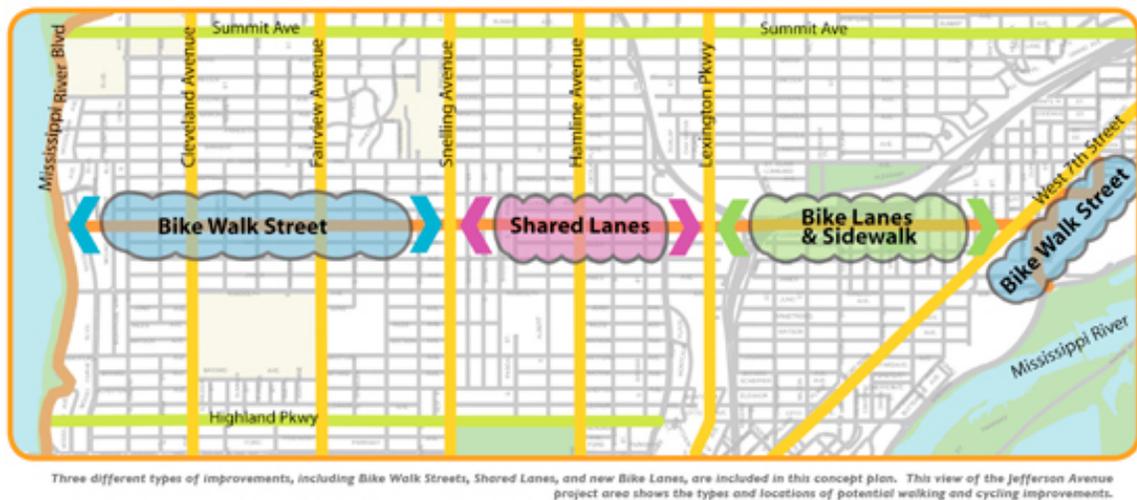
Figure 6.3 Map of the Jefferson Avenue project circa 2012.

However, as it moved through its public hearing process, and the proposal was brought before neighborhood groups and committees of active local residents, and momentum on the project quickly ground to a halt. At one meeting in particular, the public works staff's presentation on the proposed project was derailed by a boisterous crowd and, as one attendee described me, the information meeting was turned into a public forum where proponents and opponents lined up on opposing sides.[63]

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[63] Informant interview with Andy Singer.

Figure 6.4. The "test median" for the Jefferson Avenue bicycle boulevard.

One flashpoint emerged over the design details at the intersection of Jefferson and Cleveland Avenues, one of the locations where the boulevard would cross a major North-South traffic corridor. Many bike boulevard designs in Minneapolis and elsewhere install "median diverters" that disallow through traffic from turning onto the boulevard, while simultaneously providing a median for bicyclists and pedestrians to cross the busier arterial [See Figure 6.4.]. As it happened, the proposed Jefferson Avenue median diverter at Cleveland fell directly in front the home of a connected conservative political activist, who proceeded to generate stories in the media about the bike project and its funding structure (particularly the "unelected" non-profit agency). A good example was the castigation of the project by a well-known Conservative radio host:

The St. Paul City Council has decided to go ahead with a $1 million bike lane project on Jefferson Avenue, from Mississippi River Boulevard to West Seventh Street, that gives bikers the important connection to the Sam Morgan Trail, named, I think, for Sam (The Squeeze) Morgan, an Ultimate Fighter or kickboxer.

What this means is that hypocrites who have a car or two in the driveway at home will now put on the Italian racing suits with jerseys that look like the labels on olive jars and turn Jefferson into

196

a slogfest of starts, stops, bump-outs, speed humps and something at Jefferson and Cleveland

called a pedestrian refuge, where, if you are a pedestrian, it sounds like you are stranded or given

some sort of green card status until you can be rescued and brought safely to one side of

Cleveland or the other.

<div align="right">(Soucheray 2010)</div>

At the nadir of the controversy, an anti-boulevard activist filed a document request

demanding the correspondence of anyone working on the bike project, and Bike/Walk Twin

Cities staffers spent time compiling years worth of emails mentioning the NTP funding

process and releasing them to the public.

Eventually, the project stalled and was delayed. Yet city staff, the bicycling advocacy

community, and political leaders in Saint Paul remained interested in using the available

Federal dollars to fund the infrastructure improvement, and in 2012, a watered-down version

of the project passed through city committees and was approved by the City Council.

Construction is finally occurring during the summer of 2014, just within the viable

timeframe for using the NTP funding.

The Jefferson bike boulevard debate became a decisive moment for bicycling in Saint

Paul because it solidified conservative resistance to change on one hand while forcing a re-

thinking of advocacy approaches on the other. As one City Council Member explained, the

difficulties around the boulevard project helped advocates understand the importance of

planning:

The project was never really talked about with the community in advance. The city applied for

money to do the project because the money was there, and there had been priorities, city maps,

for a number of years saying, here's where we'd like to build our bike projects at some point. But

it was really those maps for the most part, and not in the neighborhoods.[64]

In this case, as Stark points out, even when typically elusive funding streams are assured, bicycling infrastructure aimed at new riders lacked the social political narratives that might generate support from potential audiences in the "neighborhoods." This lack of clarity can become exacerbated when city staff has difficulty articulating the goals and methods of new types of infrastructure. In response to this problem, the Jefferson debates prompted a reconfiguration and hiring of a new sustainable transportation coordinator within the Saint Paul Public Works department who would be explicitly tasked with design and public engagement for bicycle and pedestrian infrastructure. At the same time, advocacy groups within the city became more careful about how to engage neighborhoods around potential action.[65] For these reasons, subsequent debates over the construction of bicycle boulevards in both Minneapolis and Saint Paul have proceeded with less rancor and a more careful consideration of framing proposed change around particular audiences and concerns.[66]

As this example demonstrates, attempts to imagine new riders has the potential to backfire when advocates or city staff make assumptions about the potential affective assemblages of bicycling. Implicit within engagement efforts and planning processes are assumptions about who, why, or how people might ride bicycles. These assumptions can be exacerbated by the structural and political barriers posed by the system of automobility, which often constrain the emergence of more diverse affective relations around the bicycle through tools such as survey questions. Faced with these difficulties, the Jefferson Boulevard impasse reveals how carefully advocates and planners have to frame debates about future bicyclists. In this case, little effort was made to consider the diversity of potential affective

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[64] Informant interview with Russ Stark.
[65] Informant interview with Lars Christiansen.
[66] Field notes opening Riverlake Bike Boulevard, informant interview Lars Christensen.

relationships between bicyclists' bodies and the built environment, a fact that left bicycling advocates with little ability to achieve their goals.

During interviews and less formal conversations about bicycle boulevards, the new rider problem frequently came up as the primary justification for new infrastructure. Planners, advocates, and politicians repeatedly described how different designs might accommodate a wider range of bicyclists and allow for a greater potential diversity of bodies and riding styles than current on-street infrastructure designs. For example, women, children, and families were cited during public presentations by advocacy groups as the target audience for the boulevard (City of Saint Paul 2012). Similarly, the goals of the boulevard align with the language of the original NTP project grant; both are focused on the "goal [of] new riders", so that "the purpose of a bike boulevard is to serve as an incubator for people who are learning to ride or want to become more competent riders."[67] Put another way, traditional infrastructure treatments (e.g. bike lanes, sharrows, professional training courses) operate under the assumptions about the universality of affect, where potential bicycle riders might display relatively equal capacities for enjoyment, athletic endurance, or other embodied differences. On the other hand, bike boulevards are predicated on the idea of affective difference and represent a shift in mindset for bicycle planners from technical safety to experienced comfort such that "it is a new way for people to think about traveling in a street [that] means that families can feel safer on a street; more novice bicyclists can feel safe."[68] The emphasis here on the role of "feeling" points to the shift of focus within planning practices towards more affective conceptualizations of potential action. By attending to the relationship between the bicycling experience and capacities for mobility, differences in embodiment, capacity, and subjective disposition are

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[67] Informant interview with Joan Pasuik; informant interview with Emily Erikson.
[68] Informant interview with Joan Pasuik.

implied between groups.

The second major area where the bicycle boulevard approach comes into conflict with the political and institutional structures of automobility lies in the inherent flexibility of the "bicycle boulevard" design itself. Unlike most road proposals, which tend to rely on a strict guidelines such as the Minnesota State Aid standards or the *Manual on Uniform Traffic Control Devices*, bicycle boulevards are typically a site-specific set of tools that lack any definitive treatments.[69] Instead, engineers and planners can choose from a set of different "traffic calming" measures that share the goal of discouraging and slowing car traffic. In a sense, a bicycle boulevard relies on a diverse set of tactics, rather a standardized design, to create urban spaces that might cultivate street relationships that allow for more ways of riding bicycles.

Yet this lack a standardized design also makes the implementation of bicycle boulevards (and other more *ad hoc* designs) susceptible to the erosion of their effectiveness. In practice, many of the bicycle boulevards that have been constructed in Minneapolis and Saint Paul fail to adequately calm car traffic to the point where bicyclists receive priority on the streets. This contrast between planning and implementation points to the difficulty of reconciling the standards-based model of transportation engineering with more flexible design approaches based not around abstract safety statistics, but around the creation of spaces with specific affordances. For example, the end result of the Jefferson Boulevard lacks traffic diverters intended to reduce through automobile traffic, and is missing two key calming circles in the more highly-trafficked center part of the route. Both of these omissions make it difficult for the street to be used by bicyclists as it was intended, and

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[69] Informant interview with Ethan Fawley.

restrict the appeal of the street for those unwilling to adopt a vehicular style of bicycling.

Figure 6.4. A "block party" meeting intended to generate support for the proposed Charles Avenue bicycle boulevard project.

Despite the difficulties that the Jefferson Bicycle Boulevard present for attempts at bicycle planning advocacy, some other NTP bike boulevard projects in the Twin Cites have proven to be more successful. The "Riverlake Greenway" running East-West through South Minneapolis, and the "Charles Avenue Bike Boulevard" running East-West through the middle of Saint Paul were both successful and implemented with more of the calming techniques (including through-traffic diverters) that were met with broad acceptance by community groups and politicians in both cities.[70] [See Figure 6.4.] As one initially skeptical Minneapolis council member described, bicycle boulevards broaden the appeal of bicycling: The significance of a bike boulevard is that it's designed to put bikes first. We have not

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[70] Field notes Riverlake Bicycle Boulevard opening; informant interview with Lars Christensen.

restricted… Automobiles will still be using the roadway, but it's really designed to cut down on through traffic. I know that residents along 40th street will appreciate that even if they never bike it. This project is a demonstration that the city of Minneapolis values non-motorized transportation, using your body, and we are willing to support the infrastructure that will support that transportation. It's no longer just for recreation that we have bike paths."[71]

For the Minneapolis City council member here, the boulevard broadens the affective reach of bicycling by creating a path that might attract a greater range of potential riders who would ride "no longer just for recreation." Despite the difficulty of identifying and predicting the characteristics of new riders, the bicycle boulevard approach begins to make rough connections between infrastructure and previously autonomous capacities for movement, beginning a larger conversation about a larger assemblage around bicycling.

6.4 Minneapolis Open Streets

The second case study departs from the traditional infrastructure-based model of behavior change, and instead works through a temporary intervention to generate activity around an alternative set of affective relationships to the street. Traditionally, the system of automobility places structural constraints on infrastructural change through long-term planning processes, where proposed modifications of the built environment require vetting by multiple institutional structures. Civic goals – for example Saint Paul's stated goal of achieving a 5% bicycling mode share by 2015 – are constrained by processes that require the maintenance of existing traffic patterns, vehicular access, or parking capacities so that change to the existing built environment occurs at a very slow pace (City of Saint Paul 2010). This inertia dampens the ability of potential bicyclists to change behavior, pointing to a feedback

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[71] Field notes Riverlake Bicycle Boulevard opening.

loop between the built environment and existing behavior which helps to explain the gap between expressed values and lived experience. Because mobility patterns of everyday life represent a interconnection between environment, habit, and subjective narratives, it remains very difficult to change one of these dynamics (for example, bicycling to work) without shifting the other parts of the assemblage.

The example of Minneapolis Open Streets represents a new approach for bicycling advocates and planners because it circumvents these difficult circuits with a short-term or "tactical" space that is intentionally unplanned, simply closed off to cars. Normally, the way that busy commercial streets typically function within the system of automobility restrains the kinds of affective capacities and experiences that can flourish. For example, the kinds of play that children can engage in, or the volume of conversations that can occur on a street corner, are limited by the speeds, volumes, and frequency of automobile traffic in ways that limit the forms of everyday life in a neighborhood. By removing the automobile from the picture, Open Streets events create space for new affect, where different kinds of experience and activity can emerge,.

One key reason for the Open Streets' low-cost, temporary evolution is that it offers a rare example of a planning innovation migrating from the Global South to the Global North. The concept in Spanish, a "*ciclovia*", emerged as an attempt to increase physical activity and pedestrian safety in the dense streets of Bogotá, Colombia. From that point, ciclovia-type events have proliferated across South and North America, sometimes called Sunday Streets or Open Streets or CicLAvia (in Los Angeles) (Lugo 2013). In each of these cities, the event acquired slightly different social and political valences depending on the context. For example, the Sunday Streets events in New York City often take place in parks, while other cities' events create long-distance loops meant for circular tours, or restrict the

creation of car-free streets to a specific neighborhood that focus more on local connections and community identity.

In Minneapolis, the idea for having an Open Streets event emerged through discussions between urban planning consultants in the mid 2000s. A local planner, Colin Harris, began holding monthly meetings of people interested in organizing the event, and held conversations with city staff for over a year before the first event took place on two and a half miles of Lyndale Avenue in South Minneapolis in 2011, a main commercial street lined with shops, apartments, and single-family houses. Leading up to that point, during a series of quarterly meetings with the city's Licensing Coordinator, Harris worked through a concerns from city staff over traffic control, police and security details, impacts to parking, and neighborhood involvement. Negotiations over the exact route and duration of the event were the most difficult to solidify because of competing claims to street control from different jurisdictions (i.e. certain Minneapolis streets are also state or county highways), as well as concerns about traffic disruption. Eventually, Lyndale Avenue was chosen as the first street for the event, and Harris' group began organizing the community and petitioning residents for permission to close the commercial street from 10:00AM until 4:00PM on a Sunday in June. During the community organizing process, there were concerns from business owners and neighbors about the economic effects to local business and restricting car access for residents. However, with effort from volunteers, the Open Streets event received political and community support and eventual funding from both the city and the Minneapolis Bicycle Coalition.

For the most part, the rain held off on the afternoon of June 12th, and the first ever Minneapolis Open Streets was held. The event was deemed a success by the organizers, and one of the key dynamics of the legacy of the event was that most local businesses along the

route saw record sales as small crowds gathered on the street throughout the day, walking and bicycling at leisurely paces down the street. The support of business owners meant that, with help from the Bicycle Coalition and foundation support, the city sponsored four similar Open Streets events in all parts of the city the following year, including on roads that had official county jurisdiction. More recently, the city has again increased the number of Open Streets events, and Saint Paul has also begun holding similar events. With each successive attempt, organizing and understanding these projects has become easier to accomplish.

The first key dynamic of Open Streets events are the way in which they engage with traditional logics of planning by working through a very short-term change to the built environment. The dominant model for fostering change within 20th century planning theory relies on a "comprehensive planning process" to calculate future demographic, transportation, and economic trends based upon systematic analysis of existing conditions and community visions (Fogelsong 1986, Kelly and Becker 2000). These comprehensive plans often have temporal horizons that rest decades into the future, and shape more contemporary planning documents and processes according to predictive models based on long-term trends and demographic or transportation forecasts.

By contrast, some newer approaches to planning are often framed as "temporary" or "tactical" interventions within the built environment. For example, the New York City Planning Department's removal of cars from Broadway Avenue at Times' Square in 2009 was initially launched as a temporary experiment. The re-design of the street environment only become a permanent change after it was installed and built, and once people experienced the space, adjusted behavior, and began supporting the change (Crowley 2009). Similar efforts include "pop-up" parks, short-term uses of land slated for development, and "experimental" changes in street design that take place from only a few hours to a few

months (Lydon et al. 2012). In these cases, typical planning barriers – for example projected traffic counts, mobility patterns, or parking concerns – are circumvented by adopting an improvisatory and short-term narrative. In other words, change becomes an event, rather than a permanent piece of concrete.

For Open Streets Minneapolis, while promoting bicycling served as a key impetus and proved to be a useful source for funding and volunteer labor, organizers initially framed the event around broadening the affective inclusions of the street. In other words, the event was not explicitly about bicycling:

We made sure to say that Open Streets was not a bicycling event: promotes sustainable transportation, supports local business, promotes public space (seeing streets as public spaces), and health (active living). That was all interesting for everyone to digest.[72]

In a way, the occlusion of bicycling by Harris was an attempt to get around the impasse of the new rider problem by de-emphasizing existing bicyclists as the beneficiaries of the event space. Rather, bicycling becomes just one of the many public space possibilities of the post-car street, just a piece of the larger set of affective potentialities. During the event itself, while bicycles were a key part of the assembled street life, many other ways of using the street emerged as well: dog walkers, on-street yoga, street cafés, street vending on sidewalk tables. Many people simply walked and wandered up and down Lyndale Avenue without any particular obvious purpose, simply experiencing the street in a new way. [See Figure 6.5.]

[72] Informant interview with Colin Harris.

Figure 6.5. Four photos of the 2011 Minneapolis Open Streets event. Clockwise from top left: group yoga on the street, a dog walker and bicyclists, police controlling traffic at Lyndale Avenue and Lake Street, cyclists and a street musician in the residential section of Lyndale Avenue.

As Harris describes it, the un-programmed nature of the street became a form of material politics, resting on assumptions about the relationship between street design and social possibility:

For me this event is a little confrontation. Or holistically subversive, being very honest and wholesome with it, is still one of the most subversive ideas. Making things happen, and people don't know how they're happening. Suddenly Lyndale's open, and bam, go out and do something with it.[73]

In a way, Harris' connection here between subversion and being "holistic" implies a relationship between the built environment and social possibility, suggesting a strategy that undermines individualistic theories of politics that fail to consider the meaning of street design or sidewalk activity. Instead, through a temporary intervention that circumvents the

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[73] Informant interview with Colin Harris.

restrictions of traditional urban planning, the Open Streets event enacts the political

connection between the built environment and social relationships, if only for a moment. As

the spaces of the event have grown more and more frequent, this enactment of Open Streets

illustrates how changes to built environment can shift patterns of mobility, collective desires,

and the movement of bodies.

The second key political characteristic of the Open Streets event is its commitment to

change through embodied experience. Unlike many event-based attempts to influence

mobility patterns — for example Bike/Walk to Work Week events described in Chapter

Four, or any number of the "tabling" advocacy approaches that rely on face-to-face

conversations — the de-programmed space of Open Streets does not make explicit appeals

to rationality. Advocates typically frame bicycling within ethical, health, or environmental

narratives that attempt to instill particular values within potential cyclists, before proceeding

to overcome barriers that stand between these values and behavior (Bannister 2005, Shove

2010). In contrast, the Open Streets event bypasses appeals to rationality in favor of less

explicitly mediated experience. As Harris explains, the model of Open Streets substitutes

embodiment for argument:

Harris: I've always been hesitant about getting too far into that category of bicycle advocacy. I've

never really felt comfortable honestly in that position. I don't feel comfortable being that person.

Q: Why not?

Harris: Because I think that in terms of the talk that goes behind it, I don't like to talk that much. I

think like you said working hard and actually doing things, having people experience it without

having to convince them with words… I guess it's still advocacy, but it's not like this traditional

sense of getting in front of them and telling them why they should change their minds.

[…] With a slow street and cars are going 10 to 15 mph and people feel comfortable going on the

street. I think I got people thinking about that a little bit. I just think it's as a really powerful event for people to experience. It doesn't… It's not telling them to think something. It's not telling them to do something. It's not taking their money or forcing them to be competitive. It's allowing them to experience space in a new way.[74]

Here Harris describes how Open Streets attempts to bypass narrative and circumvent the value-action gap described by Shove (2010). Instead, here the experience itself attempts to "change … minds" only by changing spaces, and thus allowing new kinds of affective combinations to unfold on the street itself.

The lack of explicit narratives does not, however, negate the ways that the space of the event is shaped by existing social relations in many smaller ways. As the Open Streets events have spread through Saint Paul and Minneapolis in the subsequent years, events have taken on distinct characters in different neighborhoods. The lack of explicit programming of the space leaves room for difference to emerge in ways that, like any set of social relations, include certain kinds of potential behavior while excluding others. For example, in Saint Paul's first Open Streets on University Avenue event in the summer of 2013, special accommodations were made to an existing Asian-American grocery store to allow for their customers to access a parking lot. The following year, in 2014, the Asian-American community created a special "Little Mekong" marketplace along the street for food and craft vendors to use the street space for commercial activity. [See Figure 6.6.] While the Asian-American "day market" attracted the most foot traffic and street life of any part of the street, yet other communities along University Avenue struggled to use the potential space offered by the car-free street in ways the generated much foot traffic or street activity.

The political tactic of an Open Streets event is not without precedent, and parallels the

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[74] Informant interview with Colin Harris.

experience outlined by Furness (2007, 2010) of how critical mass bicycle rides can transcend typical traffic conflicts through communal action (see also Carlsson 2002). The key difference is that here the sometimes alienating radical political gesture of Critical Mass has been replaced by a smooth, sanctioned release from the daily restrictions of street traffic. The affective potential of the street, typically constrained by the relentless danger of speeding cars, is opened up to a world of social possibility that emerges in ways contingent on the specifics of the neighborhood around it.

While this form of engagement remains temporary, and the street inevitably returns to its hegemonic automobilic regime, events like Open Streets are accessible to a broader array of bodies and subject positions, offering a model for short-term "tactical" embodied experience that bypasses traditional methods of advocacy.

Figure 6.6. A view of the Open Streets event in Saint Paul in 2014, centered around the Little Mekong district of small Asian-American businesses. Note the absence of bicycles.

6.5 Nice Ride Minnesota

The third case study, bicycle sharing systems, represents one of the fastest-growing trends in urban bicycling planning throughout the Global North. The world's first large bike share system in Paris has over 1,200 stations spread throughout the city, and serves more than 80,000 rides each day. In North America, New York City, Washington DC, Boston, Montreal, and San Francisco each have extensive systems (with New York's being both the largest and the newest), while smaller cities are also building bike sharing systems at a rapid rate. For example, in the summer of 2014, Nice Ride expanded to the small Northern Minnesota city of Bemidji.

Most bike sharing systems do not make a profit, but rely instead on either public funding or corporate sponsorships for capital costs. The Twin Cities' Nice Ride bike sharing system is an example of the former model, and initial funding for the Nice Ride rollout came from out of the Federal 2007 NTP funding grant. While the Twin Cities' bike sharing system, which has one of the highest numbers of stations per capita, remains supported by a wide variety of local corporate and non-profit entities (most notably Blue Cross/Blue Shield, a local health insurance provider), the initial funding revenue came from the NTP program largest "non-infrastructure capital award."[75] As the of the NTP funding committee members explained,

We realized it wasn't just the rides but the visibility on the sidewalk, in neighborhoods downtown, and the visibility on the street of a very high profile bike. You look at it and realize it's one of those green bikes. The visibility and the attention and the buzz factor… We knew it would be huge and it has been. So it had the transportation and the awareness. Excitement.

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[75] Informational interview with Joan Pasuik.

Building potential.[76]

As Pasuik explains here, the Nice Ride program was considered appealing to new riders as much for its visibility and social impacts as for its practical usefulness as transportation, pointing to the role that perception of bicycles plays in shifting the political and social possibilities of bicycling.

The symbolic potential of bike sharing systems like Nice Ride is somewhat unique within the existing planning structures because it disrupts common narratives. Most obviously, due to logistic complexity, almost none of the existing bike sharing systems provide helmets as part of the rental package, a fact that poses difficulty for bicycling narratives that center on safety equipment. (The recently opened bike sharing system in Seattle, Washington is a lone exception.) Similarly, the bike sharing systems explicitly targeted people who, by definition, are far less likely to own a bicycle, aiming at "service for short trips in urban area."[77] In this way, bike sharing systems are forced to confront the new rider problem and begin to think through how to appeal to people who are not yet riding bicycles in cities on a regular basis.

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[76] Informational interview with Joan Pasuik.
[77] Informational interview with Bill Dossett.

Figure 6.7. A Nice Ride bike sharing station on Lyndale Avenue in South Minneapolis.

As an independent non-profit, in order to appeal to new riders, Nice Ride adopts a more market-driven approach to bicycle planning than is typically allowed within a more state-funded institutions. For example, Bill Dossett, a former law partner who directs the Nice Ride program, explained the specific demographic groups that they were targeting using language specific to class and lifestyle:

There are certain groups of people who get it quickly, one is person who is in town staying at hotel, wants to explore downtown, and the bike is right there. The other is the person that lives in a condo or apartment within three blocks of one of our stations, particularly a person without a car or whatever. Those are people who will sign up right away. The more difficult ones [to target] are students, and the group that lives in the burbs but works downtown […] That's the group that is the biggest challenge because often their relationship with downtown is not one where they

want to go explore it at all. They want to get in and out as fast as possible.[78]

This focus on specific demographic and geographic markets caused some controversy as the Nice Ride system was rolled out in Minneapolis, centering specifically on the downtown and University of Minnesota campus areas and excluding many other parts of the city, particularly those with larger concentrations of people of color. As Hoffmann (2013) argues, this race and class geography exacerbates some of the already existing exclusions around bicycle cultures and social dynamics, and in response the Nice Ride program has attempted to expand its coverage zones into less affluent areas of North Minneapolis and Saint Paul. However, low ridership in these areas despite the station additions suggests the complexity of the affective assemblage and the difficulty that any specific component has with overcoming less material barriers to everyday urban bicycling. [See Figure 6.8.] (As a result, the Nice Ride program launched a different kind of long-term bike sharing system during the 2014 service year aimed explicitly at overcoming race and class barriers. Here, bikes are lent out on a long-term seasonal basis in exchange for confirmed participation in bicycle events throughout the summer.)

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[78] Informational interview with Bill Dossett.
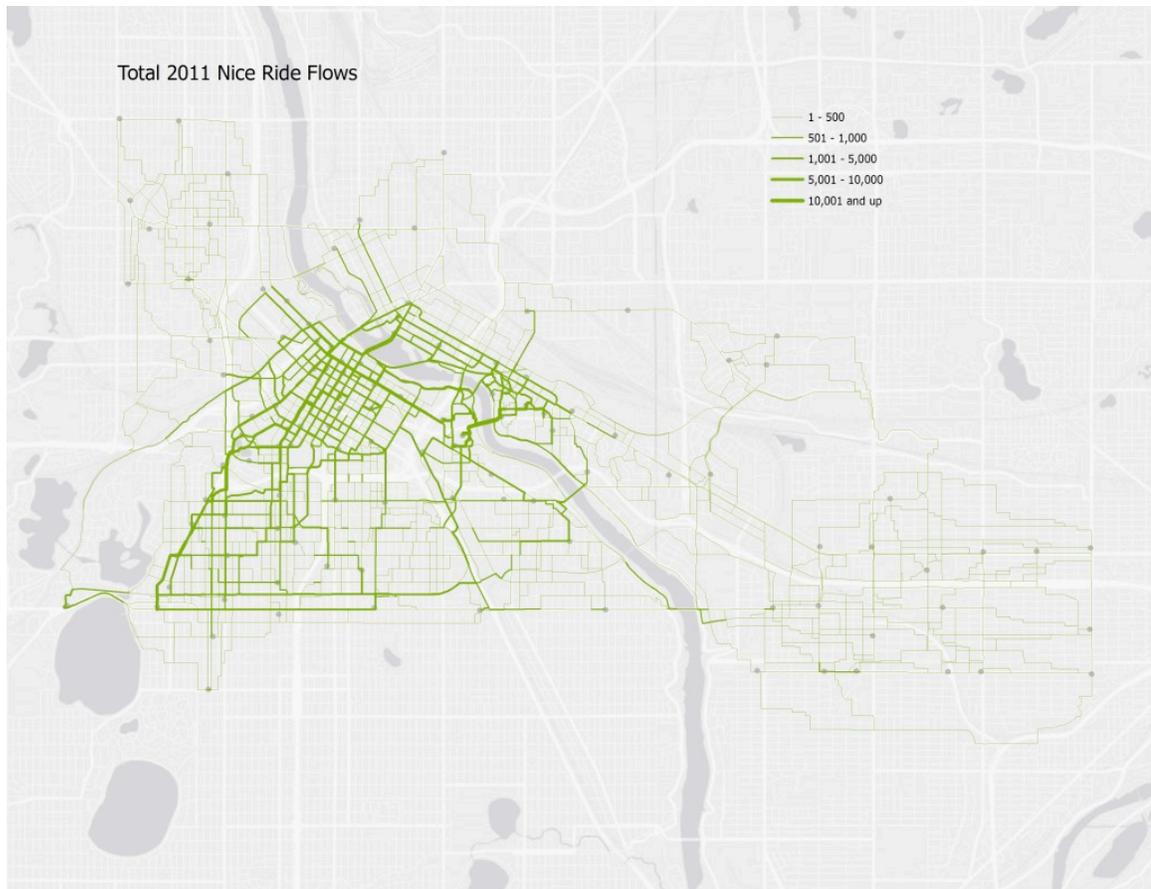
Figure 6.8. Map of Nice Ride system weighted by activity, showing all rides that took place in 2011. Note the decrease of ridership across the Saint Paul and North Minneapolis service areas.

Another crucial way that Nice Ride and similar bike sharing programs attempt to shift the affective politics of urban bicycling is through the design of the bicycle itself. Bike sharing bicycles are explicitly designed to be as accessible as possible to different types of bodies. They are heavy, have low step-through style top tubes, and a headset with a very small turning radius so that they are very difficult to fall from. (This fact has made it popular for the bike share program to host "slow races" at events, where riders compete to see who can travel the slowest along a short course without being forced to dismount from the bicycle.) They come with fenders and chain guards so that little special clothing is required to ride the bicycle, and each bike includes a flexible front rack on which bags can be easily

215

placed. Finally, they have three (low gear) speeds and an internal hub, which makes them quite slow to ride through the city, and (somewhat ironic) Nice Ride bike marathons have taken place where participants attempt to visit every (200+) nice ride station in the same day. Taken together, the existence of Nice Ride bicycles on the streets and bike paths of Minneapolis and Saint Paul changes the collective social behavior of the city's bicycling populations by shifting the kinds of riding that can take place.[79]

Similarly, despite the concerns over privatization that accompany public-private partnership (Mitchell 2004, Clough 2005), the inclusion of for-profit companies within the network that funds and organizes bike sharing programs offers some key differences for how bicycle advocacy operates as a mode of affective politics. Drawing on companies with marketing experience, the organizational mission of Nice Ride embraces a theory of how and why people make decisions that posits a more holistic view. In particular, the theory of behavior change implicit in the language of Nice Ride organizational narratives assumes a meaningful relationship between subjective choice and the larger urban environment. For example, the "vision" of the Nice Ride organization begins with this goal:

We see a bike sharing program that will permanently change the way people experience and perceive our city, as well as the way they experience and perceive transportation.

(Nice Ride 2012)

Crucially, this vision does not explicitly state that the goal is to entice people to ride bicycles (though that must surely remain implicit within the organization). Rather the stated goal is focused on changing how people "experience and perceive our city," an objective that could

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[79] For example, I have many personal anecdotes examples of being treated with more tolerance while riding a Nice Ride, both by car drivers and by experienced athletic bicyclists. In my experience, both of these groups seem to display lowered expectations about what kind of bicycle behavior is proper, and treat Nice Ride bicyclists with more leniency than they would anyone on their own personal machine.

include both bicyclists and non-bicyclists alike. Here the impact of the bike sharing system is explicitly linked to perception, and to a reshaping of the affective potential of the city. In other words, Nice Ride is attempting to create urban spaces where many more people could imagine riding a bicycle, regardless of whether they actually follow through on this behavior. This kind of vision differs from the typical statistical measures of most bicycle plans, and reveals how bike sharing programs can offers examples of planning through multiple parts of an affective assemblage, for example, linking perception, behavior, and social outcomes.

The Nice Ride planning approach also exceeds the typical value-driven theory of behavior change implicit in most advocacy literature. For example, in addition to the traditional advocacy emphases of health and environmental impact, Nice Ride lists a set of "benefits of alternative transportation" that include:

More interesting personal experiences interacting with the city.

A growing affinity to make other changes in all modes of transportation.

A sense of civic pride.

(Nice Ride 2012)

These benefits exceed the functional logics of transportation to point to the interconnections between environment, technology, and subjective perception; in other words, Nice Ride operates through a concept of a larger assemblage. In this way, bike sharing programs manipulate the socio-technological system of automobility by focusing on potential action that disrupts the feedback loop of the new rider problem. Instead of relying on the affective capacities and concerns of existing riders to guide infrastructure design, the Nice Ride bike sharing system aims at fostering new capacities within potential bicyclists. As one marketing director explained:

We have a pretty road audience. We really appreciate the avid cyclists, they are huge fans of Nice

Ride, most of them anyway. We have some that …there's this other whole huge cycling community that is supportive of us because they want to see more people on bike.

Our target audience are those people who live in the vicinity of where they work where they shop where they go who use nice ride to get to those short trips. That might include the avid bicyclists, but it may or may not include those who don't go to work on a bicycle, those who haven't been on a bicycle in twenty years, or even those active seniors who might want to adopt a more active lifestyle.[80]

In this way the bike sharing system offers another way around the new rider problem that works through a seemingly separate marketing-driven public/private model. By focusing on specific short-term trips, new audiences, and through bicycles that function differently than most common models available in most of North America, bike sharing systems like Nice Ride destabilize the long-term connections around the bicycling assemblage. Regardless of how these programs become enrolled within real state markets or sustainability narratives (Hoffmann 2013), they excel at shifting the potential terrain of bicycling through by forcing a reconceptualization of who is, or might be, a bicyclist.

6.6 The Holistic Subversion of New Rider Tactics

These three case studies illustrate how differently attempts to incorporate affect within bicycling planning can emerge within programs aimed at new riders. These new tactics are important because of the difficulty faced by planners in overcoming the self-reinforcing feedback loop of existing bicycling affect and bicycling constituencies, exacerbated by the hegemonic reach of the system of automobility. As it has socially coalesced through the Twentieth century, that system has resulted in a contingent but stable set of economic and

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[80] Informational interview with Ellen Appel.

political networks that limit the kinds of planning and implementation that can occur within North American cities. These spatial, material, social, and political relationships form a self-reinforcing landscape that captures political potential and channels it toward landscapes dominated by the single-occupancy automobile. As Krizek et. al. (2009) point out, even something as basic as walking has become neglected and devalued within this urban architecture, at high cost to the public health measures of North American countries (Frank, Engelke, and Schmid 2003). Yet, as the consistently low and often declining rate of bicycling and walking illustrates, attempts to transform the system of automobility by advocates and political leaders at all levels have proven to be largely irrelevant.

In each of these three case studies — a bicycle boulevard in Saint Paul, an open streets event in Minneapolis, and the Nice Ride bike sharing system in both cities — relationships, intensities, and collective experiences manifest themselves in ways that shift the affective terrain for the problem of bicycling. Much like the rationalized representational model of compressive planning poses challenges for changing the built environment, in each of these cases the relationships between component parts of the affective assemblage result in a shifting of affect (Kelly and Becker 2000). Each of these cases is marked by what Latour (2005) terms "controversies," where ontological stabilizations are performed to create a field of understanding within which social actors are understood. In this case, the social expectations about who belongs in a street, what kinds of built environments are perceived as normal, or what constitutes a "civic event" are mediated, manipulated, and generated from out of sometimes volatile institutional and civic processes. In each of these cases, affect is fostered in ways that disrupt the circuits of advocacy, representation, and infrastructure production that have dominated bicycling planning in North America for decades, as outlined in Chapter Two.

These disruptions are often messy, contingent and, as the Jefferson boulevard example illustrates, sometimes result in the kinds of failure that Latour used to illustrate the political and material dynamics of a social system (Latour 1996). Precisely because they do not yet exist, new riders become a controversy, a point of political contention around which narratives revolve and conflict. For example, the director of the NTP project committee offers a series of suggestions about new riders and what kinds interests, concerns, and spaces they might find appealing:

They [the public] don't understand anything except a bike trail or a bike lane. It's a new concept: the bicyclists are going to be in the middle of the lane. That seems very unsafe to them… Well, it is unsafe unless you're willing to put the design elements in place that will slow the traffic and reduce the throughput of motor traffic. It's just been really hard to visualize what [bike boulevards] can be and how [these streets] can be welcoming streets to a wider range of bicyclists, and why it can be an asset to residents who live along that street.[81]

As Pasuik explains here, the exact way to articulate and visualize new riders remains unsettled. In fact, even the infrastructure's terminology remains unsettled, so that organizers of the project shifted the ways that they described it at a very basic level calling it, at various times, "bike/walk street", a "bicycle boulevard", or a "greenway."[82] [See Figure 6.3.]

As Latour (2006) suggests, at this point within the political evolution of the bicycling problem, the identity of the future actor, is controversial precisely because it is unsettled. Thus in conversations between engineers, planners, advocates, politicians, and the public, a great variety of different rationales, visions, and stories are marshaled during conversations about the utility or futility of these infrastructures. For example, at the final Jefferson Boulevard City Council hearing, one opponent's testimony reveals the shifting criteria for

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[81] Informational interview with Joan Pasuik.
[82] Informational interview with Joan Pasuik.

evaluating the project:

I'm here in opposition to the bike road walk whatever it's called. … Didn't get answers as to what was happening to the road. Don't understand how they can make this work. If we have a car parked on both sides there's barely enough room for one car to drive through. I don't see how a bike and a car can pass through that space… I don't think that plan was presented to us in a complete manner. Don't understand purpose of a diverter. Bikes from what I see bikes rarely stop at stop signs. I don't know if they think they're above the law, its too much work, people are gonna be biking and not following the law […] I'm not against biking I'm not against bikers. I have a bike and love to bike but I'm concerned about this project and what it might bring in the future.

(City of Saint Paul 2012)

The shifting rationales of this kind of testimony, ranging from safety and traffic flow to complexity and predictions about the future, becomes common place during conversations about infrastructure intended to appeal to new riders precisely because new riders remain unsettled.

Unlike Protevi's (2010) case studies of "political affect", which exemplified different scales of formation of political intensity — the "somatic", the "transverse," and the "governmental" — the case studies here illustrate points of potential dynamism within the socio-political assemblage of automobility. In each of these case studies, some of the barriers to building a bicycling city are circumvented or transformed to allow for greater flexibility and to cultivate particular affective formations that foster bicycling. The first case — a plan for a bicycle boulevard in Saint Paul that became controversial — illustrates both the challenge of constituent representation and the way that design flexibility can be both an asset and a challenge to the construction of bicycle infrastructure. The second case — an cicylovia-style "open streets" event in Minneapolis — illustrates both how events can serve

221

as short-term infrastructure, and the role of embodied experience in fostering new capacities for bicycling and walking within urban spaces (Hernandez 2008). Finally, the third case — the Nice Ride bicycle sharing system in Minneapolis and Saint Paul — illustrates processes of normalization of diverse bicycling bodies and ways that potential action can be incorporated into the social assemblage to build a broader political mandate for bicycling. Each of these examples illustrates attempts to circumvent traditional barriers to building bicycling advocacy, infrastructure, and social habits in ways that might serve as models for promoting bicycling in North American cities more broadly.

In particular, these examples reveal how the paradox of constitutive planning operates to shape advocacy efforts within the bicycling community. During the last five years, the tension between the affective capacities, needs, and experiences of existing riders and potential future riders has become an important concern for advocates in Minneapolis/Saint Paul and around the country. In general these differences illustrate the wide diversity of affect that persists within the world of bicycling, both for experienced, less experienced, and future bicyclists-to-come. These attempts to imagine the potential affective capacities of future bicyclists have translated into efforts by planners and policy makers that have clarified tensions between teleological planning ideals and the representational implementation processes. At the same time, these efforts have permitted city staff to design built environments that accommodate a broader set of affective concerns and capacities.

6.7 Conclusion

This chapter discussed how specific examples of NTP funded bicycle projects that attempted to appeal to new riders in Minneapolis and Saint Paul made social and material interventions to circumvent the limits of the system of automobility. By looking at three case

studies – a bike boulevard in Saint Paul that offered a loose set of calming infrastructures, a series of car-free events in Minneapolis that de-programmed the street, and a public/private model of bike sharing that focused on changing urban perspectives – planners have attempted to overcome the traditional limitations of bicycle planning that make it difficult to appeal to new riders. The differential success of these case studies to change behavior illustrates how assumptions about affect can play a key role within bicycle planning, and how deliberately planners, advocates, and city decision makers have to think about the potential needs and concerns of new riders.

These examples from Minneapolis and Saint Paul are emblematic of many similar programs throughout the US and Canada, where new types of infrastructure, events, and programs are being rolled out in different cities on an increasing basis. The challenges faced in Minnesota recur frequently elsewhere, though each city and neighborhood has specific ways that its collective urban assemblage might offer tactical purchase for shifting mobility patterns. The next chapter concludes by connecting the context of bicycle planning with the specific practices and affective relationships outlined in Chapters 3 and 4, identifying interventions within planning and social science research literatures, and pointing to some specific ways forward for how potential bicycling city might be created in the future.

Chapter 7: Toward a Bicycling City…

"Sous les pavés, la plage. (Under the streets, the beach.)"

-Situationist slogan

7.1 "Bike Dread"

Like most people, my transformation into becoming a regular bicyclist was gradual. Encouraged by friends years ago, I began by riding a childhood bicycle through Minneapolis and Saint Paul when I moved back to the area after college. Gradually, I developed habits that allowed me to finally abandon my faulty car and to adopt new routines. Day by day, I encountered a different city than the one that I knew, as the bicycle limited access to certain places while catalyzing access to others. In this way, I experienced the inter-relationship between the city and one's technology of movement, how the bicycle can cultivate freedoms. The bicycling city looks and feels very different from the driving or walking city, and jumping between those worlds illustrates how volatile the urban landscape can become when seen from different vantage points. Studying these processes in detail, through documents, fieldwork, and participant observation, has only deepened the contrasts in freedom that emerge from out of the relationship between the environment, technology, and one's changing bodily abilities.

Yet even after years of thriving as an everyday bicyclist in Minneapolis and Saint Paul, I am still regularly fraught with dissonant feelings that make it difficult to maintain these bicycling practices. I distinctly remember sitting my in Geography Department office at the end of a long day of teaching, paralyzed by the thought of riding my bicycle on the

ten-mile journey back to my Saint Paul home. Confronted by thoughts of physical exertion

in traffic, I often sat there for hours surfing the internet or coming up with other

procrastinations, unable to face the sheer materiality of my inevitable trip. I was overcome

by a diffuse form of anxiety that I have begun terming "bike dread."

Eventually, often late in the evening, I would muster the requisite courage to don my

clothing and equipment, sigh inaudibly to myself, and head outside to mount myself on the

bicycle for the 45-minute trip across town.

Over the years that I have been conducting this research, both formally through

interviews and informally through conversation, I have found that this feeling of bike dread

is hardly uncommon. Particularly for less experienced riders, descriptions of anxiety are one

of the most common reactions that I encounter when describing this research question to

others. This affect is so commonplace that, as many surveys quickly reveal, bike dread

becomes a fundamental barrier to behavior change and does a great deal to explain the

emphasis that the vehicular cycling movement has placed on cultivating attitudes of

confidence.

7.2 Summarizing the Chapters

How to deal with behavioral inertia is a key question for policymakers looking to

shift the everyday mobility habits of people in North American cities. In this dissertation, I

argue that how we think about overcoming the paralysis experienced by new riders can make

a crucial difference for advocates and planners. As they become bicyclists, people form

habits and routines through different kinds of personal or social interactions with their

environment, their equipment, or alongside groups of others with whom they share bonds.

The particularities of these processes display important differences that cannot be erased in

the name of education or safety, and coming to terms with the varieties of bicycling affect remains a significant problem for urban geography.

Understanding this problem requites attending to how individualistic and affective ontological models of behavior differently describe the subject. The individualistic model inscribes strict boundaries around human subjectivity, which is seen to be driven by internalized values and desires, and acts according to logics that emerge from a complex field of social relations: for example, language, culture, ethics, and memories. On the other hand, an affective model views the subject as a fluid concept emerging from out of a relationship between human and non-human bodies. Action is thus less a matter of individuals choosing to perform, but rises from the relationship between the body and its capacities, subjective memories, or the ever-changing built environment.

The difference between these two models of human action becomes important when bicycle planning and advocacy discussions embrace more constitutive roles that exceed the reflection of existing concerns. Without language that can compellingly describe the active relationship between the environment and new riders, concepts of choice cannot adequately describe how and why people ride bicycles in different ways. As described in Chapter Two, the dynamic engagement that occurs between the different kinds of bicycles, equipment-covered bodies, and the continually shifting idiosyncrasies of the street plays out in ways that can radically differ from person to person, and across space and time. For some people, bicycling can represent athleticism, avoidance, relaxation, caution, or any number of other emotions, each of which translates differently into one's actual capacity to move through the city. At this level, affect-based theories can provide a more tangible grasp on the relational dynamics of environment, subject, and social practices.

Yet even beyond its conceptual purchase, describing the differential affects of populations and practices can allow advocates and planners to come to terms with the multiple ways that advocacy and planning approaches participate in affective exclusions. These affective assumptions, across many different parts of the bicycling assemblage, have often been detrimental to the overall objectives of bicycle advocacy movements. For example, as outlined in Chapter Three, the history of bicycle practice and planning in North America can be described through its inclusionary and exclusionary assumptions. From its early proliferation as macho performance to the vehicular cycling debates in the 1970s and 80s, assumptions about gender, class, and athleticism of individual bodies have defined the bicycle advocacy community in ways that have limited its appeal to broader and more diverse populations.

While today's efforts to shift travel behavior, epitomized by the funding priorities of Minneapolis' NTP project, illustrate changing attitudes about policy and planning interventions, there is a lot of additional work that needs to be done to adequately take into account differentiated affect. The broad range of NTP projects, and particularly the insistence on experimental infrastructure, point to a frustration with the traditional framework of bicycle planning that dominated the last decades of the 20th century, based around the equivocal ideas of "enforcement, education, encouragement, and engineering." However, without understanding how and why different affective relationships come to exist around the bicycle in the first place, these experiments will likely continue to lack the ability to meaningfully shift behavior.

Affective difference emerges in multiple ways that differ depending on intricately related variables, including class, race, gender, age, cultural factors, and spatial geography. For example, as illustrated in Chapter Four, the variability and uncertainty of the existing

built environment forces bicyclists to respond differently to unequal spatial affordances. In contrast to the abstract representation of bicycling as a relatively uniform set of behaviors that follow a legalistic and vehicular framework, the spatial practices of bicycling thus vary widely and combine differently to form people's differentiated bicycling habits.

These practices, when combined and amplified with social interactions and bicycle cultures, reveal the distinctive patterns of bicycling that I describe in Chapter Five. Though limited by the small sample size, within the world of Twin Cities' bicycling, I argue that particularly strong affective circuits exist where bicycles, bodies, and urban spaces share distinct and unreconcilable affective characters. This taxonomy suggests how deeply the variations in affect can shape the seemingly homogeneous world of bicycling. For example, some bicyclists go out of their way to exert themselves, for example, detouring to ride up steep hills with the goal of physical exertion; others behave in opposite ways. Similar opposed affective relationships persist around things like being visible in the street, or acquiring technological expertise; for some bicyclists, these things are sought after, while others take great pains to avoid them. These affective differences mean that advocates and planners must rethink how they go about cultivating new riders in a diverse city.

Affective difference poses a problem for advocacy because most experienced bicyclists cannot help but make assumptions that about how, why, and where bicyclists ride. Advocates and planners invariably posit particular affective relationships as universal experiences that end up limiting the potential appeal of bicycle plans, so that seemingly positive bicycling interventions might run at counter purposes to their stated goals. Despite that fact that many bicycling advocates and planners seem to be growing more aware of the limiting potential of traditional planning practices, and often go out of their way to invoke the image of categories of "non-traditional" riders (e.g. women, people of color), there

remains a tension within these efforts between the comfort displayed by regular bicyclists and the emergence of new habits for the less experienced. As shown in Chapter Six, when compared to the previous decades of bicycle planning, over the past few years North American cities have done a great deal to destabilize these long-standing affective assumptions. Yet it remains difficult to overstate the gap between the affective relationships of the automobile and that of the bicycle.

For most people, bicycling in a city remains a terrifying proposition. Despite the oft-quoted truism that most North Americans both know how to ride a bicycle, and have one sitting in their garage, forming the habits required to overcome this gap remains a tremendous task. Even in a city like Minneapolis, where efforts to appeal to new riders were well-funded and explicitly aimed at broadening the types of affective appeal of the bicycling experience, growth of bicycling within a hegemonic automobile landscape has remained marginal.

As I have shown, the way in which bicycle advocates have struggled with encountering affective difference points to a few key lessons about affect, mobility, and urban planning. Studying the differential formation of bicycling affect, and the way in which the bicycling assemblage can foster different subjects, remains a crucial task for bicycle planning that takes seriously the costs and benefits of significantly changing mobility patterns in North American cities. Thinking more carefully about new riders is a fundamental task for achieving these long-held social goals.

7.3 Intervention in Mobility Discourse

Generally speaking, social science research around mobilities makes key interventions that disturb the idea of presence and absence, and what constitutes an actor

within a relational world. Yet the emphasis on broader flows of people, capital, or information tend to obscure how concrete material movements shape the rhythms that emerge in everyday life. In other words, just as national borders pose barriers for populations or migrations, during everyday bicycling journeys, freeways, dangerous intersections, badly designed bridges, or dark alleys serve as barriers for bicycling trips. Sometimes these are literal barriers of concrete and metal, but just as often these are emotional or psychological barriers that build their walls out of feelings of insecurity. These barriers interrupt everyday mobility patterns so that the ability to move becomes "punctured, disrupted or even curtailed by moments and periods of arhythmy" (Cresswell 2011 193). The key for a mobilities discourse that takes the built environment seriously is to view each of these barriers as potentially meaningful. In each case, capacity for action is diminished or expressed in particular ways so that, for bicycling just as for any landscape, technology, bodies, and built environments combine to create freedom to move.

As Aldred (2014) argues, the differential power to move that is often the focus of mobilities research is not often considered deeply enough within mobilities research. One key reason for this is that the technological and environmental landscape of city streets maps peculiarly onto traditional social hierarchies around class, race, and gender. One the one hand, when considered as human and non-human assemblages, the North American landscape of automobility is often separated from social distinction. Car ownership is at such a high level in the US and Canada that the race and class positions of drivers only enter into the picture when they are disrupted, as is commonly the case around police discrimination. Yet the vast majority of the time, the smooth spaces of roadways offer a form of mobility that can turn a blind eye to many deep social fissures.

On the other hand, within the bicycling community class, gender, race, and age play crucial roles to frame discourses and policy approaches for bicycling. In its attempts to critique what Amin and Thrift (2004) call "co-presence," meaning geographic communities based on face-to-face interactions, mobilities studies threaten to evacuate the conceptual power of assemblages that shape the affordances of the city. These kinds of relational capacities become more important when considering less goal-driven forms of urban mobility, particularly bicycling and walking, where bodies are inherently open to the surrounding environment. This fundamental relationality is one reason why mobile methods used in this dissertation project — the art of "observing people" and "following things" — reveals affective differences that are often invisible to traditional quantitative and qualitative research.

Yet mobilities research must also take care to avoid reifying mobility for its own sake. Particularly for bicycling and walking, movement often resists the binary logics that separate destinations and journeys, means and ends. Abstracting movement as a separate problem, as is commonplace within much transportation research, threatens to ignore the larger way that urban spaces create capacities for action. In other words, the fundamental character of urban spaces lies in in what they allow people to do. As Buscher and Urry (2011) describe, mobilities must consider how,

Movement, potential movement and blocked movement, as well as voluntary/temporary immobilities, practices of dwelling and 'nomadic' place-making are all viewed as constitutive of economic, social and political relations.

(4)

Thus cities are not reducible to movement, but rather to the differential capacities to act. Movement is not a means to an end, but a form of action in itself: a stress releasing stroll, a

mother being able to go to a store without a car, a 12-yr old playing in the park, or an 80-year old having the ability to maintain an active social life. Mobility is freedom-to and moving-to, and if these freedoms become ingrained within the rhythms of everyday life, mobility-as-movement *per se* can almost disappear into the rhythms of the everyday.

As I have demonstrated in this dissertation, bicycling offers an example within mobilities discourse that challenges many of these assumptions and breaks down conceptual distinctions between means and ends, movement and freedom, self and world. Particularly when thinking through problems of urban geography, mobilities research must take pains not to reify categories that undermine the foundational role that urban spaces have to produce freedom.

7.4 Intervention in Bicycle Planning Approaches

Over the last five to ten years, the bicycle has assumed a totemic quality in conversations about urban planning and economic development throughout North America. Bike lane projects and bike sharing systems have assumed a high profile in media and civic narratives, and have become the subject of seemingly limitless conference presentations. A number of key trends lie behind the current "bike boom": increasing energy costs, concern for the environment and climate, exercise goals, and cultural shifts toward more flexible urban lifestyles. Meanwhile, demographic trends toward smaller and older households have fueled narratives about economic growth in more walkable cities, particularly focused on downtowns. The intensity of efforts to boost bicycling in Minneapolis and (to a lesser extent) Saint Paul represent a likely outcome for cities across the continent as they react to these trends, particularly combined with the increasingly disaggregated regional and national transportation funding.

Yet these debates over how best to encourage urban non-motorized transportation often lack ways to describe the complex connections between individual behavior, collective cultures, and the urban environment. As problems surrounding new bicycle riders demonstrate, descriptions of how and why people make decisions remain committed to a methodological individualism that limits the importance of environment, specific designs, or the social dynamics of the shifting street. Policy makers lack the language to describe how place matters. Instead, the dominant epistemological framework treats the city as an abstract sum of inert material, spatial distance, and monetary value, so that encouraging bicycling becomes a relatively simple matter of bridging network gaps or providing information to help people overcome barriers to action.

As urban bicycling investment has intensified, many advocates and planners have struggled within this semantic vacuum to justify what they perceive to be important infrastructural elements of bicycle design. The variety of terminology for these newer treatments — protected bikeways, cycle tracks, bike boulevards, greenways, "bicycle superhighways", and more — point to the uncertain nature of claims about bicycle infrastructure design, and the importance of how bicycling investments are framed. For example, while debates over the difference between "safety" and "comfort" are now commonplace within advocacy circles, the organizational structures of city engineering, design, and funding processes remain epistemologically limited by current methods of quantification that fail to account for this key aspect of the bicycling experience. These kinds of reductive logics are structurally embedded within a system of accounting that reinforces existing patterns of automobility to an extent that greatly limits the ability of cities to change transportation outcomes.

These limitations matter because, on a bicycle, embeddedness within the environment makes it all but impossible to disconnect from the surrounding world. Without the protective shell of the automobile, the active attention of bike riding fosters a distinctive form of presence. Paying attention to the pavement in front of the wheel, and the cars continually emerging from the surrounding roads is just the beginning. On top of that level of conscious concern, the changing variety of the landscape crystallizes into a layer of detail whose routines begin to feel like a narrative. Even during the most monotonous commutes, small points of variation continually bring awareness back to the world: a change in the wind, the length of shadows in the hot summertime, the moon glinting through bare tree branches at night, falling leaves, a musician practicing an instrument nearby. While any transportation experience could offer similar difference and repetition, on a bicycle the elements achieve an almost intoxicating fullness of sensation, and offer degrees of difference only comparable to a stroll on foot.

Small details like these are often neglected in accounts of bicycling, and remain largely overlooked by planners attempting to shape mobility patterns; yet for the bicyclist, these details are primary. These kinds of relational moments — the feeling of a bicycle glove, a bike bell, an awkward encounter with a car, a ride with friends — together compose the world of affect, the assemblage of urban environment, perception, the body that is the primary experience of the ride.

As I have shown in this dissertation, for transportation planning to take seriously the role of affect, it must first begin to include these kinds of relationships within its modeling. The decision-making process is not a simply sum of cost, efficiency, and time; rather, the capacity for movement emerges out of a more complex assemblage of bodily capacities, individual technologies, memories, mental maps, and the specific details of the built

environment. Particularly for new bicycle riders, the decision to ride hinges on the complexities of affect: slippery streets in wintertime, knowledge of safe routes, changing wind or rain conditions, or technologically sophisticated bicycles, clothing, or equipment, among many other things. Yet the same kinds of factors can be equally important for someone walking to a bus stop or taking a train to work; rather than mere amenities, the details of the urban assemblage can be crucial to the formation of the particular affective conditions that provide freedom to move in different ways.

In this way, bicycling offers just one (particularly dynamic) example of how the concept of affect can reshape transportation planning. The kinds of problems, methods, and conclusions outlined here point to ways that geography can re-think the city and its patterns to begin to explain the persistent gaps between planning ideals and the unceasing patterns of everyday life. The key lesson is that meaningful transportation change cannot take place on the margins. Increasing the mode share of bicycling, walking, or transit will not occur simply because of cost or time variability. As this dissertation shows, planners must also consider how to shift the affective potentialities of urban space or risk remaining stuck in the rut of automobile dependence.

7.5 Greenway Affect

When compared to more seemingly concrete theories, the concepts that I have used in this dissertation are sometimes viewed as empty gestures, frames that lack critical purchase on real world problems. Given the broad claims of some theories of affect, perhaps this skepticism is warranted; for example, Thrift (2004) describes cities as:

Roiling maelstroms of affect [where] affects such as anger, fear, happiness and joy are continually on the boil, rising here, subsiding there, and these affects continually manifest themselves in events which can take place either at a grand scale or simply as a part of continuing everyday life.

(1)

The idea of a city as a roiling maelstrom might seem melodramatic to people who view the patterns of daily transportation as a repetitive and monotonous exercise. Yet for a bicyclist, Thrift's description rings true. Most bicycle trips have at least one encounter where the violence of automobility threatens to erupt. Every bicyclist has a story of a "near miss" where the dual register of affect, as emotion and somatic connection, manifests itself in ways that constrain people's abilities to move and thrive (Aldred 2014b). On the other side of the car window, the public space of the street comes to life with affect; as a calm ride through a neighborhood quickly boils into a hectic intersection and near miss experience, Thrift's dramatic description provides a language for the often silenced dynamism of the city.

Yet bicycling is not always an affective tumult. In Minneapolis, the Midtown Greenway has become synonymous with its claims to be "a bicycling city" largely because it dramatically shifts the affective landscape of bicycling away from these experiences of intense bodily threat. The Midtown Greenway is an old grade-separated rail corridor that runs through the heart of South Minneapolis. Approximately ten years ago, it was transformed into a bicycling and walking path that runs almost ten miles through Minneapolis, connecting the wealthy lakes area with the diverse central neighborhoods and the Mississippi River. Importantly, bicycling on the Greenway bypasses almost every potential encounter with car traffic, and the right-of-way is wide enough to accommodate different kinds of bicyclists riding at different speeds. These spatial affordances are the prime reason why, for almost every bicycling interview in this project, the Greenway served as a

backdrop for bicycling narratives: "Of course I love the Greenway," "I took the Greenway as far as I could," or "I wish Saint Paul had a Greenway."
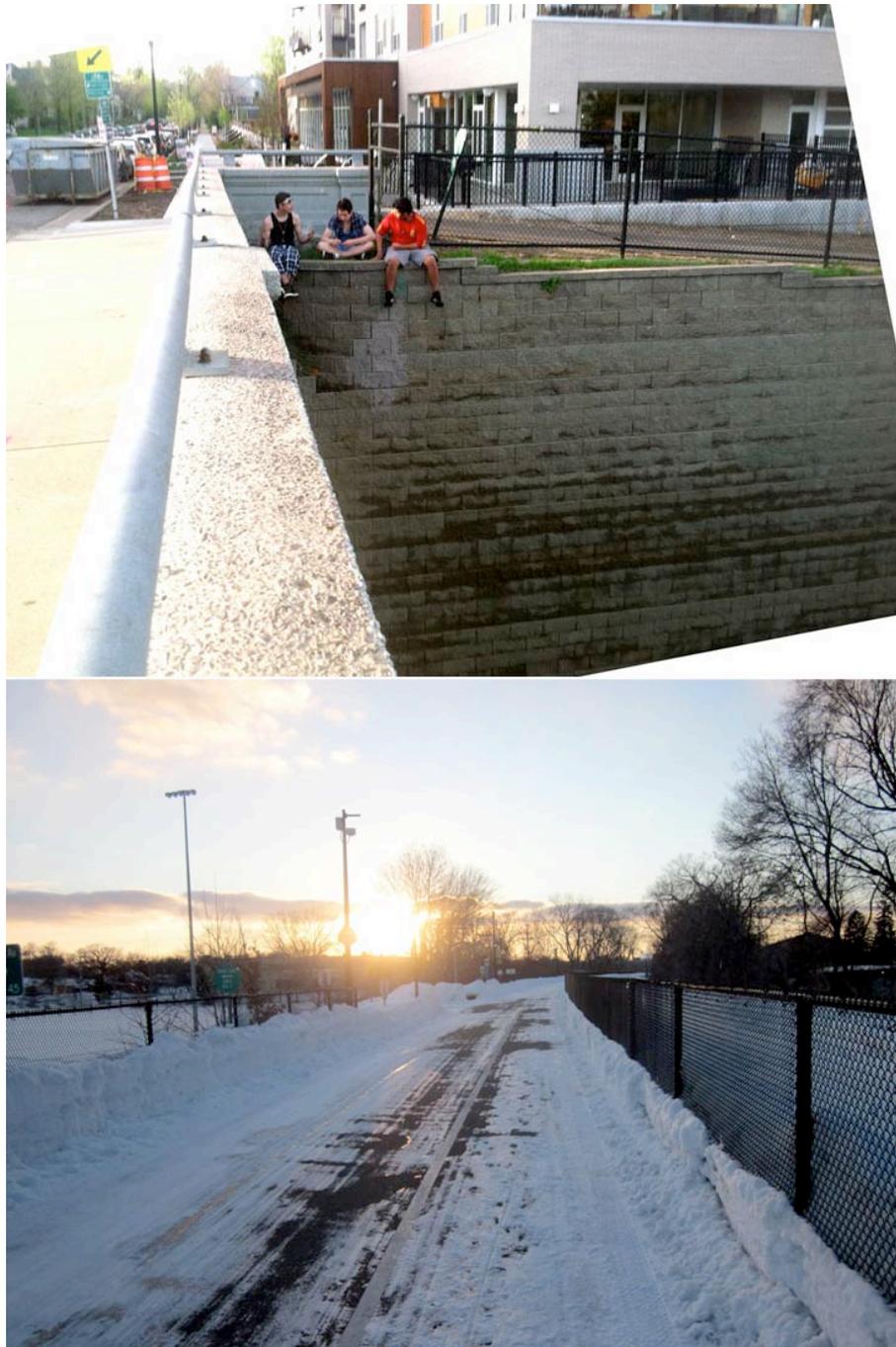

Figure 7.1 Two views of the Midtown Greenway.

This is not to say that the Greenway lacks affective difference; on the contrary, on any given summer's day, the space is alive with variety, from speeding athletic "roadies" to kids playing under the bridges to groups of young people riding bicycles out on the town to neighbors walking their dogs. (I have even seen Latina families harvesting berries from the shrubs along its edges.) Similarly, as Hoffmann (2013) describes, there have been contestations around Minneapolis' long-standing racial and economic inequities: for example, debates over graffiti or perceptions of safety, and sexual violence that has prompted nightly bike patrol safety rides. Affective dissonance remains alive and well on the Greenway, yet its dynamics are radically different from the spaces of the street, where the everyday speeds and violent intensities of the automobile system can often seem suffocating. In contrast, the openness of the Greenway to a flourishing of speeds and slownesses, activities and social connections, offers a space of rare relief that has catalyzed the growth of the bicycling community in Minneapolis.

In its diversity of affect, the Midtown Greenway serves as a paradoxical model for the bicycling city. In one way, the Greenway seems like a de-radicalized space where the politicized identities of bicycling have been largely erased, their intensities replaced by a relatively calm intermingling of bicycling communities all neatly separated from the social and economic centers of the city. When compared to a critical mass ride, anarchist punks high atop handmade tall bikes, or a fully equipped winter cyclist trekking through downtown, the smooth space of the Greenway can seem depoliticized. Here the once extreme act of bicycling has been normalized and brought within the liberal state, embraced by real estate developers, advocacy coalitions, and civic leaders alike around discourses of sustainability, economic growth, and public health.

238

Yet urban bicycling remains a radical act. For almost every bicyclist, and particularly for the kinds of new riders introduced in this dissertation, riding in Minneapolis involves overcoming a deep and justifiable fear of everyday automobile violence. Almost no practical journey can escape this omnipresent condition, and moving beyond bike dread remains a courageous practice for the still small number of people who can accomplish the feat. A truly radical approach to bicycle planning involves moving beyond the affective extremes of macho contestation, and cultivating spaces that can accommodate a critical mass in the physical sense, where the number of bicycles reaches a tipping point that shifts the affective capacities of the street and cultivates a broader set of freedoms throughout the city.

The bicycling city thus haunts the present day. Moments of release like Open Streets events or group rides offer glimpses into the potential of our streets as public spaces that might radically shift the potential actions and patterns of everyday life. The fact that, despite its popularity, no new spaces like the Greenway have yet been created in Minneapolis or Saint Paul only illustrates how deeply the system of automobility has rooted themselves within politics and patterns of our cities. Yet these exceptional moments and spaces reveal that another city is possible. The diversity of bicycling affect outlined in this project only points at the potential diversity of the bicycling city; once the affective limits of automobility are loosened, other possibilities might grow like so many wildflowers. I argue that realizing the bicycling city will require a better grasp of the inclusions and exclusions of affective difference, and a greater recognition of how bicycling habits can form around the diversity of subjects and societies that might become new riders. This goal might involve abandoning some of the affective assumptions that have accompanied bicycling within cities long saturated with cars, in exchange for a broader mandate that grapples with how deeply automobility has colonized the city. I am not arguing for an abandonment of bicycling

identity, but for a recognition of the massive potential that the bicycle offers to change our

cities, habits, and individual and social bodies in ways that remain difficult to imagine.

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