**Reassembling Urban Travel:
Mobilities, Neighbourhoods, and Off-Car Possibilities**

by

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ABSTRACT

Car dependence has become a systemic crisis for cities, tied to problems as diverse as gridlock, epidemic obesity and climate change. Yet, transport continues to be seen as an instrumental behaviour, isolated from other aspects of the city, thus obscuring the social, political and economic conditions of the car that stymie reform. In response to this narrow understanding, my thesis considers travel through a wide lens. It seeks to deepen our understanding of everyday mobility by examining its multifaceted relationship with urban space and the built environment.

My thesis engages with recent research on mobilities, Henri Lefebvre's work on the production of space, and actor-network theory. Building on these materials, I advance a conceptual approach called "neighbourhoods of mobility" that emphasizes the particular ways in which automobility, rail travel, and other mobilities interact with urban space through city planning and everyday practice. I use this conceptual approach to 1) explore mobility as it is co-constructed with the city as a network of urban flows and fixities, and 2) outline a critical politics of automobility that supports the expansion of urban rail transit, bicycle travel, and walking.

To examine historical and contemporary "neighbourhoods of mobility," I conduct a detailed case study of the National Capital Region. I use a mixed methods research design that proceeds in three stages. First, I trace the historical consolidation of mass automobility in southern Ontario as a dynamic and diverse network. Second, I examine recent attempts to curb car use through smart growth and the production of space for cycling and light rail transit. Third, I investigate how cities are re-imagining and forecasting future mobilities through urban intensification, even as recent moves by the Harper government threaten the scientific basis for long term planning.

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LIST OF ACRONYMS

ANT	Actor-Network Theory
BIA	Business Improvement Association
BRT	Bus Rapid Transit
CAA	Canadian Automobile Association
CBD	Central Business District
CN	Canadian National Railway
COD	Car-Oriented Development
DOTT	Downtown Transit Tunnel
LRT	Light Rail Transit
NCC	National Capital Commission
NCPS	National Capital Planning Service
OCP	Ottawa Cycling Plan
OER	Ottawa Electric Railway Company
OIC	Ottawa Improvement Commission
OMB	Ontario Municipal Board
ONS	Ottawa Neighbourhood Study
QEW	Queen Elizabeth Way
SPCO	Social Planning Council of Ottawa
TDM	Transportation Demand Management
TMP	Transportation Master Plan
TOD	Transit-Oriented Development

Chapter 1 – Introduction

Between “Neighbourhoods of Mobility”

Walking down Bank Street one afternoon in early fall, I watch the waves of commuters go by as they ripple out of the central business district towards Ottawa’s bedroom suburbs in the south. Through their cloudy wake I approach a border between two neighbourhoods. I am about to leave Old Ottawa South, an old streetcar suburb. Here, traffic tends to congregate and mix as people idle and flow between homes, stores, pubs and bus stops. I pass a busy coffee shop full of students, professionals and parents concerned with their laptops, lattes and kids. Bridgehead, aptly named, sits where a thriving tramway system used to arrive at its southern terminus. Outside the coffee shop a slow-moving elderly man feels comfortable enough to jaywalk, ducking between the parked cars that protect pedestrians from two middle lanes of internal combustion. While crossing a side street and a bike lane, I near an Anglican church with a daycare, and the subtle clicks and whirs of cyclists and staccato calls of children playing outside join the chorus of traffic. Finally, I climb up a gentle slope onto Billings Bridge and hover above the Rideau River. This 180 year old right of way currently caters to cars, trucks and SUVs, but not exclusively (see Figure 1). Behind a guard rail I watch as a mother towing her child in a bicycle chariot fearlessly squeezes by four lanes of automobiles. After visiting Billings Bridge many times, I have come to understand that this place is not an ordinary border between two neighbourhoods, at least in a geographical sense; it also marks an interruption of urban history. On Billings Bridge, there is a rupture in both space and time.

Figure 1: Billings Bridge

On the southern foot of the bridge I arrive at a busy intersection between Bank Street and Riverside Drive (see Figure 2). My nostrils fill with gas fumes. Across the road I see the fill-up pumps opposite a brownfield site where older pumps used to be. Car traffic is noticeably louder and heavier on this side of the river. The sidewalks shrink and utility poles sprout up though their slabs like invincible weeds, making the sidewalks even smaller. At the same time, the lane alongside the curb no longer provides a barrier of parked cars. It has become a river of fast moving steel from which my body instinctively recoils. On my right, opposite an office building and several residential towers, a shopping mall sits far back from the road in a large parking lot.

Figure 2: Billings Bridge, Old Ottawa South (right), and Riverside Drive (left) (photo Tom Alfoldi)

A confused cyclist tries to leave the lot. Discovering no way to turn left on Bank Street short of climbing a concrete median, he opts to ride on the sidewalk. On the same median another elderly jaywalker seems stranded. I start to wonder if by walking across a mere 100m bridge I have entered a new order of urban experience. But what, exactly, has changed? The differences between the neighbourhoods on either side of the river are as stark as they are fluid and socially complex. They certainly do not lend to easy judgements between “good” and “bad” kinds of urban space. In fact, both neighbourhoods have high densities and a diverse mixture of land uses, foundational elements for vibrant city life according to Jane Jacobs (1961). These spatial qualities are exactly what the City of Ottawa hopes to exploit in its bid, as enshrined in its Transportation Master Plan (2003), to expand cycling, walking and transit use. The mall even

offers access to an extensive bus rapid transit system (BRT). What becomes clear after crossing Billings Bridge, however, is that the conditions of movement have changed. In a nonlinear manner, the city starts to favour the movement of car drivers in ways that make walking and cycling physically difficult, less productive and dangerous.

This distinctive border crossing on Bank Street is played out many times, not only elsewhere in Ottawa but on the edges of urban cores across Canada. Core city neighbourhoods, including streetcar suburbs, stand apart from postwar automobile suburbs, not always in a clean and crisp manner like in my example of Billings Bridge, but clearly enough to make a powerful difference to city life. This may seem like a difficult distinction to draw, much less generalize. Does it not ignore the social complexity and diversity that characterizes urban life *within* core neighbourhoods and *within* the suburbs? For example, uneven forces of gentrification and exclusive condo development increasingly stratify the inner city, closely juxtaposing rich and poor. As affluence clusters in some areas downtown, often around good rail transit connections, deep-seated poverty characterizes other neighbourhoods, often on the margins in the form of dilapidated and overcrowded housing projects (Hulchanski 2007). The suburbs, moreover, are also economically and socially diverse, and much more complicated than old notions of “white flight” suggest. For example, many immigrants who come to Canada see a car and a new house in the suburbs not only as a symbol of wealth and status but as a way to fit into the wider collective. Some satellite communities where non-Anglo European groups have become dominant suggest to some the rise of ethnic suburbs. My aim here is to not reduce this social complexity *within* either core neighbourhoods or postwar suburbs. My aim, rather, is to explore the question: what kinds of social complexity exists *between* urban and suburban space? While

reading across urban neighbourhoods and the postwar suburbs, the social complexities of city life, I argue, become wrapped up in a fundamental way with everyday movement and mobility. Placed within a sociological perspective, movement offers a valuable tool for understanding the city, including some of the most pressing social challenges facing urban Canada. I will help develop this movement-based approach to the city by exploring “neighbourhoods of mobility,” an analytical concept I define below.

My thesis is situated in the study of mobilities, an interdisciplinary field that draws on sociology, urban studies, geography and planning. Over the last decade research on the movement of people, goods and ideas has enjoyed increasing attention, what some authors call the “mobility turn” (Hannam et al. 2006). A growing literature on mobilities explores how movement mediates social life and the creation of meaningful spaces in which people live together (Urry 2007; Cresswell 2006). The “mobilities paradigm” includes “studies of corporeal movement, transportation and communications infrastructures, capitalist spatial restructuring, migration and immigration, citizenship and transnationalism, and tourism and travel” (Hannam et al. 2006: 9-10). These studies have two things in common. First, they examine the proliferation of mobilities, exploring how interdependent institutions and novel sociotechnical networks, from currency markets and exurban commutes to mobile social networking, bring individual biographies increasingly into contact with global flows of people, products and information. Second, mobility studies just as importantly form a response to dominant conceptions of movement. In particular, mobility contrasts with conceptions in transport geography and engineering geared towards maximizing the economic efficiency and productivity of movement. Tim Cresswell usefully distinguishes mobility from movement as one might

distinguish place from location: “It is produced and given meaning within relations of power” (Cresswell 2001: 20). A concept of mobility as socially contextualized movement shaped by systemically unequal power relations can further a critical understanding of difference in urban space. However, it cannot do so as an abstraction without application to a particular environment. I will apply the concept of mobility in the Canadian context, where four out of five Canadians reside in an “urban” setting (broadly defined), whose sprawling features, generally speaking, apply to the United States as well. In the next section, while providing a few details about this context, I outline the central goal of my thesis and the motivation behind it.

The Politics of Mobility

Canadians rely heavily on automobiles for everyday travel; it is hardly an exaggeration to say that the car¹ constitutes the context of Canadian mobility. Like the United States, with which it is densely interconnected, Canada maintains an extensive “system of automobility” (Urry 2004). Automobility refers to the web of social, technical and spatial relations which sustain the widespread, we might say hegemonic, practice of car driving, and forms a salient category of analysis in research on mobilities (Dennis and Urry 2009; Conley and McLaren 2009; Paterson 2007; Sheller and Urry 2000; Bohm et al. 2004). According to this research, a heterogeneous set of factors, including culture, consumer capitalism and urban planning, reinforce a daily ritual: turn a key, spark an engine, share the road. Canada has a lot of road to go around – 900,000 kilometres – enough to circle the globe 22 times (Transport Canada 2010). In fact, Canada

¹ I use “car” as shorthand to refer to all enclosed and motorized passenger vehicles, including cars, trucks and SUVs.

maintains more kilometres of road per person than anywhere else in the world, a network 25% greater than the United States, twice as great as France, and almost four times as great as Great Britain (Forman et al. 2003: 34-36). It is curious then that Canada remains a relatively neglected site in the literature on automobility. While Canada's enormous landmass partly accounts for the nation's extensive road network, so does an abiding commitment to the expansion of motor vehicle travel. According to Statistics Canada, approximately 86% of Canadians use a car for all or part of their commute between home and work. Public transit is much less common (12%), and walking and cycling, which appear to be in long term decline, even less so (11%) (Turcotte 2005: 8). And car dependence goes well beyond getting to work and back. About three out of four Canadians use a car to reach most or all of their daily destinations (Turcotte 2008: 22).

The dominance of the car in urban Canada over other, more sustainable forms of mobility is as much a political as it is a technological or economic issue. The way that car travel is constructed has direct implications for walking, cycling, bus-riding and rail travel in the city. These different modes are co-constructed and *relational*: the mobility of some actors always requires, in relative terms, the immobility of others, which effectively is to say that movement has a context (Adey 2006: 86). The high levels of urban mobility enjoyed by car drivers in Canada depends on a social and spatial system that, broadly speaking, marginalizes pedestrians, cyclists and transit-users. This occurs in direct ways where highway law, traffic control devices, transport economics, deeply held cultural expectations, and not least routinized violence towards pedestrians and cyclists allow motorists to monopolize urban rights of way (Short and Pinet-Peralta 2010). However, the indirect manner by which automobility immobilizes those without cars through urban form and planning is equally important to consider (Ewing and Cervero

2010). By facilitating extensive separation between work, home and leisure activities, automobility has figured centrally in concerted efforts by public institutions and scientific authorities to design a built environment in which no other option for daily travel exists but the private automobile. As Mimi Sheller and John Urry argue, in a seminal article, in the twentieth century automobility undermined the “taskscape” that allowed self-propelled and public forms of transportation to offer speed, autonomy and flexibility: “the predominance of the car in government policy and planning afforded seamless car journeys while breaking down those linkages that once made other forms of transport possible” (2000: 746).

A central goal of my thesis is to elaborate a *critical politics of mobility*. According to Mark Simpson, a politics of mobility describes “the contestatory processes that produce different forms of movement, and that invest these forms with social value, cultural purchase, and discriminatory power” (2005: xiii-xiv). For Cresswell, it must include an “awareness of the mobilities of the past” and must also “constantly consider the politics of obduracy, fixity, and friction” (2010: 28-9). In line with these definitions, I elaborate how car driving has over time become invested with social, political and material power, with power viewed in a distributed, relational sense. I am not concerned with a particular field of power, so much as the way the car cuts across multiple fields, generating new forms of fixity as well as flow. Mobilities, whether “mobile phones, cars, aircraft, trains, and computer connections, all presume overlapping, and varied time-space immobilities,” or what Urry calls “moorings” (2003: 125). The idea of moorings suggests that, like the intersecting flows of people in traffic, the material infrastructures on which these flows depend gain meaning in relation to one another. This relationality bears directly on, for example, the design of alternative mobilities such as cycling. As Peter Frank

Peters puts it, “because speeds are relational, designing a passage for the bicycle must also always mean designing a passage for the car” (2006: 153). Alternative forms of everyday travel offer an obvious, cost-effective way to address looming health and environmental crises in western society – as the Netherlands and Denmark found out in the 1970s, and as Canada is only starting to discover. A central purpose for a *critical* politics of mobility, therefore, lies in the expansion of active and sustainable mobilities such as cycling, walking and public rail transit.

The expansion of sustainable mobilities is important for two reasons. The first reason is because as it is currently deployed in North America (but increasingly elsewhere, notably India, China and South America), the automobile constitutes a growing threat to public health (Frumkin et al. 2004). This is not to say that automobiles do not correlate with high standards of living. For those who can afford to use it, the car offers an easy and private form of year-round mobility. As a result, it helps maintain connections between distanced families and creates new forms of company and community (Best 2006; Redshaw 2008). Conversely, curtailed car use, whether because of age, disability, criminal activity or the price of gas, reduces mobility in both the social and physical sense of the word. This is especially true in North America, where “welfare and welfare-to-work policies favour those people who have cars, despite the reality that the poor and jobless are the least likely to own an automobile,” and “upward mobility” is effectively tied to automobility (Sterne 2003: 385; Ehrenreich 2001). The costs of automobility, however, extend beyond the sociospatial exclusion of people without cars. Obesity, with its associated risks of diabetes, hypertension, heart disease and some forms of cancer, increases in car-dependent environments that discourage routine walking, cycling and outdoor play (Bray et al. 2005). Obviously these conditions have an enormous impact on health care and public funds in Canada.

The noxious particulates that pour out of the world's billion-plus motor vehicles, furthermore, wreak havoc with cardiac and pulmonary health (Brugge et al. 2007). Finally, road crashes and traffic injuries pose a leading cause of violent human death. According to a comprehensive report by the World Health Organization, car crashes kill 3000 people every day, 1.2 million every year, and produce an immense social and financial burden, not only for national economies, but also for the households and social networks of every person killed or disabled by a road collision (Peden et al. 2004).

The second compelling reason to expand sustainable mobilities lies in the detrimental effect that widespread car-dependence has on ecology and the environment (with which human health, needless to say, is closely related). The infrastructural “moorings” of automobility, including freeways, arterial highways, collector roads, street lighting, parking lots, strip malls, suburban sprawl, oil pipelines, gasoline refineries, fill-up stations, etc., collectively take a heavy toll on natural ecosystems. This occurs in obvious ways, such as the removal of forests and wetlands, but also through more subtle means. A highway affects a natural area much larger than itself, for example, by severing migration corridors. Wildlife mortality on roads, for which systematic record-keeping is nonexistent, represents a significant hazard for some species, although the effects of wildlife culverts and over/underpasses are still largely uncertain (Forman et al. 2003). In very few cases have species effectively adapted to road environments, although they exist. Urban raccoons, at least in Toronto, have learned to “live in small territories and avoid crossing major streets—which, given the risk of becoming road kill, is a key survival strategy (Baute 2011: n.p.). Like raccoons, when humans socialize with each other they tend to avoid crossing major streets (Grannis 1998). Perhaps more pernicious than roads and highways is the

sprawl enabled by highway-oriented development. This form of development replaces permeable terrain with an impermeable carpet of concrete and asphalt that traps heat and stymies the natural filtration of harmful chemicals. It is also relatively intensive in its use of resources such as water, oil, gas and electricity, and necessitates longer commutes with their associated carbon dioxide emissions (Frumkin et al. 2004: 131-134). Then of course there is the critical issue of climate change and heat-trapping greenhouse gases, to which transportation and the production of transportation fuel are significant causes (Sperling and Gordon 2009).

Confirming the false dichotomy between “society” and “nature” (Latour 2004), the heterogeneous health and environmental effects of automobility highlight the need for reform and a critical politics of mobility. However, three factors serve to confound a collective understanding of the need for reform. First, the ill effects of car-dependence and car-based development patterns are not borne equally by all social groups. They fall disproportionately on the shoulders of those who are least equipped to deal with them, especially low-income groups (and countries), children, the elderly and people with disabilities (Frumkin et al. 2004; Sheller and Urry 2000; Peden et al. 2004). Second, the environmental and health impacts of automobility are institutionally externalized and rarely paid for by consumers – imagine the outcry if we all woke up tomorrow and the cost of accidents and road maintenance was reflected in the price of gas! As Jim Conley and Arlene Tigar McLaren put it, “the benefits of automobile ownership and use largely accrue to individuals, while the costs of that consumption in the aggregate are borne by society at large” (2009: 3). Third, a powerful bloc of automobile manufacturers, oil and gas multinationals, engineering firms, construction companies, suburb developers and their political and juridical associates have long-term vested interests in increasing, not reducing car-

dependence. This “machinic complex” (Sheller and Urry 2000: 738) contains the potential to prolong and exacerbate the inequalities and externalities of automobility while undercutting the expansion of sustainable alternatives, which in turn may render liberal-democratic institutions and global markets less responsive to emerging public health and environmental crises. To be effective, a critical politics of mobility must therefore be able to respond to and counter the arguments put forward by this auto-industrial complex. In the next section, before moving on to the main goals of my thesis, I describe these arguments and present them as a motivating force and jumping off point for my research.

Reinventing the Wheel

The automobile is the most heavily marketed product in the world. Car advertisements, slick and imaginative, offer a window into the cultural logic of the car. This logic usually involves an exciting yet luxurious escape into unadulterated nature from the clogged cities in which most North Americans live (Conley 2009). This narrative is as old as mass advertising itself. Yet, car ads quickly respond to emerging social trends, including criticisms of automobility. For example, the contradictory presence of cyclists in a growing number of car ads (even filming them) may suggest a newfound willingness among car drivers to share the road with cyclists. But it arguably suggests something deeper as well about the efforts of the auto-industrial complex to structure the reform of automobility to meet the demands of future growth in car dependence. Periodically, the auto industry overhauls its messaging in response to challenging market conditions. This was the case after an economic downturn in 2008 hobbled North America’s automakers, triggering an

ad campaign promising change. A television commercial from General Motors – set to ominous and then exciting music alongside images of aggressive and heroic American icons – captures the tone:

Let's be completely honest. No company wants to go through this. But we're not witnessing the end of the American car. We're witnessing the rebirth of the American car. General Motors needs to start over in order to get stronger. ... Reinvention is the only way to fix this, and fix it we will. So here is what the new GM will be: fewer, stronger, brands; fewer, stronger, models; greater efficiencies, better fuel economy, and new technologies; leaner, greener, faster, smarter. This is not about going out of business; it's about getting down to business. Because the only chapter we're focused on, is chapter one. (General Motors 2009)

North America's integrated automotive industry has apparently been "born again." Usually applied to the evangelical Christian community, to be born again means to go through an intense, deep-seated conversion from a previous form or a radical break with the past, usually in response to a crisis of identity. Eager to display contrition and renounce the errant practices which compromised their solvency (e.g. expanding consumer markets for military inspired, gas-voracious SUVs), major automakers have pledged unprecedented transformation, nothing less than the "rebirth of the American car." Apparently, given that Detroit's "Big Three" are once again profitable (although in Chrysler's case as part of Fiat), the message may have been convincing. As it stands, more than two billion motor vehicles, at least half of them cars, appear set to inhabit the global built environment by 2020, and key indicators of car-dependence (e.g. growth in vehicle-kilometres-driven) have been robust for decades in North America (Sperling and Gordon 2009; Sinha 2003). North American car companies may have been "saved" in a financial sense. Market failure, unfortunately, represents only one order of crisis facing the auto-industrial complex, and good reasons remain to reinvent automobility.

The rebirth of North America's automotive industry and self-styled conversion to leaner, greener vehicles relies on a problematic conception of technological change, which I will call "born-again automobility." This conception figures prominently in corporate advertising but cuts across a variety of other sectors, government and academic, forming a grainy horizon of reform with three distinguishing features. First, born-again automobility characterizes the modification of car travel as a sharp, nonlinear break from past practice. On the commercial level we have witnessed what "the new GM will be" and the supposed redemption of corporate citizenship. More critically, sociological analysis has also argued that automobility may, like the climate has in the past, suddenly and radically change across "tipping points" such as advanced car-body materials, revolutionary vehicle fuels, software-architecture for "adaptable learning autocars," and reflexive road schemes (Dennis and Urry 2009a). Second, born-again automobility seeks to translate certain elements of modernism into public policy. The Canadian, American and Ontarian governments, seeking to justify the recent multibillion dollar bailout of the automotive sector and an economic stimulus package characterized by extensive investment in highway and road-related infrastructure, appealed to economic growth, increasing consumption and technological innovation. Although notably lacking plans for a new kind of city, the bailout and stimulus package illustrate a muscular optimism in "science and technical progress, the expansion of production, the growing satisfaction of human needs," and "the mastery of nature (including human nature)" (Scott 1998: 4). This mastery of human nature involves the redistribution, and in some cases removal, of human control through technology.

The third, and perhaps preeminent, quality of born-again automobility is investment in technological solutions. Technical fixes take on different forms that, like conceptions of

nonlinear change, vary in their degree of complexity. While the airbag was introduced in the 1970s as a way to minimize human error and to potentially avoid politically unpopular mandatory seat-belt laws (Wetmore 2009), advanced vehicle design is today touted as a way to “injury-proof” driving environments. As MacGregor observes:

Equipping motor vehicles with occupant crash protection devices, and other vehicle design innovations allowed the United States (and likely Canada as well), to overcome the tension between safety and an increasingly adverse automotive environment (such as higher speeds, cell phone use while driving, and vehicle crash incompatibility and increased roll-over risk associated with the rise of the SUV). (MacGregor 2009: 103)

Recent design innovations include improved crumple zones, side impact defenses and anti-rollover (static stability) technology (Robertson 2007); “smart cars” nested within “intelligent transport systems” (Dennis and Urry 2009a); GPS risk assessments; pedestrian-friendly bumpers and soft, forgiving car-bodies. As a twenty-first century version of the airbag, “electronic stability control,” for some, marks the definitive object of a global “safety race” (MacGregor, 2009). For mechanical engineers and computer scientists taking a more futuristic approach, the focus should be on a “cognitive car,” or transforming the car into “a technological system which can perceive itself and its environment, as well as collect and structure information in an autonomous way,” such that it can then “*act* autonomously” (Heide and Henning 2006: 198) . While planned obsolescence ensures a steady, lucrative stream of car crash avoidance systems, an increasing number of industry and policy leaders have identified a deeper, structural fix in fuel efficiency, natural gas and electric drive technology. In contrast to fuel taxes and low-carbon fuel mandates, “fuel efficiency” enjoys broad political and generational appeal in the U.S. and Canada, and for some presents a technological panacea. In a recent study endorsed by California’s former governor, Arnold Schwarzenegger, for example, two prominent

transportation experts envision humanity “driving toward sustainability in two billion cars,” not by rethinking city design, land use issues or consumption levels, but by altering the way people power existing systems of automobility (Sperling and Gordon 2009). This narrow conception of reform based on abrupt, technical fixes may define a dynamic role for technology but it ignores many factors that entrench car dependence in North America.

The sociology of automobility, an increasingly prominent stream of mobility research, points to a variety of actors “left behind” by corporate strategies and public policies that emphasize pseudo-modernist technical fixes. Looking “beyond the car” (Zielinski and Laird 1995), mobilities research argues that besides technical systems, narrowly defined, a diverse set of political, cultural and economic relations also constitute automobility and would therefore require modification were North Americans to transform the primary way in which they travel together. Such research, therefore, can directly support a politics of mobility that is critical of born-again automobility (Henderson 2009). To do so, however, the “mobilities paradigm” has to be flexible. It must avoid hardening the different registers and scales at which the automobile is constructed as an object of analysis, and instead highlight the “hybrid” nature of car driving (Thrift 2004; Dant 2004; Beckman 2001). Moreover, mobility studies must attend equally to the changing nature of flows in the city as the fixities on which these flows depend. That is, it should avoid emphasizing the fluid, portable and itinerant in late modern life at the expense of the rigid, fixed and obdurate (Hommels 2008). Prevailing metaphors and ways of imagining mobility, “rhizomes” for example, have a way of valorizing a sense of expanding flow (Cresswell 2006). Finally, mobilities must consider not only how drivers and passengers inhabit or “dwell” in the car (Urry 2006), but also consider how the car–driver hybrid inhabits the city and the

neighbourhood. These directions for the analysis of mobilities will be elaborated later on as a justification for engaging mobilities research with new theoretical perspectives.

Mobility and Space, a Dynamic Relationship

To develop an alternative approach to reforming how people move together, and one which acknowledges the social and technical complexity of movement, I will examine the dynamic and open-ended relationship between mobility and urban space. By foregrounding this relationship my thesis has three interlocking goals:

1. to further the study of mobility as it is co-constructed with space by using a relational, flexible concept of everyday travel defined by overlapping urban fixities and flows;
2. to develop a critical, historically situated politics of automobility that supports the expansion of cycling, walking, and train travel and the intensification of urban space;
3. to flesh out contours of a Canadian politics of mobility through the examination of urban planning practices and policies in the National Capital Region.

To advance these goals as a concerted response to the limitations of born-again automobility, I will conceptualize the relationship between movement and space through the notion of “neighbourhoods of mobility.” Neighbourhood offers an intuitive level of analysis that has the

potential to bring out salient environmental conditions and social contexts of urban mobility, as I suggested in the introduction during my walk over Billings Bridge. Before specifying neighbourhoods of mobility as the central conceptual contribution of this thesis, it is important to note that neighbourhood brings a somewhat unfamiliar perspective to bear on the study of everyday travel and transportation.

Neighbourhood does not figure prominently among the theoretical concepts that usually counterpose notions of movement and flow in the “relational politics of (im)mobilities” (Adey 2006). Several concepts have been used to describe the fixities “that enable the fluidities of liquid modernity, especially of capital” (Hannam et al. 2006: 3). They include “moorings,” which Urry argues relate in a dialectical way to mobilities (2003), and David Bissell’s animate depiction of “waiting” and “stillness” (2007). Also relevant is Cresswell’s discussion of “sedentarism” as a characterization of mobility and certain mobile populations (nomads, gypsies) as pathological (2006). Insofar as it does contrast mobility, neighbourhood may signify an outmoded or misplaced sense of face-to-face social ties, a “thick” sociality uprooted by translocal flows. Nostalgia over lost (or imagined) niches of “authentic community,” for example, informs communitarian appeals to civic virtue (Kymlicka 2001), even as sites of “local community” are made responsible for maintaining sufficient social capital to alleviate poverty and control crime (Amin 2005). Moreover, when not perceived as an antidote to anomie, apathy or problems of the welfare state, neighbourhood has been construed as a crucible for social problems. A growing quantitative literature on “neighbourhood effects” examines neighbourhood-level processes affecting individual-level problem behaviors and health outcomes (Sampson et al. 2002). Problematically, this literature sometimes reinforces the view that

neighbourhood effects occur primarily in poor, racialized “slums” where a critical mass of broken windows and petty crime leads to socioeconomic exclusion (Nelson 2008). In contrast to these representations, my account will take pains to avoid essentializing or idealizing neighbourhood qualities and differences.

I define neighbourhoods of mobility as *urban complexes of social and architectural conditions that over time work to facilitate some ways of moving in the city while stymying others*. These conditions are inevitably mutable, and I emphasize their spatial and temporal plurality. Over time, uneven interactions between everyday travel and the built environment create different neighbourhoods of mobility. Neighbourhood has two distinct meanings here. The first meaning refers to the fact that as a conventional planning unit and source of local identity, neighbourhoods are significantly impacted by traffic and travel patterns. That is, mobilities shape the “street neighbourhood” (Jacobs 1961), or socially distinctive clusters of residential, commercial or other activity. Street neighbourhoods are usually demarcated in some topographical manner by rivers, arterial highways, train tracks, etc., and generally accommodate a mixture of mobility types. The second meaning of neighbourhoods of mobility expands on this first sense by encompassing an assemblage of street neighbourhoods and other spaces that tends to promote one particular kind of mobility. In this understanding neighbourhood becomes a metaphor for local “regions” of the city where urban form and other factors support cycling, or car driving, or transit, or walking. Because different mobilities require different kinds of space, the expansion of city space generally has uneven consequences for everyday travel. In the process of interacting with the built environment, different mobilities become associated with different patterns of urban growth (“transit oriented development,” “car-oriented development,”

“pedestrian-oriented development”). For example, the early twentieth century suburbs through which streetcars once traversed share distinctive “rhythms” and spatial formations; today they project the presence of rails that have long been erased by asphalt and concrete (Doucet 2007). Neighbourhoods of mobility in this second sense overlap with each other in interesting ways. For instance, streetcar suburbs tend to be generous and compelling to cyclists and pedestrians, but frustrating for motorists who have become accustomed to using freeway and arterial highway infrastructure.

Taken together, these two aspects of neighbourhoods of mobility raises two important questions for urban policy in Canada. How have “neighbourhoods of automobility” come to eclipse neighbourhoods that support alternative, more sustainable mobilities? How has car-dependence become a *de facto* and *de jure* condition of the suburbs in the last sixty years? There are no easy answers to these questions. According to neighbourhoods of mobility as I have defined it, while the built environment plays a significant role in delimiting possibilities for movement, travel patterns are not predetermined by space. Rather, mobility and neighbourhood interact, they build off one another in dynamic ways that inevitably end up favouring the passage of particular kinds of actors. This can be seen in the way that mobility systems both structure and are structured by urban space. For example, rail relies on density, meaning that cities undercut the feasibility for light rail systems by propagating sprawl; however, at the same time, by building rail, cities can stimulate relatively dense development. Because of the inherent dynamism that characterizes space–mobility relations, it is necessary to examine sociotechnical change over different geographical scales, time periods and technological contexts. To this end, chapters three, four and five each apply a distinctive temporal and spatial lens to analyze

neighbourhoods of mobility in the Canadian context. Throughout this analysis I periodically identify particular street neighbourhoods and discuss how they are impacted by translocal patterns of traffic. What further distinguishes each chapter, in addition to spatio-temporal context, is the manner in which I characterize neighbourhoods of mobility in the second sense of a regional assemblage of multiple street neighbourhoods.

In chapter three, *Assembling Urban Car Travel*, I apply actor-network theory or “ANT” (Latour 2008) to understand the emergence and consolidation of automobility. Here, neighbourhoods of mobility are elaborated as networks made up of a heterogeneous set of elements. The core strength of ANT lies in its capacity to analyze networks that feature many kinds of “actants” or actors that have been traditionally excluded from sociological accounts, including nonhuman objects and material infrastructures that facilitate the daily production of automobility. Although ANT has only recently entered mobilities research, it brings a powerful toolkit to the study of everyday urban travel (Fariás & Bender 2010; Rutland and Aylett 2008; Latour 1996). I use this toolkit in the case of twentieth century efforts in the National Capital Region, as well as a few examples in southern Ontario more broadly, to reassemble pre-automobile space through everyday car driving. “Assembling” refers to a level of analysis described by Bruno Latour and developed by ANT that moves beyond deconstruction and dispersion of pre-existing relations to the re-association and reconstruction of spatial order and reality (2007). My conceptual and analytical contribution in chapter three is developed through a novel application of ANT and the identification of two competing regional assemblages of space and mobility, what I call the “park road” and the “machine road.”

In chapter four, *The Production of New Urban Space*, I draw on a complementary approach defined by Henri Lefebvre's work on the production of space (1991). I use this approach to examine current efforts in the twenty-first century to begin reassembling the city through alternative mobilities and emerging planning principles associated with smart growth. Here, neighbourhoods of mobility are elaborated as a dialectic production of conceptual space and material terrain. The strength of a Lefebvrian approach is that it highlights the political construction of neighbourhood differences and spatial manifestation of systemically unequal power relations. I use this approach to examine efforts over the last decade in Ottawa to map out an open, shared space for automobility and build up an urban capacity for cycling and train travel. In addition to elucidating the political struggle to produce a wider plurality of mobility options, chapter four builds on existing research by outlining a central element in emerging neighbourhoods of mobility, what I call the "new urban road."

Lastly in chapter five, *Aspirational Space and the Intensification of Urban Life*, I use a synthetic approach that combines the concern with heterogeneity of ANT with the attention to power of Lefebvre. With this synthetic approach I examine how future neighbourhoods of mobility are being re-imagined, projected and forecasted in Ottawa, and in Ontario more generally, through urban intensification and urban containment. As part of this analysis, I consider how the recent decision taken by the federal Conservative government to downsize the Canadian census may undermine a critical tool for long term city planning.

The conceptual resources that I draw on in my analyses provide more guidance than a theoretical framework. Both Lefebvre's production of space and ANT make epistemological and ontological assumptions about what exists, how it can be made known, and why it might be

significant. Namely they are analytical strategies as well as theories about the world. As such, they would sit uneasily in this thesis as traditionally segregated servings of theory set apart from my analysis. Therefore, I engage Lefebvre's spatial theories and ANT on the go with respect to my empirical analysis, in a manner of sociological inquiry that might be described as "integrated knowledge production." Before embarking on this itinerary, in chapter two I elaborate on the methods and analytical tools I draw on for this integrated production. There I also describe my data sources, research sites – Ottawa, Ontario, and Canada – and the critical links between these sites that offer possibilities for contextual specification as well as generalization. Finally, in chapter six, I revisit born-again automobility as an incisive challenge for a critical politics of mobility, and reflect on how neighbourhoods of mobility can help mobilize this politics in practice and why such a politics matters.

Chapter 2 – Methods and Research Design

A study of the multifaceted relationship between everyday mobility and urban space demands a flexible research methodology. As laid out in the previous chapter, my thesis seeks to develop a spatially nuanced politics of mobility that accounts for neighbourhood level differences and serves to challenge the hegemonic status of the car in the city. This goal makes it necessary to move, analytically speaking, between the general and the particular, the variable and the constant, the novel and the long-established. While one method may be effective at illuminating one aspect of the relationship between mobility and space, another method may be more effective at elucidating other aspects. However, using multiple methods together, not only by

combining them but integrating them so their joint perspective amounts to more than the sum of each part, can produce a broadly textured account. This approach has been described as “mixed methods.” One of the great challenges of mixed methods is to balance the texture and complexity generated through multiple methods with the need for coherency and consistency. My strategy for achieving this balance is to use a narrative approach. As I detail in the first section below, instead of the usual understanding of methodological integration as “triangulation,” I rely on narratives of mobility and urban space. The purpose of these narratives is to trace theoretical development of the thesis as it progresses through a wide-ranging case study. I describe this case study in the second section, and provide a map. Finally, in the third section, I outline the historical, descriptive and interview data and methods I use in more detail.

Methodology: Mixed Methods with Narratives of Mobility and Space

Mixed methods forms the umbrella of my research design, and draws on a multidisciplinary methods literature. This literature (see Bryman 1988 for a good starting point) has been growing in recent years as sociologists, political scientists, educational scholars and others seek ways of leveraging the unique technical strengths of different methods within a single study or program of research (Morse and Niehaus 2009; Creswell and Clark 2007). Some refer to the growing ranks of mixed methodologists as the “third research community” (Teddie and Tashakkori 2009). A key factor that has enabled recent innovation and development in this community is “paradigm peace,” or a pragmatic uncoupling of social research methods from the philosophical positions to which they have been closely associated in the past, especially in the case of qualitative and

quantitative methods (Bryman 2006). By combining different kinds of research strategies, mixed methods designs do not necessarily aim to silence epistemological and ontological dilemmas, but instead focus on “triangulating” different perspectives to elucidate a common problem .

Triangulation, however, is in some ways a problematic mode of integrating different kinds of data or analysis,² especially in its early formulations. Traditionally, the process of triangulation has focused on validation, and in particular convergence between different data sources, research findings, or methods (Campbell and Fiske 1959). This process of training multiple vantage points on a single problem to gain a more accurate or complete understanding draws on the navigational practice of triangulation, in which bearings are taken on different landmarks to locate one’s position as coordinates on a map. Some scholars have recently criticized this geometric metaphor for continuing to perpetuate a narrow focus on validation-convergence. As Julia Brannen argues, “we cannot unproblematically assume that data from different methods will corroborate one another as is implied in the strategy of triangulation—that is where the choice of methods is intended to investigate a *single* social phenomenon from different vantage points” (2005: 176). On the other hand, as Hammersley has shown (2008), triangulation has also taken on postmodern forms concerned with producing divergent interpretations and dialogue between epistemological positions. Some of these postmodern versions of triangulation may be equally problematic for mixed methods research, insofar as they dispense altogether with the notion of validity-checking and goal of seeking complementary information to create a fuller picture of social phenomena. I argue it is important to strike a balance between 1) recognizing that research methods cannot validate absolute truths or produce

² Triangulation can refer to the integration or juxtaposition of different data, methods, or methodologies, and thus should not be conflated with mixed methods (i.e. triangulation can occur within methods).

a total and complete picture, and 2) recognizing that some level of validation is nevertheless important for social science, and “by drawing data from different sources that have very different potential threats to validity it is possible to reduce the chances of reaching false conclusions” (Hammersley 2008: n.p.).

Along with Brannen, I assume that mixed methods is more effective when researchers acknowledge the power of methods to mould and differentiate the phenomenon under study. If triangulation is to provide an effective investigative strategy for mixed methods, rather than distilling the universal essence of a problem, it must focus on using different vantage points to elaborate, corroborate, complement, and possibly contradict initial research questions and subsequent findings (Brannen 2005). Recently, however, there has been a shift in thinking about triangulation, in line with post-positivist ideas about the provisional and situated nature of social research, that suggests it can accommodate these various non-convergent possibilities. As Ma and Norwich argue, there has been a move away from a “procedural concept of triangulation,” as validation-convergence strategy, “to one that highlights the contribution of philosophical and theoretical differences behind methods in an empirical endeavour” (2007: 212). Such a post-positivist notion of triangulation can be productive for mixed methods research that reads across qualitative and quantitative methods while also acknowledging their underlying epistemological tensions. Still, it remains unclear how the triangulation of messy, non-convergent outcomes can avoid incoherence, or of creating a kind of “cognitive dissonance” in readers by juxtaposing possibly incommensurable assumptions and evidence. To address this issue, I rely on a *theoretically-driven* strategy of selecting different sources of data and reading across methods, or what I call a *narrative approach to triangulation*. A narrative approach to triangulation is defined

by its post-positivist orientation, and builds upon a methodological approach that uses theoretically-informed arguments, rather than technical procedures, to link up, or move between, levels of analysis and the different lenses offered by particular data and methods (Irwin 2008).

A narrative approach to triangulation deploys elements of stories and story-telling to weave a disparate group of actors and settings together in a theoretically meaningful way. What distinguishes narrative, or narrativity, from stories and chronicles, and what makes narrative relevant for sociological analysis, is its inclusion of ontological connections and emphasis on continually linking individual stories and story-tellers to the sociocultural and technological contexts in which they find themselves (Moen 2006). Two salient aspects arise from this notion of narrativity. First, a narrative approach necessarily considers a problem at multiple levels of analysis, focusing on social agents and practices as well as the relational settings (institutions, organizations, markets, etc.) that condition action. As a voice who not only moves but arbitrates between different levels of analysis, I constitute an important narrator, whose concern lies with framing and qualifying this narrative as a sociologically persuasive account of mobility and urban space that provides insight into neighbourhoods of mobility. However, effective narratives are ones that make space for the stories of others to be told, a point I return to below in relation to narratives of city planning. Thus, other important narrators make their way into this account, notably expert planners, as interviewees; marginalized authors of the city, namely the pedestrian, cyclist and public transit-user, as voiced jointly by planners who use these modes on a daily basis, secondary research, and myself in the role of a non-motorist; and, finally, streets themselves, whose voices I construct, again through a combination of materials (archival work, observation, images, expert accounts) as polyphonic authors of specific urban assemblages.

The second important aspect of narrativity relates to assumptions about the nature of the social world. Rather than seeking to represent knowledge in an authoritative or singular manner, and impose order on otherwise chaotic events, as Somers elaborates, “scholars are postulating something much more substantive about narrative: namely, that social life is itself storied and that narrative is an ontological condition of social life” (1994: 613-14). Somers’ notion of “ontological narrativity” (1994: 613) captures why narrative offers an effective mode of triangulation for mixed methods research. By refusing to allow epistemological criteria, or the context of justification, to overshadow discovery and issues of social ontology, narrative triangulation accounts for theoretically and philosophically important differences of method. Narrative integrates differences borne of observational, interview and textual sources of evidence, for example, by linking independent actors and historic events through “emplotment,” or the process of configuring a network of relationships. The overarching conceptual narrative which I am concerned with, as I have mentioned, pivots around neighbourhoods of mobility. My aim is to apply to spatial mobility the insight that Somers has convincingly applied to identity: “to make something understandable in the context of a narrative is to give it historicity and relationality” (1994: 617)

Narratives of mobility and urban space can draw on narrative approaches to urban planning (Eckstein and Throgmorton 2003; Jensen 2007). Planning is only one part of the process of producing space and mobility, a process which also includes everyday practice, but it forms a crucial part, pertaining to how communities try to anticipate and ultimately manage change. “Social agents,” as Jensen argues, “give voice to ideas of spatial change in the city by means of local narratives and stories nested within discourses” (2007: 218). As urban plans are

plotted and rehearsed, like all forms of story-telling, they draw boundaries around communities. As a result persuasive story-telling depends in part upon the ability of authors to tell the stories of others, or use voices which resonate across community fault lines. In a sense, as Eckstein (2003: 31) describes, planners authorize spaces for stories to be told, spaces which can be judged by how successfully they “conscript” strangers into dialogue. Planners, of course, are not the only kind of authors. For example, private developers, by attaching potent symbols of freedom, luxury and safety to new subdivisions, influence the distribution of transit services and traffic patterns. Therefore, while “the clanking semiotics of developmentese can be painful to consider,” as Rotella (2003: 101) notes, it helps construct “a fragmentary city of feeling from elements of the city of fact - a city of feeling that will, to the extent that buyers take notice, have a significant reflexive effect on the city of fact.” Municipal councillors, moreover, tied to parochial ward concerns about noise and congestion, also tell important stories about mobility.

However, professional planners comprise a particularly important group of authors who have powerful tools at their disposal with which to manipulate stories about mobility, which is why this group forms the focus of my interviews. By applying specialized definitions of “optimal road capacity,” “efficient service” and other technical concepts, planners put ideas about everyday mobility and dwelling into practice. As part of the praxis of city planning, moreover, planners come into direct contact with an important set of “readers” or audience of planning narratives, namely the actual people, locally situated as part of wider publics, whose lives are directly impacted by a particular plan. If narrators authorize spaces for telling stories, readers shape the production of urban mobility through their conscription into planning narratives. Since the mid-90s, much ink has been spilled on civic engagement and deliberative democracy.

However, despite academic interest and legislation formalizing public consultation, garnering active public involvement in planning remains a considerable challenge. This challenge is particularly acute at a normative level, where shared goals and objectives are negotiated, versus the implementation stage where details are ironed out. Transportation planning, for example, frequently relies on “open-house” style public meetings where professional consultants outline plans and demarcate a space for community concerns. In my experience of attending these meetings, planners managing intersection or road design studies will often present pleasing architectural images of planters and benches and ask the public where these objects should be placed in relation to images of happy pedestrians and cyclists. However, they frequently will have already made the decision to widen a road in order to improve the level of service, and suggestions by the public to lower the speed limit or increase the number of crosswalks will require vetting by a “technical advisory committee” of engineers concerned with minimizing “flow barriers.”³ A key test facing the enrollment of readers into new planning spaces, related, for example, to alternative mobilities, lies in how effectively planners can address and ultimately translate local neighbourhood concerns into urban reform.

Finally, although not easily separated from authors and readers, stories themselves also shape the production of mobility by connecting characters and manipulating time and space to create an arc of events. Spatial perspective provides a critical tool with which planning stories engender meaning. High modernist planners, for example, established a peculiar vantage point. Suffering from what Jan Gehl calls the “Brasilia syndrome,” “bird-shit architects” looked down on the city in order to impose a totalizing order, “planning from high above and dropping their

³ For example, this was the case for an ongoing study to redesign Bronson Avenue, a contested arterial highway in Ottawa that becomes a focus of analysis in chapter three.

things down” (<http://spacingvancouver.ca/2011/02/03/jan-gehl-cities-for-people/>). Obversely, a street planner concerned with the self-isolating effects of modernist superblocs might consider, looking horizontally, a hapless pedestrian’s point of view. Temporal perspective, too, provides significant fodder for narration. Suburban wetlands and old growth forests, for instance, have within short-term horizons been represented as economically viable locations for low density housing starts. Yet, within a longer term horizon the same space may appear ecologically indispensable in the form of a wetland and old growth forest. Along with perspective, spatial and temporal *scale* furnish additional tools to understand actors in stories about mobility. A planner-storyteller might consider the difference between a truck train, or long-combination vehicle, and a smaller scale lorry. The former, in addition to tormenting civil engineers by destroying paved surfaces, needs more time-space to stop than the lorry, in turn reducing possibilities for safe pedestrian crossings and creating long, self-isolating blocks.

In sum, planning narratives highlight relations between authors (e.g. planners), readers (e.g. publics) and stories as they evolve over time, playing with spatio-temporal perspective and scale. These narrative elements, as I deploy them, elaborate a post-positivist basis of triangulation in mixed methods analysis. They can be applied more generally to the problem of producing mobility and space, helping to elucidate an ontology, or what Somers calls a “conceptual narrativity” (1994: 620) of mobility–neighbourhood relations. In turn, narratives of mobility and urban space, as articulated by expert planners, alternative mobility users, and myself as a sociologist and participant in everyday traffic, can create a platform for a critical politics of mobility by linking actors, settings and events in ways that defamiliarize automobility.

While authors, readers and stories play an important role in city planning, it is their joint ability to make hegemonic spaces seem strange, including spaces associated with the car, that has the most to offer critical narratives of mobility and space. Compelling narratives effectively offer a cultural critique of everyday life. They challenge strategies of domination “that inure us to the status quo by effectively short-circuiting our ability to envisage and enact e ways of living” (Gardiner 2004: 244). I concur with Eckstein:

An effective story is that narrative which stands the habits of everyday life on their heads so that blood fills those brainy cavities with light. Such a story fully exploits the materials of [time and space], deliberately arranging them in unfamiliar ways so that they conscript readers who are willing to suspend their habits of being and come out in the open to engage in dialogue with strangers. (2003: 35-36)

Exactly what kind of post-car world might arise in North America remains less than pellucid. However, it is clear that challenging a culture of car-dependence in the present will require transforming a technological habitus (Sterne 2003), inculcated since childhood, which takes the car as a self-evident norm against which to imagine alternative mobilities. Defamiliarizing mundane highways, buildings and streets through the use of compelling narratives, which emphasize the active role of settings in which stories are told, constitutes a critical element of a politics of automobility, a politics that would ideally “prepare us for and produce ruptures in our quotidian lives” (Eckstein 2003: 25).

The capacity of narrative to defamiliarize mundane mobility and space – in contrast with more traditional forms of triangulation – is bolstered by its inclusion of nonhuman agencies. While the agency of nonhuman actors is categorically different from that of humans, in that people intentionally make choices and judgements, its effect is nevertheless similar. Non-humans, for example, including hard infrastructures, powerfully modify technological habitus,

possibly extending a generational forgetfulness by which ever-more car travel becomes a natural state of traffic. My analysis, therefore, seeks to expand on the general potential of mixed methods to unsettle taken for granted beliefs, by including the “voice” of nonhuman actors in narratives of mobility and urban space. As a concept, neighbourhoods of mobility rests on theories of space from ANT and Lefebvre which explicitly recognize the transformative impact that technologies, energy and materials have on space and society. To periodically accentuate the “voice” of one technical object, the street, I construct six vignettes, or brief portraits in which I engage briefly with the biography of a particular right of way in the capital region.⁴ My intention is not to anthropomorphize the street, or to impose on it a single authentic voice, but rather to show how the car has, through urban space, become systematically invested with material and symbolic forms of power denied to other agents of mobility.⁵ To strengthen a political narrative that contests the story of automobility as an inevitable outcome of technological progress, the six vignettes foreground mundane aspects of city streets that make the car seem strange, and highlight how different neighbourhoods of mobility have changed over time. Above all, these micro-narratives convey the persistent malleability of the built environment, foreshadowing the potential for sustainable alternatives to the car.

Ultimately, the six streets chronicled in the vignettes provide connective tissue for a larger case study of the National Capital Region, in which I also draw on other examples in southern Ontario. The order in which the street vignettes appear (as bookends to chapters four, five and six) reinforces integrated knowledge production, or the process of weaving together

⁴ These vignettes draw on material that has been published in *English Studies Canada*, 36.1 (2010), a special issue on the concept of “traffic,” with permission for further publication for research and educational purposes and depositing in an institutional repository.

⁵ While I would have liked to actively take on the first-person “voice” of these streets, I use a voice that still captures what I suggest are their genuine and unique perspectives on the city by which they are buffeted.

theory with its application. Thus the first two vignettes speak to the assembly and consolidation of automobility, the next two speak to challenges associated with urban reform, while the final vignettes speak to the future of mobility and urban intensification. Before outlining in more detail the particular methods and data that feed into the vignettes and other analysis, in the following section I set the stage for a critical case study that revolves around the city of Ottawa.

A Critical Case Study

The National Capital Region represents a critical case of mobility and urban space in three ways. The first reason owes to the fact that municipal governance in Ottawa, which is the primary driver of urban planning, intersects with national identity and federal politics to an extent unseen elsewhere in Canada. As the seat of Parliament and the headquarters for federal government agencies, city planning in Ottawa is jurisdictionally constrained by the National Capital Commission (NCC), a crown corporation charged with ensuring that “Canada’s Capital Region is a source of national pride and significance” (www.canadascapital.gc.ca). The suburban and rural thrust of Canada’s federal system of politics also constrains local level planning in Ottawa, recently to the disservice of mass rail transit (Hilton and Stoney 2008). The second way in which Ottawa provides a strategic case, and one similar to Canberra, New Delhi and Brasilia, relates to the city of Ottawa’s heritage as a product of modernist, muscular planning (Scott 1998). According to planning historian David Gordon, Jacques Gréber’s 1950 *Plan for the National Capital Region* “was the most important Canadian plan of the mid-century, setting a standard for comprehensiveness that was rarely exceeded in the decades ahead” (2001: 57-58). The lasting

influence of the Gréber Plan for the capital provides an important subplot in my analysis. In chapters three and four I introduce the Plan and examine its role in altering how Ottawans live and move around together. In chapter five, I explore how initial cracks in the Gréber Plan's foundation, tied to inaccurate population projections, continue to affect Ottawa's planning horizons and emphasize the importance of unbiased population (census) data to long-term planning and smart growth.

Finally, the National Capital Region represents a strategic case of urban mobility and development because of its ambitious embrace of smart growth policies. After a recent shift in planning direction (2003), Ottawa is pursuing intensification, light-rail transit (LRT), and Copenhagen-style cycling lanes. Based on its highly successful bus rapid transit (BRT) system, existing cycling facilities, strong recreational cycling culture, local political will and federal support from the National Capital Commission (itself a recent development), Ottawa is relatively well placed to expand alternatives to the car and can be viewed as a "critical case" of smart growth (Flyvbjerg 2001: 78). That is, if Ottawa fails to implement smart growth and transform prevailing mobility patterns, we can generalize that other cities that are not as well situated may similarly continue to privilege car-oriented development.

If ANT and Lefebvre's work on the production of space suggest that space is full of life and agency, they also suggest that space cannot be easily disentangled into discrete units of analysis. This principle lies at the core of the notion of neighbourhoods of mobility, which holds that mobilities are spatially bounded yet irreducibly plural and interconnected. The "spatial creep" that renders it difficult to identify where one neighbourhood of mobility ends and another begins, poses problems for defining the boundaries of my case study. Throughout my research I

was confronted with the dual question, where does Ottawa begin, and where does it end? Or in a more general sense, where do city limits usually lie? At the outer fringes of the suburbs? On the urban growth line drawn by developers and city staff? Or does it lie where City water or City sewage cease to flow? Or might city limits relate less to traditional land-use distinctions and fixed markers, and more to the shifting presence and absence of things that cities spew forth and attract, such as the metals leaking out of industrial parks, or the rural commuter that arrives for work from a distant (and politically discrete) municipality? While city limits at large may seem to be a relatively hard border in the public imagination, at least in contrast to the more mobile and amorphous borders of local neighbourhoods, which seem to constantly mutate as different groups and businesses move in and out, in reality both city and neighbourhood boundaries are subject to ongoing negotiation according to particular uses, practices and symbolic context.

My definition of Ottawa's borders reflects this mutability. However, I also recognize the significance of more rigid markers, such as urban development boundaries established through juridical means. As a result, in my account I periodically leave the 4715 square kilometres that currently make up the National Capital Region while tracing an extra-local connection for which this accepted city limit is insignificant or irrelevant, such as Ottawa's commutershed or a network of twentieth century ideas related to highway design. For this reason, I describe my analysis as a case study of the National Capital Region that includes examples from other parts of southern Ontario. This is a way of acknowledging that it is difficult to understand mobility in Ottawa without situating the city-region in its wider spatial surroundings. Problematically, the things that make up mobile spaces in Ottawa – the roads, various vehicles, different orders of human and nonhuman flows – include many things that exist, or have come from, outside

Ottawa. Therefore, rather than hew to a strict *a priori* distinction between inside and outside, city and countryside, my case study will follow relevant actors as they become implicated in networks and local productions of mobility.

To give the reader a detailed picture of the site the maps below depict the primary area of study.⁶ The first map, a regular Google Map ⁷, is a general overview of the National Capital Region. The other six maps were produced by laser printing 2012 Google Maps on card stock and applying acrylic paint and marking pen. These six maps overlap, and show three different scales⁸, with the urban core in closest range, the northern suburbs along the Ottawa River in medium range, and the southern suburbs in the most distant perspective.⁹ The use of multiple scales was a logistical necessity to encompass key elements of the subsequent narrative – such as Terry Fox Drive, which is located quite a ways from the city core – while retaining some level of spatial complexity seen in the “old city.” I painted the Ottawa River, Rideau River and Rideau Canal in crimson red to correspond with scientific transportation and planning maps from the 1950s and 1960s (for an Ottawa example, see Wilbur Smith Associates 1955). These maps luridly represent major waterways in red to convey their “negative” role as barriers to traffic flow, which is to say the flow of automobiles.¹⁰ A deep irony in this dominant framing, of course,

⁶ The map is actually a series of photographs of a map, which explains why the borders are uneven in some places.

⁷ Google permits the printing of Google Maps (with attribution) for distribution for professional uses including analysis (<http://support.google.com/maps/bin/static.py?hl=en&ts=1342531&page=ts.cs>).

⁸ The scales are two kilometres, one kilometre, and 500 metres per 1.8 cm. These scales equate with the sixth, seventh and eighth “notches” (of seventeen) on Google Map’s scrollbar.

⁹ I used three different shades of card stock to correspond with the different scales, with the darkest hue showing the most distant perspective, although this can be a little bit difficult to discern in the photographs.

¹⁰ This visual-spatial-political tactic enjoys a long tradition which carries to this day. A recent example occurred in Ottawa. Imperial Oil, after donating \$600,000 to the National Museum of Science and Technology for its exhibition, “Energy: Power to Choose,” tried to change an exhibit of polar oil and gas reserves from red to blue, (privately) arguing that red “has a negative connotation” (CBC 2012).

lay in the fact that Ottawa would not exist, either as a capital or a sleepy lumber town, without these waterways, which form its earliest network of highways and associated development.

The marker pen features a variety of colours and superimposes Ottawa's streetcar system as it existed in 1929 (McKeown 2004: 142-143), still in its heyday. The colours, however, correspond with the scheme chosen for the Gréber Plan in 1950, which showed the streetcar system after the capital, at Gréber's behest, dismantled the Elgin St. and Main St. lines (as well as the outer portion of the Rockcliffe "R" line). This historical mash-up – foregrounding bygone mobility networks and outdated modes of representation while submerging the new, "Google city" into a faded background – is intended to set the stage by adding a visual critique to a map that is otherwise meant to serve as a geographical aid. The insinuation is that, in hindsight, abolishing streetcars and streetcar oriented development, and using planning as a way to turn the city away from its waterways, its lifeblood, seems ill conceived. Descriptive captions under each part of the map highlight key actors and events that appear in later chapters during my analysis.

Figure 3: National Capital Region

This map shows the National Capital Region, with the city of Ottawa at its centre. As you can see, Ottawa is situated at the intersection of three rivers, the Ottawa, the Gatineau and the Rideau, which in an important sense account for its existence. Ottawa's three "bedroom communities" flank the city to the west (Kanata), south (Riverside South-Barrhaven), and east (Orillia). The white and green space that separates these communities from urban Ottawa is a greenbelt. The orange ribbons represent freeways.

Figure 4: "Western Terminus"

This map shows the city of Ottawa's west end. The Ottawa River, a cloud of crimson, bleeds in from the north, far from its source in the Laurentian Mountains, and not yet confluent with the Rideau and the Gatineau. The Britannia Streetcar, beside the river (top right, in purple), reaches its western terminus. Below Britannia, new subdivisions drift along, tethered by freeways and arteries. On Terry Fox Drive (top left), and Highway 417, cars come in and out of Kanata like oxygen for the suburbs.

Figure 5: "A Day at the Beach"

Zooming in, and moving east, this map shows just how far the Britannia Streetcar, the A Line, branches off into the urban wilderness. Anchoring several "streetcar suburbs" (e.g. Westboro), which make up some of Ottawa's most fashionable neighbourhoods, the A Line runs east until it eclipses the S Line (in green) on Holland Avenue; both lines turn together onto Wellington Street. The A Line brought the beach to the city, cheaply, at Britannia Park. To the north (top right), the H Line (in red) took electric rail into Hull.

The map shows the Rockcliffe Park area in Montreal, Quebec. Key features include:

- Geography:** The St. Lawrence River is at the top. Rockcliffe Park is a large area along the riverbank.
- Landmarks:** Canadian Army Base - NRC - Rockwell Heights, Manor Park, Hemlock Rd Cemetery, Vanier, Vanier North, Vanier South, Forbes, Cummings, Castle Heights, Cyrville, Overbrook West - McArthur, Pineview, and Pineview Park.
- Roads:** Boulevard Maloney E, Rue Notre Dame, Rockcliffe Pkwy, Montreal Rd, St. Laurent Blvd, Industrial Ave, and various local roads like Hemlock Rd, Vanier Rd, and Overbrook Rd.
- Other:** The map also shows the city of Montreal to the west, with areas like Vanier, Overbrook, and Pineview.

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Figure 8: "Southern Termini"

This map zooms back in again, closer than before. More streetcar suburbs (top half) leap into view: Little Italy on the R Line (orange); Dows Lake and Old Ottawa East on the E Line (blue); and the Glebe and Old Ottawa South on the B Line (black). The Rideau River is a border between antebellum Ottawa and the postwar capital. It separates streetcar suburbs and sprawling, car-oriented development. The bridges on Bronson Avenue and Bank Street over the Rideau provide portals between these two urban worlds.

Figure 9: "Confluence"

Here, in a beige ocean, lies a remarkable confluence of events. A set of waterways and railways become interconnected, allowing transfers and interchange like blood vessels. After winding along the Ottawa River, the R Line enters the downtown fray, eclipsing Sussex Drive. In Lowertown and Sandy Hill, four different streetcar lines traverse King Edward Avenue (Ottawa's current interprovincial truck highway), two of them twice. The city's entire streetcar system descends upon Sparks Street in Centretown.

For further spatial and temporal context on Ottawa and the capital region as a case study, the reader can consult “A Brief Timeline of Mobility and City Planning in Ottawa,” found in Appendix A, which doubles as a chronological aid and brief summary of events. This timeline captures most of the main actors I engage with in the thesis, and places them on a linear path.

Methods and Data

In this third and final section on methodology, I provide more detail on the specific research methods I use and how I combine them to carry out my analysis. These methods can be categorized as 1) historical, 2) descriptive (including field observation, photography and descriptive statistics), and 3) in-depth interviews. Each of these methods provides material that feed into my overarching narrative on mobilities and urban space, as well as micro narratives, nested within this larger plot line, that follow particular streets, plans and events. To begin with, I rely on historical methods to trace the eclectic set of actors whose associations initially established the private automobile as a practical form of mass travel. I undertake this historical analysis in chapter three and within the narrative vignettes that I described above, and use it to contextualize subsequent efforts to change the ways in which we travel together. The materials used to support this analysis include texts and images obtained through university libraries and internet searches, such as newspaper articles, print advertisements, provincial and municipal policy documents, speeches from key public figures and timelines presented in organizational biographies (e.g. the Canadian Automobile Association). I have also undertaken archival research that focuses on creating a more detailed picture of particular events and sites. Accessed through

the City of Ottawa Archives (mainly via the City's Corporate Resource Library), this archival material includes city, regional and site plans; planning and engineering reports prepared by private consultants contracted by the City of Ottawa; and ancillary documentation, such as promotional materials related to plans and testimony provided by community associations for the Ontario Municipal Board. Where possible, I place archival and other historical data in the context of secondary analyses pertaining to the period.

As a complement and extension of this historical approach, I employ descriptive analysis, including field observations. Part of this fieldwork, which consisted of visiting key sites identified in the historical analysis and systematically making observations, involved taking photographs with a digital camera. The resulting images comprise an important part of the street vignettes that help tie the historical, observational and interview data into a coherent narrative. Each photo evokes a significant theme or motif, contextualized in the text, that suggests how these streets relate to mobility and how this relationship has changed over time. This method of amateur photographic analysis has recently been developed as scholars have teased out the implications of processual, multi-sensorial and experiential concepts of space and place, as contingent on movement and mobile encounters, for the image. For example, Sarah Pink has explored amateur digital photography as a mobile practice related to the shared "event" or performative constitution of place (2011a). She argues that some images, "fueled by specific intentionalities that involve representing a particular type of sensory and affective urban experience ... often go beyond being documents for memory to represent experiences that are to some extent collective" (2011a: 95). Following Pink, instead of treating images as static snapshots, taken from a position of rest so that my hands, conspiring with one dominant sense

(vision), could exert some imagined intellectual superiority over my feet (Ingold 2004: 321), I argue that images are inherently embedded in, and produced through, movement. In doing so, and by carefully selecting objects that by themselves evoke different relations of mobility and space, my aim is to create images that “bring our attention to and invoke the feeling of movement in new ways” (Pink 2011b: 12). All of the images I include depict outdoor environments. However, the visualization of everyday movement, and the role of images as a sensory way of knowing (and governing) this movement, occurs indoors too, within stations that play a pivotal role in “real-time” regimes of traffic control (see Figure 10).

Field observation was made easier by the fact that I live in Ottawa. My decision to explore the National Capital Region as a case study reflects design considerations, but it was also a logistical move to facilitate auto-ethnographic description from the perspective of a pedestrian/cyclist. Being in Ottawa made it easier to access and explore my research environment through first-hand experience. On the other hand, by choosing (insofar as it was feasible) to travel to my site without a car, I found it quite challenging to reach streets and suburbs that were located within multiple layers and rings of automobile-focused infrastructure. This travel proved to be a productive learning process in itself, helping to elucidate how the same social and physical configuration of urban space can make one form of mobility difficult and dangerous while making another mode practical and efficient. In a few instances (e.g. South March Highlands in Kanata) I was forced by spatial conditions to commandeer a friend’s car to make the journey. Overall, the data collected through this loosely structured fieldwork offer a useful complement for data collected through other means, helping to parlay initial observations based on abstract city plans and historical materials into a deeper account that resonates with experiential evidence.

Figure 10: Ottawa's Traffic Control Centre. While nearly all of the sites I visited for my fieldwork were streets and outdoor neighbourhood spaces, some were located inside buildings. For example, I took the above photo while on a tour organized by Doors Open Ottawa (2011). It shows a section of Ottawa's central traffic control desk, nestled deep inside in a 1970s red brick building that housed the city's first computerized traffic control system. Alongside the Queensway just west of Little Italy, this command and control post embodies the growth (and growing complexity) of tools at the city's disposal to actively intervene and regulate car traffic on a system level. In 1976, the control centre maintained 200 traffic signals. Today, it maintains over 1091 traffic signals, a "centralized traffic control network," an "audible pedestrian signals system" and at least 145 traffic cameras.

To help situate neighbourhood and city level field observations throughout Ottawa into a wider frame of reference, I turn to another, quantitative kind of descriptive analysis of population

data¹¹. This analysis mainly draws on government documents and tabular data (e.g. from Transport Canada) as well as community association reports that compile and collate Census and General Social Survey data collected by Statistics Canada. Through this descriptive use of quantitative data, concentrated in chapter five, I complement and elaborate my qualitative analysis by placing neighbourhoods of mobility in Ottawa into a national context.

The third and final method I use to examine the relationship between urban mobility and the built environment is in-depth interviews. These interviews took place in autumn of 2010. Collectively, they articulate an expert planning narrative that deals with urban reform, smart growth and the production of new mobilities, which in turn elaborates important aspects of the broader sociological narrative of mobility and urban space with which I am concerned. My sample consists of urban planners, and a few people who work closely with urban planners, nearly all of whom work (or have worked) in the planning department at the City of Ottawa. Respondents are mainly white women and men between the ages of 30 and 60 who live and work in Ottawa and tend to use alternative transportation (for further sample information see Appendix B)¹². I selected respondents on the basis of their ties to “new mobility” projects, namely light rail, utility cycling, foot travel or urban intensification policy. The sample is strategic in the sense that it captures most, if not all, of the new mobility projects occurring in the region at the moment (projects which roughly capture innovation in transportation policy

¹¹ Originally I had planned to conduct explanatory as well as descriptive statistical analysis. However, it became apparent that an explanatory quantitative analysis, in part due to the lack of detailed data on travel behaviours in Canada (particularly cycling, walking, and transit), would take up most of my time and preclude some of the other methodological strategies in which I was interested.

¹² The interviews themselves lasted anywhere between an hour and three-and-a-half hours, and were all structured to an extent by an interview guide. These guides were customized to the respondents’ experiences and areas of expertise. To approach potential respondents I used either email or showed up their place of work in person. In most cases, I had prior familiarity with each respondent or their work through previous (non-interview) stages of research.

happening in other cities in urban Canada)¹³. I explicitly detail the manner in which this sample contributes to a mixed methods analysis below, after describing its general orientation and ethical issues.

My sample could be cast as the “progressive wing” of Ottawa’s planning establishment, although with two important caveats. First, nearly all respondents wear multiple hats, meaning they have gained experience in planning matters related to automobility as well as alternative modes of travel. Second, and following from the first, this progressive wing represents a surprisingly small and newly organized force within the larger municipal machinery (noticeably dwarfed, for example, by branches related to traffic and parking operations that almost exclusively cater to motor vehicles). Reflecting this progressive bias of my sample, over a third of the respondents in my study work in the Transportation Strategy Group at the City of Ottawa. This group is positioned as a forward-thinking office with a unique role in city planning. One project leader identified its mission as “changing transportation demand by reducing auto-dependency.” As I elaborate in chapter four, this group can be seen as the “vision department,” with a *modus operandi* of mobilizing the city’s long-term planning goals. The underlying reasoning behind my sample design relates to the respondents’ multiple hats. Every person I interviewed could talk to the spatial and urban conditions of automobility as well as that of alternative mobilities. What’s more, they could talk to these multiple mobilities on both a professional and personal level, although the connection between the two only became clear to me after the interviews had begun.

¹³ Of course I could not cover all new mobility projects, particularly policies being implemented in peripheral suburban areas, such as “park-and-rides” and traffic roundabouts. However, with most new projects occurring in or near downtown, which tends to be the most economically feasible area for alternative mobilities, in general I have managed to cover what I argue are the most salient shifts in mass transportation.

Interviewing people whose work sometimes entails upsetting the City's planning establishment introduces important ethical dimensions to my study. Every participant is comfortable with, and consented to, having their name published, and many have public profiles and work on controversial projects which would anyway render anonymity difficult. However, at times the discussion turned toward cultural and organizational problems associated with the municipal institutions which employed most of my respondents. This raises the issue of whether comments that are critical of the City could be used against some respondents in the future to limit their professional advancement or otherwise negatively impact their work environment. I address this ethical issue in two ways. First, to eliminate harm as far as possible, I exclude from my account any comments that would directly place a respondent in a potential conflict of interest with their employer, even though I may use this material to inform or corroborate my own observations (virtually all of the people I talked to are media-savvy individuals, so this was not an undue strain on my ability to represent key arguments and findings). Second, in two cases where I include comments that would not jeopardize a respondents' standing with their employer but nevertheless are clearly critical, I contacted the respondents to ensure they were comfortable with the content.

The interviews all revolved around two major themes that tie into neighbourhoods of mobility in different, yet overlapping ways. The first theme, generally covered in the first third of the interview, relates to the respondent's own neighbourhood and their personal experience of commuting from that locale to work and back again. My aim was to motivate respondents to reflect on the interaction between transportation and city space in a specific place with which they were personally connected. The second theme of the interviews expanded on these

interactions by engaging the respondents' professional work as a planner in designing and implementing urban mobility infrastructures. In this part of the interviews we talked about the relations between mobility and urban space in a more abstract sense, while addressing central issues of car-dependence and urban sprawl (for a sample interview guide see Appendix C). To help craft a cohesive narrative of mobility and urban space, I structured the interviews such that the resulting data dovetailed with the content of my field observations, archival material and descriptive statistics. I accomplished this in part by asking respondents, in the second part of the interview, if it had not already arisen in the first part, about the particular streets and neighbourhoods that I visited and explored through historical and visual materials. These urban spaces, and their basis in theoretically significant distinctions between neighbourhoods of mobility, generate a narrative flow that helps integrate multiple perspectives in my thesis borne of different methods. Ultimately, it is these particular spaces and neighbourhoods, and their complex relationships with mundane mobilities, that motivates a methodology based on mixed methods and narrative triangulation. With this methodology, my goal is to advance different theoretical understandings of reassembling urban travel.

Chapter 3 – Assembling Urban Car Travel

Sparks Street, a narrow passageway tucked away inside the shadows of Ottawa’s skyscrapers, is only accessible to pedestrians, and therefore may seem like an odd place to start analyzing the car. However, Sparks Street has a storied past. Lying at the very core of an astounding “confluence” of passageways, as mapped out in the last chapter (Figure 9), Sparks Street is currently a kind of tomb. Although it may seem lifeless (see Figure 11), it contains and conceals sediments of important actors and associations from a world gone by. Upon digging down into these sediments, it becomes clear that something profound and far-reaching occurred here with respect to relations between the neighbourhood and the mundane, everyday means by which the residents of a city get to work and back (among other chores). Sparks Street is ground zero.

This perspective of Sparks Street is necessarily selective, like all narratives, yet expansive enough to touch upon a set of social and material transformations that trace the coalescence of automobility through the reconfiguration of urban space. In turn, I use Sparks Street as a springboard for this chapter to examine neighbourhoods of mobility, particularly in the second, more diffuse meaning of this term based on urban networks of actors that facilitate particular ways of moving together. This meaning is especially relevant for the time period considered here. Given the unprecedented pace and diversity of urban linkages established through automobility during its emergence, I use ANT to elucidate neighbourhoods of mobility as constantly growing and mutating networks in which the introduction of new actors transforms existing identities and spatial relationships.

The First Vignette: Sparks Street Blues

Figure 11: Sparks Street at 10:30 p.m. on a Saturday night in early fall

In the future, Sparks Street will be one of the most popular tourist destinations in Ottawa's Central Area, and an important focus for retail, commercial and pedestrian activity in the Central Business District. (City of Ottawa 2003, "Official Plan" Vol. 2a, Sec. 1.13)

"Now it's just a place where government workers go eat their lunches." (Former Ottawa Mayor Larry O'Brien, quoted in Chianello 2010)

Like a giant lung, each weekday morning Sparks Street inhales a great swath of Ottawa's workforce into the urban core before exhaling it back out after a day's work. One of Ottawa's oldest streets in the heart of its original business district, and but a stone's throw south of the neo-gothic buildings of Canadian Parliament, on its surface Sparks tells the story of a failed

pedestrian mall. However, as late as the 1950s, before it formally shut out other kinds of traffic in 1966, Sparks was considered Ottawa's "Broadway," prone to street parties as trams poured crowds of people into a narrow sixty-foot wide passageway teeming with shops, theaters, hotels and restaurants. Visitors bumped into each other but also the people who lived there. As a recent report to the National Capital Commission recounts, "for almost a hundred years, it was the economic, political and cultural hub of the city" (Bray et al. 2003: n.p.). By the 1970s, however, it became clear that Ottawa's Broadway had begun to wilt. Some of its decline was driven by trends occurring all over the continent, especially a pervasive decentralization whereby families left downtown for large lots in new suburbs that were serviced by modern shopping malls with free parking. Some factors were unique to the Canadian capital. As WWII came to a close, Prime Minister MacKenzie King retained Jacques Gréber, the leading urban planner in France at the time, to produce a plan for the National Capital Region which would accelerate suburbanization in a variety of ways, such as purging much of the work force to large peripheral office parks (Gordon 2001). In the 1970s, moreover, the federal government became a dominating and ultimately homogenizing force on the street itself, expropriating properties for new modernist office complexes close to Parliament Hill. Today, a ritualistic evacuation of human activity can be observed as civil servants leave their office towers and retire to Ottawa's bedroom communities, underlining why Sparks, according to Ottawa's former mayor, needs to be revitalized.

The slow seepage of life from Sparks Street corresponds with rising action in the story of automobility. Car ownership diffused faster in southern Ontario than elsewhere in Canada (Davies 1989). Ottawa was reporting "serious" traffic problems as early as 1923 (Taylor 1986:

146), where a car parked on the side of the street or a truck trying to unload could create gridlock, owing fundamentally to the fact that automobiles occupy far more space per person than do trams. Congestion, more effectively than shareholder greed or the failure of the Ottawa Electric Railway Company (OER) to modernize its fleet, stymied service along busy thoroughfares like Sparks (Bray et al. 2003). Poor service made Ottawa's private streetcar company an easy target for detractors. Jacques Gréber did not conceal his personal conviction that tram lines were compromising Ottawa's chances of becoming a modern capital, and that motorized public transport was the way of the future.

The main streets in the centre of Ottawa are encumbered with all the elements detrimental to traffic circulation and aesthetics: tramway lines, with the added inconvenience of bilateral parking, overhead wiring and its supporting poles ... We are confident that all tramway lines will ultimately disappear from the urban scene, as is the case in most modern cities. ... The auto bus is therefore the only practical transportation system suitable for central urban areas. (Gréber 1950: 127, 257)

Abolishing rail from urban space set in motion other elements in the Gréber Plan, which, rare among urban plans, enjoyed comprehensive implementation. Retiring streetcar lines and removing Union Station and heavy rail infrastructure to suburban Ottawa opened up precious rights of way that were exploited for new arterial roads and a superhighway (Gréber 1950: 165; Gordon 2001). Automobility, a system of social and physical space for the motor vehicle, had arrived: Gréber managed to "persuade Ottawans to convert what had been the busiest tram route in the city, Sparks Street, into a pedestrian mall" (Davis 2001: 374). Seven decades after it was introduced, the private motorcar had turned urban Ottawa inside out. As Davis argues, "many would thereafter walk on Sparks to escape the fast-moving traffic and diesel fumes that the decisions of the past sixty-nine years had made possible" (2001: 374).

The conditions which ensured its initial success as one of North America's first outdoor pedestrian malls were established long before 1966, when traffic was first turned over to feet as per Gréber's suggestion. From the time of Confederation to the First World War, Sparks functioned as Ottawa's spinal cord, attracting and transmitting people between disparate parts of the city and shaping the central pattern of traffic. Bridging Ottawa's deep ethnocultural and class enclaves, Upper Town and Lower Town, the street's rail lines helped foster an impressive mix of land uses, including international commerce, industry, markets, schools, churches and housing, which together assembled "a meeting place for the public and the primary 'beat' of the influential. Here, politicians rubbed shoulders with the powerful and public alike" (Bray et al. 2003). People not only had a variety of reasons to go to Sparks and stay for a while (if only to watch other people), but critically, they had at their disposal ready collective access. This access occurred on a local level, via streetcar, but also on a translocal level via intercity passenger rail lines. Once regional locomotives had punctured Ottawa's surrounding wilderness, national and international foot traffic reached Union Station, when it was downtown, on Sparks' doorstep. Limited crossings over the Rideau Canal, moreover, had aligned Sparks into a central passageway for horsecar and then tramway traffic.

In demolishing streetcar lines and accelerating suburban decentralization, Gréber, the federal government and the City had not only retired a distinctive mode of traffic, but also a compact form of urban growth spurred by rails anchored in the street. Vibrant pedestrian malls share the same basic traffic pattern that Jane Jacobs famously described of vibrant neighbourhood parks: a diverse mix of people constantly using the space for different reasons at a variety of times in the day and night (1961). As the monolithic plazas of government moved in

and the various shops and almost all of the people living on Sparks moved out, single land uses smothered entire blocks. Immense structures, such as the Bank of Canada and the C.D. Howe Building, deliberately turned their backs on the street, accommodating internal retail space while reducing the eye-level street outside to a sunlight-deprived wind tunnel (Bray et al. 2003). Currently Sparks comes alive at lunchtime on weekdays, and then, in the words of a local historian, we are “cursed with the Sparks Street Mall at night” (Jenkins 2008).

Actor-Network Theory and Automobility

Traveling with ANT, I am afraid to say, will turn out to be agonizingly slow. Movements will be constantly interrupted, interfered with, disrupted, and dislocated. (Latour 2007: 25)

As the story of Sparks Street suggests, automobility is not simply (or even mainly) about car driving, but about the many connections that cars maintain with all kinds of other actors across an eclectic network. In a broad sense, automobility consists of multiple scales, materials, both flows and fixities, and the complex relationship between car drivers and the urban environments which cater to their needs. This heterogeneity is important to recognize when thinking through a critical politics of mobility. One way to respond to the technological tunnel vision at heart of born-again automobility, with its focus on “technical fixes” for problems associated with car-dependence, would be to isolate and emphasize the agency of obviously “social” aspects of the car. But this response would ignore the role that material objects and technologies play in the integration of car drivers into the city, for example all the sewers, streets, hydrocarbons, lights, medians, sidewalks and snow plows that contribute to “seamless” car trips (Sheller and Urry 2000). Arguably a more effective approach would be to reject a rigid dichotomy between the

social/humanistic and the material/technical, and instead trace the connections between the social conditions of automobility and the relational power of hard, bituminous infrastructures. The “mobilities paradigm” (Urry 2007: 44) introduced in chapter one, I argue, has much to offer a critical understanding of automobility, although it will require three kinds of flexibility.

First, as an analytical perspective, mobilities must emphasize the different scales and sites involved in the conceptualization and practice of automobility. This composite viewpoint recognizes that social and technical elements that make up everyday, mundane car driving are distributed across a variety of networks (Thrift 2004; Dant 2004; Beckman 2001). Representations of car travel, as leisure or a way to escape urban life for example, cannot be treated as ideological or cultural constructs detached from the influence of physical environments and infrastructures (Böhm et al. 2006: 4) which in turn reinforce particular understandings of the good life (Rajan 2006). Second, mobilities that refer to the expansion of different flows of people, information and other objects in the city, must equally pay attention to the stable pylons and fixed pillars on which these flows depend. If mobilities are proliferating in number and kind (Urry 2007: 10-11, 47) and we face a situation “of ‘accelerating mobility’ in the city” in which social institutions are fundamentally reordered (Jensen 2006: 144; Hannam et al. 2004), it stands to reason that forms of obduracy are changing, too. By privileging flow at the expense of fixity, or an “ontology of flow” (Amin 2004), especially through the use of metaphors that valorize fluidity and movement as natural forms of resistance or freedom, we risk obscuring the systemically unequal power relations that unevenly distribute (im)mobilities and shape the social production of movement (Cresswell 2006; 2001). Third, and finally, while mobilities research has taken up how drivers and passengers inhabit or “dwell” in the car (Urry 2006; Redshaw

2008), it must also consider how the car–person assemblage inhabits the metropolis. The latter relation is necessary in order to grasp how collectively the dwelling of person-automobiles operates over time to “lock out” other urban mobilities, particularly in countries with relatively high levels of car-dependence such as Canada.

Actor-network theory (ANT) can help develop a flexible concept of everyday mobility defined by overlapping fixities and flows. As a “dislocated” approach to action, ANT stresses how relations between circulating entities, rather than intrinsic properties of entities themselves, generate their world-building activity (Law 1999; Latour 2007). This approach follows from a relational and distributed notion of agency. Agency, defined as the capacity of actors to modify the meaning or force they carry, extends to nonhuman actors in heterogeneous, “sociotechnical” ensembles. These ensembles refer to associations between irreducible and otherwise unconnected entities. Picture “a world made of *concatenations of mediators* where each point can be said to fully act” (Latour 2007: 59). This picture is meant to blur hard and fast distinctions between global and local, macro and microlevel phenomena, shifting emphasis to the scale-making work of specific configurations of actors. “Instead of opposing the individual level to the mass,” notes Latour, “we follow how a given element becomes strategic through the number of connections it commands,” or conversely, “how it loses its importance when losing its connections” (1997a). A central assumption of actor-network theory is that if a particular connection seems to persist over time, such as a set of roads which open a relatively smooth passageway to one’s workplace, it generally means work has been “delegated” to nonhuman “actants” or actors (Latour 1988; 1997b). By including these actors, and relating their capacity to modify events and actions to that of human actors, ANT offers a way to sidestep some familiar binaries in social science (e.g.

social versus technological, social versus natural, organic versus machinic, etc.). Rather than decide at the outset of an account what categories of actors and partnerships constitute the world in question, ANT attempts to follow the world-building activities of the actors themselves as they are “made to act” by many others.

ANT extends intuitively, perhaps, to an account of dwelling in the car,¹⁴ but does it shed light on the ways in which car drivers dwell in neighbourhoods and cities? Beckman, for one, argues that “although ANT captures the morphing of object and subject, that is, of the car and its driver instructively, it provides limited possibilities to understanding the spatiality of the hybrid. This void within ANT is based on the elimination of geographical distance or proximity” (2001: 603). “Elimination” is surely an exaggeration. What Beckman really objects to is treating geographical definitions of proximity and distance as but “one type of connections, one type of networks” among others (in Latour 1997a) on grounds of the “constitutive relevance” of these connections. Given the way it treats “geographical space,” he maintains, “ANT proves to be of little help for the investigation of spatial mobility - since mobility is, first and foremost, about the overcoming of geographical distance” (2001: 603). I concur with Beckman on the point that ANT challenges conventional or universalizing definitions of geographical space and motion. For example, it challenges the conceptual space found in the work of Hägerstrand (1976), to which Beckman appeals (2001: 597), or “time-geography” in which three dimensional objects are conceived as successfully “overcoming” three dimensional space so long as they do not occupy the same space as another object, or two different locations at once. I would argue,

¹⁴ Dwelling at speed, for example, depends on a certain level of comfort and ease achieved by delegating work to objects. Driving has become sufficiently controlled and predictable that this dwelling sometimes becomes slumber. Many people recall a sense of “delegating” force to their car after snapping out of a so-called micro-sleep at the wheel, which some scientists believe occurs quite commonly during routine, monotonous driving situations (Vanderbilt 2009: 74). The micro-sleeps of some long-haul truckers apparently last for many miles.

however, that ANT reconceptualizes rather than “eliminates” this physicalistic understanding of distance/proximity, and I disagree with Beckman that ANT’s rendering of distance/proximity weakens its capacity to investigate spatial mobility.

Actor-network theory furthers the investigation of mobility and the interaction between the car and the city by underscoring spatial multiplicity, or what Massey calls “contemporaneous plurality” (2005). Mobility, as distinct from mere movement through vacant, neutral grids, evokes the social and political construction of space (Cresswell 2001). Accordingly, ANT suggests that there exist as many spaces and times as there are ways for mobile bodies to relate to one another (Latour 1997b: 174). “The important point here,” as Law puts it, “is that spatiality is not given. It is not fixed, a part of the order of things. Instead it comes in various forms” (1999: 6). *Actor-network* describes a relational topology in which the influence of actors remains contingent upon the extent of their circulation through webs of variably dense associations. This relational topology strengthens an account of automobility in three particular ways. First, ANT foregrounds the heterogeneity of agencies assembled in car travel. By including political and cultural agencies it confronts the narrow technical and economic trajectory charted by born-again automobility. Equally, ANT questions sociocultural accounts which elide the mediating products of civil and transportation engineering, for example the superhighway or suspension springs (Latour 2007: 77-78). Second, as a method to follow the deployment of associations between previously incommensurable entities, ANT describes mediating links between representations of travel and the infrastructural contexts of their possibility. In other words, it contravenes an absolute distinction between representations and the “solid things” to which they refer (Latour 1997a). Third, by describing the extension of heterogeneous networks, ANT helps account for

the dynamic stabilization or fixation of automobility. As provisional linkages multiply between human and nonhuman actors, and as “equivalences” spread between once incommensurable entities through a process of “translation” (Law 1999), they reinforce a particular reality. Highly connected actors and partnerships become “obligatory points of passage” (Hess 2001: 109). At the same time, newly enrolled actors alter the network, contributing to its plurality. Hence Michel Callon warns against confusing an actor-network with

a network linking in some predictable fashion elements that are perfectly well defined and stable, for the entities it is composed of, whether natural or social, could at any moment redefine their identity and mutual relationships in some new way and bring new elements into the network.” (Callon 1989: 93)

In addition to challenging the capacity of ANT to investigate the dwelling of car drivers in city space, some have questioned its political potential. Hess, for example, argues that “the theory is not very good at explaining why some actors are excluded from the game and why the playing field is not level” (2001: 110-111). Others suggest ANT fails to sufficiently account for the generation of uneven political associations, or the asymmetries of power in which the interests of central figures dominate. Routledge, for example, observes that “the process of circulation (of information, people, etc) is unequal. Some ‘circulate’ more than others, creating differential social relations, whereby power gets centered on certain people and things” (2008: 201). In response to this weakness, Routledge elaborates ANT’s political project through a notion of “critical engagement.” Rutland and Aylett (2008), in their response to the same limitation, place ANT in tension with analytical tools from another approach, governmentality. These adaptations express the diasporic quality of ANT, or the lack of a single identity. “Like other approaches, actor-network theory is not something in particular,” yet, Law argues, “neither is it a

random set of bits and pieces, wreckage spread along the hard shoulder of the superhighway of theory” (1999: 10; 1997). Partial connections among different applications form the core of ANT. The circulation or “translation drift” of ANT away from its “natal interests” (Brown and Capdevila 1999: 29) speaks to the flexibility of ANT’s core tools: (1) a distributed notion of agency, (2) deployment of associations between heterogeneous actors, and (3) network translation or stabilization.

To continue this drift and extend ANT’s political project, I will place these analytical tools in tension with the problem of automobility. They offer mobility studies a way to foreground the relations among different registers of automobility, the dwelling of car drivers in the city, and fixities associated with auto flow infrastructures. Like the hybridic car–driver, the “autospace” in which the car driver is grounded (Beckmann 2001: 603) can be viewed as an “urban assemblage” in which human and nonhuman actors align through a process of translation (Farías and Bender 2010). When autospace is well-aligned it works smoothly, and the motorist “will find no difficulty in distinguishing what is displaced from the immutable framework in which it is displaced” (Latour 1999: 174). How has car travel become so *smooth* that a majority of Canadians take it for granted as the mundane background of modern, everyday life? What kinds of sociotechnical actors were aligned together in order to produce mass automobility? Was this process of translation a linear and inevitable process, or was it marked instead by contingency and continual transformation?

In order to address these questions, the next two sections follow the world-assembling activities of automobility’s foundational actors. First, I focus on the advent of Canadian car travel, as seen through the lens of the National Capital Region and southern Ontario. This lens

does not capture every early development of significance in Canada. But it does have “strategic importance in relation to the general problem” (Flyvbjerg 2001: 78). That is, motor vehicle registrations and manufacturing in Ontario quickly outstripped that of other regions, turning the province into a critical test case of sociotechnical change that subsequently occurred across Canada (Davies 1989: 124). During the first three decades of the car, when Sparks Street was still Ottawa’s Broadway, associations between the motorcar and everyday life were rapidly multiplying. An evolving network of motorcar travel across southern Ontario concatenated key actors, like print advertising, “good roads,” driver-vehicle registration, and the traffic survey, into a new “constellation of mobility” (Cresswell 2010) that redefined Canadian space and society. In the second section, I move onto the expansion of mass automobility in the same context during the mid-twentieth century. New actors and associations, such as modernist planning, freeways, and car-oriented development, transformed earlier associations by actively reassembling the city through automobility.

Ignition: 1901-1939

When the first automobiles, better known as the horseless carriages, appeared on the streets of Toronto twenty odd years ago, pedestrians and spectators were startled at the sight of the self-propelled vehicle. Many remarks were passed, but the most common exclamation was: “Who owns it -- where did it come from?” (“Ontario Takes Pride in History of Motor Vehicles,” *Globe*, January 16, 1920a)

Ottawa leads a double life to which other national capitals can relate. It constitutes symbolic national space and, at the same time, everyday living space. Like Canberra, Brasilia and Washington, Ottawa was transformed through a comprehensive city plan to represent a suitable site for national government. Owing to its youth, much of its growth was intertwined with the

development of automobility. After a fire decimated much of the city in 1900, crippling its industrial base, capital space and car space were mutually constructed upon the ashes of an isolated lumber town. In 1901 a small civil service bureaucracy began to boom, so did Ottawa's population, and the first internal combustion engine-powered car arrived. It was not greeted as a harbinger of technological progress. On the contrary, the automobile arrived as it had elsewhere in North America, as a dangerous obstruction to legitimate and longstanding street practices. Angry parents and pedestrians argued car driving was unjust and harmful to children, police saw it as disorderly, downtown chambers of commerce saw it as detrimental to business, and courts held it as primarily responsible in traffic accidents (Norton 2008; Davies 1989). Cars were clashing with the everyday politics of street belonging, and through a noisy process started modifying city space and redistributing relations of power, or in other words the ways in which groups of people attain their goals (Mann 1988). Thirty years after the first automobile arrived, 23,000 cars and 3200 trucks were negotiating Ottawa's streets (Taylor 1986: 146). Reflecting Ontario's especially pronounced diffusion of vehicle registrations (Davies 1989),¹⁵ in 1931 Canada had the second highest level of automobile ownership (per capita) in the world, and was only outpaced by the United States (plus Hawaii), to which its most advanced highways ran (Francis 2006: 38).

During the first few decades of the car, a gathering of different agencies, more distributed than automobiles in themselves, formed a nascent network of human and nonhuman actors which modified southern Ontario's landscape. Before they began to shape abstract ways of seeing the city, motorcars disturbed horses and sleeping patterns. Noise from combustion engines and

¹⁵ Between 1903 and 1906 over one thousand vehicles were registered in Ontario. By 1919 the number had risen to 138, 288, which meant "Ontario Exceeds the Combined Totals of the Three Prairie Provinces, and has Twice the Number of Cars as the Other Five Provinces Put Together" (Globe, January 23, 1920a).

friction from pneumatic tires rubbing against tarmac flooded the urban soundscape, and in doing so occupied city space, deepening the difference between the city and the quieter countryside. Drivers eager to evade the noisy traffic and explore the open road quickly congested colonial highways (Nostrand 1983). As Henri Lefebvre observes, “the town perceives itself in its double, in its repercussions or echo as it contemplates itself in the countryside that it has shaped” (1991: 235). With car prices falling, this contemplation took on new significance through popular print advertising. The American “touring car” and its Canadianized models strived to become more than a “summer toy” (*Globe*, January 16, 1920a) for a “new sport of the rich” (CAA 2010). They were rebranded across broadsheet “motor pages” as a middle class way to break free from cramped, cacophonous cities. Images circulated of car drivers gliding into pristine natural environments removed of other people and machines, prefiguring an enduring, contradictory motif (Conley 2009). In practice, early motorists encountered few decent roads or fill-up stations beyond city limits to abet their escape, which was slow-going. Speed, Latour notes, requires “the complete obedience of the places traversed” (1997b: 176), and Ontario did not yet defer to the motorcar. Drivers were forced to enlist teams of horses to escape sloughs and bring extra oil and gas in tow (Francis 2006: 44-45).

The motor tour, from modest Sunday drives to intercity adventures, figured centrally in the process of translating fair weather roads into stable, perpetual connections. Garages, utility poles, power lines, motor hotels, pipelines, viewsheds, outsized signage and gasoline stations became a set of mediators that afforded motorists opportunities for more extensive automobiling. Lobbying to improve touring conditions intensified in 1907, when autoclubs in Ottawa, Toronto, Kingston and Hamilton banded together to form the “Ontario Motor League” with 170 active

members and 56 associate members (CAA 2010). Forerunner of the Canadian Automobile Association (CAA), which began soliciting members of Parliament to improve motoring conditions in 1916, the Motor League focused its efforts on the construction of “good roads.” Road improvement was represented in quantitative terms of building more roads, but also as making car driving more safe and efficient. Good roads required grade elimination and wide, linear alignments, as well as the replacing of earlier forms of macadamization, such as raking loose stone over dirt surfaces, with concrete pavement (Francis 2006: 33). Smoothed, concretized highways with extended sight lines facilitated safer car driving. At the same time, they opened the door to heavy freight trucking and faster car driving, for which the League lobbied in 1912 (15mph in cities, 20mph in the countryside) and 1927 (20mph and 30mph, respectively) (CAA 2010). The diffusion of ponderous motor trucks and the higher velocity of motorcars redistributed risk and transformed road safety, in turn widening the space for governmental intervention.

With the help of the Motor League, automobile buyers were enrolled into a mushrooming provincial bureaucracy as driving became an increasingly risky activity. Purchasing, owning and driving an automobile, for the first few years, was not information which people necessarily had to share with anyone. As the *Globe* described, “the automobile was a free lance then; it was used on the highways with as much liberty as the delivery carts, phaetons and stylish buggies, without any particular mark of identification” (January 16, 1920a). In 1903, however, the Ontario government began to compel motorists to disclose their identities. The Department of the Provincial Secretary, comprised of a clerk and several assistants, issued a leather badge to 220 motorists. In 1911 the Department registered 11,330 cars and introduced metal plates featuring a

small, juridical inscription: year of issue, with which police could convict owners for failing to renew their vehicle licenses (Globe, January 16, 1920a). These plated identities were not extensible outside provincial boundaries, however, until 1916, when after ten years of lobbying by the Motor League, Ontario established “reciprocity” with the state of New York. Other provinces and states soon followed (CAA 2010). During the same year, the Department of Public Highways assumed control of registration as part of enacting an expanded Motor Vehicle Act (Davies 1989). One clerk and five assistants had grown into a large division of clerks, stenographers and examiners charged not only with collecting fees and issuing permits, but also administering laws relating to traffic, speed, load and incarceration (Globe, January 16 1920a). Registration authority, critically, had been placed under the same agency with authority over road construction, describing an elegant circle of power. The reorganization “was deemed advisable because the use of the highways and the legislation affecting it should be under the immediate eye of the department which had control and maintenance of the highways” (Globe, January 16 1920a). This circle came to encompass individual credentials in 1927, when both the Highways Department and the Motor League began to issue standardized driver’s licenses (CAA 2010).

Driver-vehicle registration for the use of public highways created a means to identify and regulate the population as well as the power to exclude certain person-machines, not least people without cars. Producing a “passage” for the automobile, relationally, also meant producing a passage for the streetcar, cyclist and pedestrian (Peters 2006). Drawing on a similar program in Chicago, for example, the Motor League trained 11-14 year-old “safety patrollers” to teach people to walk and play responsibly in the city (CAA 2010), or, respectively, off the street and in the park. The delegation of traffic control to actors that unevenly sorted out traffic flows

reinforced a segregation of street uses. Automated traffic signals became a crucial delegate. Their timing and spacing, by means of which the first “traffic engineers” helped establish their legitimacy, orchestrated pedestrian crossings and traffic flows such that cars, trucks and jitneys¹⁶ could begin to circulate as efficiently as pedestrians and streetcars (Davies 1989; Norton 2008: 138). Certain highways became national passageways where road building was conflated with nation building and territorial consolidation. In 1922 the Motor League began urging the federal government to develop a restricted access Trans-Canada Highway (CAA 2010) which would connect large cities, but also bridge urban Canada with parks and natural areas deemed to be nationally significant (see Figure 12). Highway construction inside these conservation areas was permitted during WWII, exploiting the labour of German and Austro-Hungarian prisoners interned as enemy aliens (Francis 2006: 33-4). As a result, motor tourists had direct access to rarefied landscapes that were previously outside the realm of automobility. At the same time, public highways organized a passive and environmentally costly mode of consuming “roadside wilderness” (Peters 2006).

These links between nature, the motor car and exclusive transportation infrastructure became even more pronounced in the city, as early twentieth century planners crafted a novel representation of urban space: the park road. The park road constituted a “good road” according to the Motor League’s definition, namely a straight, hard and flat alignment for continuous automobiling. But it was more than a pragmatic instrument. It applied the ideals of three urban

¹⁶ The jitney was an early form of motor bus, usually a modified Ford Model T touring car that could handle up to twelve passengers, whose name derived from American slang for a five cent coin. It operated as a “hailed-ride” without a fixed route or schedule, and was typically faster than trams, yet notoriously unreliable. Several thousand registered jitneys were operating in Canada by 1915 (Davis, 1992).

planning movements, each a unique reaction to the ills of the Victorian slum city. The first was

McLAUGHLIN

BANFF HOTEL
BANFF-ALBERTA

MASTER
SIX
5-Passenger

CONFIDENCE in "Canada's Standard Car" is most clearly shown in its absolute leadership in the market. McLaughlin "Master Six" has become the "known factor" among motor cars—a gauge by which to judge not only values, but style, finish and design.

This is what makes the McLaughlin such a sound investment—that gives it its established re-sale

value—that makes it the accepted car among men of substance. Coupled with the same power and dependability that have made McLaughlin Master Six motor cars famous throughout Canada, is added riding comfort, more roominess and better seating arrangement, easier control and a beauty and grace that fittingly express the higher standard of 1921 models of "Canada's Standard Car."

McLAUGHLIN MOTOR CAR CO., LIMITED

Figure 12: Automobile Advertisement (Globe, April 2, 1921)

the Garden City movement. Inspired by the radical ideas of Ebenezer Howard to build self-sufficient cities in the countryside and surrounded by large greenbelts, the Garden City was as much a model for self-government and cooperative enterprise as it was a “back-to-land” movement (Hall 2002: 93-95). The second approach, City Beautiful, was more authoritarian. Its prophet, Daniel Burnham, famously implored in his 1909 blueprint for Chicago to “make no little plans. They have no magic to stir men’s blood.” Following Haussmann’s reconstruction of Paris, this movement employed the assumption that a beautiful city, composed of radiating boulevards, parks and monuments, would make its citizens better people (Hall 2002: 190-196). Finally, the City Scientific approach, which became the dominant mode of planning in Canada after WWI (Gordon 2008), prioritized healthy circulation. Allied with civil and railway engineers, City Scientific planners were concerned with improving the social and technical efficiency of urban infrastructure, such as roads, watermains and sewers, through new materials and construction techniques. With linkages to each of these movements, Garden City, City Beautiful and City Scientific, the park road became defined by the experience of continuously wending through a naturalized landscape that was artificially crafted to coincide with the motorist’s visual perspective.

From an actor-network perspective the park road or “pleasure road,” as it was also called, represents an early effort among planners to make the motorcar commensurate with urban space. Unlike the Motor League, planners concerned themselves with wider dimensions of urban space that were (as of yet) unrelated and nonconductive to the car, such as urban form, green space, housing and water systems. In this vein Frederick Law Olmsted introduced the first parkway system to North America in Buffalo during the 1890s. He believed that “a park road is pleasant

by reason of that which adjoins it, or is open to contemplation from it, not because it favors speed” (1997: 257). A protégé of the Olmsted office, Frederick G. Todd, became Canada’s first resident landscape architect, based in Montreal, and in 1903 brought with him to Ottawa a Garden City philosophy of putting road users in thrall to their natural surroundings. “The term Parkway I have taken to mean a winding pleasure drive laid out with a narrow strip of land reserved on either side, and treated in a park-like manner,” an exemplar of which, Todd pointed out, “is your new drive along the Rideau Canal” (1903: 16). Replacing a jumble of industrial yards and private boat houses, the two-lane road along the canal’s west bank subsequently became Queen Elizabeth’s ceremonial Driveway (see Figure 13). It elevated the visual experience of entering an isolated lumber town, the civic symbolism of which was not lost on the Ottawa Improvement Commission (OIC), which had built the road. After starting work on a second parkway along the Ottawa River, in 1903 the OIC retained Todd to beautify the capital, who recommended a system of park roads (Gordon 2002).

Many of the roads first envisioned by Todd and the OIC were implemented in the Garden City/City Beautiful style, but only decades later, by other administrations, and after functionalist ideals had already eclipsed kinesthetic considerations of pleasure within city planning. Edward Bennett, a leading City Beautiful planner who collaborated with Burnham on the Chicago plan, elaborated the park road in his 1915 plan for Ottawa and Hull. The plan proposed to expand by 44 square miles a “system of parks, parkways and playgrounds” (Bennett 1915: 130). It was shelved, however, as the nation focused on the war effort and rebuilding Parliament after a fire destroyed Centre Block. Support for Bennett’s parkway system was subsequently drained,

Figure 13: Queen Elizabeth Driveway, Ottawa's first parkway, continues to manifest the elements of a city park road today

moreover, by a shift away from City Beautiful thinking. The approach was heavily criticized for ignoring the poor housing conditions which often proliferated in the vicinity of grandiose civic centers (Gordon 1998: 291; Hall 2002: 191). During the 1920s, as a growing middle class could afford to take weekend pleasure drives outside the city in mass produced cars, Ottawa turned instead to “scientific management” (Norton 2008: 112), which prioritized efficiency and practical interventions for eliminating urban congestion. For example, Noulan Cauchon, a railway engineer and key actor in the expansion of municipal planning in Canada, elaborated a host of City Scientific interventions like rounding street corners, street extensions, traffic regulation, re-

routing and zoning by-laws (Gordon 2008). Cauchon and other first generation “planner-engineers” effectively paved the way for a new science of adapting urban space to the car, rather than the other way around. As the auto industry realized that urban car-ownership was lagging behind rural rates, they supported engineers who defined urban congestion as a problem of insufficient road supply, or lack of “floor space” (Norton 2008: 153).

An entire motor tourist economy became associated with scenic park roads and highways, adding pressure to build more roads and construct more legible routes. The prospect of millions of Americans annually touring north of the longest undefended border in the world made road expansion a politically easy policy for public officials. Domestically, the construction of new roads was increasingly seen as a contractual obligation: when Canadians invested in automobiles and driver-vehicle registration, they expected to gain access to a safe and efficient road system. This relationship was made clear at a Motor League AGM in 1920, virtually dominated by men, with women largely excluded from the driving public, at a time when the Ontarian motorist could not yet detach himself from the tenuous, but increasingly “immutable framework *in which* [he] was displaced” (Latour 1997: 174). Before Ontario Minister of Public Works, Hon. F. C. Biggs, took the stage to express his government’s commitment to extend “permanent roads,” Dominion Commissioner of Highways A. W. Campbell addressed the 800-odd automobile owners present:

Motorists are heavy investors in Canadian roads. There are over 300,000 automobiles in Canada, with a value of over three hundred million dollars. You are entitled to the greatest amount of return on your investment. (Globe, 23 January 1920b)

This positive loop growing between car driving and road building was exemplified in highway financing. The \$4,364,833 collected from motorists through fees and fines in Ontario from 1916

to 1920, for example, was funneled back into “highway improvement” (Globe, January 16, 1920a). Several years later, when the first gasoline tax helped diversify road related revenue, Canadian provincial governments were investing more in roads than any other budgetary item (Francis 2006: 43). For oil companies producing and distributing hydrocarbon fuels and lubricants, automobiles clearly represented long term capital gains. To coax reluctant motor tourists onto public roadways, the oil industry sponsored national motor tours and distributed cartography. Canada’s largest petroleum company, Imperial Oil, began circulating road maps through its Esso chain of gasoline stations in 1935 (Francis 2006: 61). The maps show a microcosmic snapshot of an assemblage which, on the ground, had become mediated by regulatory and directional signage. This signage was erected primarily by the Ontario Motor League until the mid-1920s (Davies 1989: 131). It articulated traffic rules as well as identifiable routes through which previously isolated towns entered the petroleum-powered circuits of the motor tour.

By the late 1920s, the sharp rise of motor vehicle use in southern Ontario not only resulted in widespread congestion but routine fatalities, for which automobile associations and governments sought “objective,” scientific remedies. After providing emergency road services and legal defense benefits to members in the 1920s, the Motor League introduced “personal accident insurance” during the Depression (CAA 2010). Actuarial methods both defined the risks associated with car driving and rendered them calculable. Another metrological system was used to identify the underlying causes of congestion. The traffic census, “a younger cousin of public utility surveys and time-and-motion studies” (Norton 2008: 133), enumerated information on speed, turning, parking, pedestrian responses and driver origins/destinations. Two large surveys

conducted in southern Ontario in 1914 and 1922 gathered extensive quantitative data on traffic behaviour which, along with police databases, helped establish scientific “planning for the automobile” (Davies 1989: 124-27). Abandoning the earlier influences on Canadian road design which had combined utilitarian features with civic and aesthetic considerations, traffic planners and engineers began to privilege functionalist conditions of efficiency through the expansion of road supply. Traffic casualties, hundreds of which were occurring every year across urban Ontario (Davies 1989: 127), became attributed to the “promiscuous” mixing of fast-moving through traffic with slower street users and, according to Hon. Minister, F. C. Biggs, bad behaviour among pedestrians (Brown 2006; Davies 1989: 127). By the time of the Depression, Ontario, like much of America, was moving away from the mixed-use public street and towards the high-speed arterial and limited access roads we know today. Canada’s capital city was “rounding corners” to speed up automobile traffic, and debating whether to remove rail lines and pave in the Rideau canal (Taylor 1986: 146).

Even so, earlier features of the park road as a quasi-public, outwardly focused space designed for the automobile were translated into two additional domains. The first domain was the production of Canada’s inaugural superhighway from Fort Erie/Buffalo to Toronto, dedicated to Her Majesty who attended its opening on June 7, 1939. Following city parkways, the Queen Elizabeth Way (QEW) elaborated a number of technical innovations with which road engineers were experimenting across North America to improve motor vehicle flow (Jones 2008). It adopted a linear alignment, wrought iron guard rails, central medians and the largest concatenation of lighting in the world. Yet alongside these innovations, and partly as a disguise, were vistas onto spruce and pine plantations, avenues of elm and maple and other plant materials

that were strategically organized to evoke a primeval landscape. The effect, Van Nostrand observes, was “a new highway landscape created in the image of the wilderness—a wilderness which, in the first instance, had been annihilated to make way for rural colonization” (1983: 9). A second domain in which the park road extended was one of the most comprehensively implemented “master plans” in Canadian history. The Gréber Plan for the National Capital (1950) embraced the parkways, boulevards and expansive greenbelt proposed earlier by Todd, Bennett and Cauchon. As a result, the National Capital Region today features 90 kilometres of scenic parkways “conceived to offer the public new ways to see and appreciate the landscape by car.” As the National Capital Commission (NCC), successor to the OIC, elaborates: “These are not just roads. They are scenic gateways into a Capital experience. They link city and country and put people in touch with the Canadian landscape” (2011).

The Rise of Car-Oriented Development: 1945-1972

While Jacques Gréber brought a belated parkway system to life, his plan acted as a fulcrum for an entirely different kind of road in the National Capital Region. Ottawa’s experience, together with the reconstruction of the Queen Elizabeth Way after WWII in southern Ontario, illustrate a set of pivotal transformations in Canada’s mass automobility network. Three postwar planning movements promoted these transformations. The first was an adapted set of Techno-Scientific City ideals. The early work of planner-engineers to reduce congestion by widening roads and rounding corners was expanded to create different classes of roads within a functionally segregated system of traffic. Such a system had already been established by New York and

consummated in Los Angeles. It described an interconnected street hierarchy which prevented local traffic, filtered through slower collector roads and arterials, from mixing promiscuously with “through traffic” which was allowed to flow uninterrupted along restricted access express roads (Brown 2006). The second planning movement held the banner of Radiant City. Inspired by Swiss architect Le Corbusier, this approach paradoxically sought to obviate congestion in city centres by erecting uniform towers separated by open space and large expressways perched on viaducts. Le Corbusier’s skyscrapers rarely found material expression. But they informed top-down schemes of urban renewal that cleared away poor neighbourhoods for open space and brutalist architecture. Finally, a third planning movement, to which Peter Hall aptly refers as “the City on the Highway” (2002), was pioneered by New York’s master builder Robert Moses and refers to the power that large roads developed to dictate regional growth patterns.

A segregated traffic system, top-down urban renewal, and highway-based development redefined the relationship between the car and city planning, and laid the groundwork for neighbourhoods of automobility. This was not as easy as extending and expanding existing roads onto a rural tabula rasa. These novel networks may have appropriated outlying fields, forests and fallow lands, but their construction did not occur in a vacuum. Rather, it required a shift away from existing practices and infrastructures shaped by City Beautiful, Garden City, City Scientific precepts and, even more fundamentally, by streetcar systems. The move away from these planning and development patterns can be viewed as a transformation in “constellations of mobility,” or what Cresswell defines as “historically and geographically specific formations of movements, narratives about mobility and mobile practices” (2010: 17). What stands out in this changing constellation of actors, from an ANT perspective, is the number of linkages established

between previously unconnected mediators and the multiplication of linkages between the car and everyday life. What had been tenuous, provisional associations between motor vehicle use and planning established by experiments like the park road became realigned and bolstered by new elements and associations entering the network – not unlike a foreign species coming into an ecosystem and upsetting a chain of existing relationships. The result was a new kind of built environment in which the automobile, no longer a recreational vehicle and peripheral nuisance, became an “obligatory point of passage” (Hess 2001: 109). Automobile neighbourhoods became a standard form of new growth in postwar Canada and in a retroactive movement, started to modify extant urban development as well.

Ottawa offers an unusually crisp case of the Canadian transition between neighbourhoods of mobility. As expressions of national power and identity, capital cities, notes planning historian David Gordon, “were often the location of early experiments in urban design, parks, public health, and social reform, as a broad movement to establish urban planning emerged in Europe and North America” (2002: 30). But what makes Ottawa different from older capitals, and similar in terms of planning to Brasilia, Canberra and New Delhi, is that it leveraged this experimental power at a time when the technological forces of mass automobility collided with a modernist faith in muscular state-directed planning (Scott 1998). If Techno-Scientific City, Radiant City, and City on a Highway planning ideals helped turn the car into an obligatory point of passage, modernism helped convert the car into a symbol of national progress. It operated in Ottawa through “one of the most significant documents in Canadian planning history” (Gordon 2001), the Plan for the National Capital (1950). This Plan was assembled by Jacques Gréber, whom Prime Minister MacKenzie King first retained during a visit to a Paris exposition in 1936.

The French Inspector-General cemented his credibility by reorganizing Confederation Square as a national war memorial site. After WWII, he was recruited to carry out Wilfred Laurier's dream of making Ottawa the "Washington of the North." The Gréber Plan incorporated elements from earlier capital plans, including parkways and a large greenbelt.¹⁷ One of its overriding aims, however, was to rationalize the city through universal automobility.

The pattern of urban development outstripped by automobility was defined primarily by rail travel. For a relatively small city, Ottawa enjoyed uniquely high streetcar ridership, which increased seven times as fast as the population during its debut decade prior to WWI before reaching its peak, in 1921, of 336 rides per capita - or almost one trip everyday for every resident of the city (Davis 2001: 351). The first suburbs that grew up along the wires and track fed off a sense of permanence surrounding a relatively fixed infrastructure (Davis 1992: 10). Elaborating a compact, urban form of transit-oriented development (TOD), investment along traction corridors resulted in robust urban villages. Today these neighbourhoods "are four times as dense as mall communities, yet they rarely have anything significant invested in them except patching" (Doucet 2007: 48). As Clive Doucet, a former downtown city councilor, explains, "their tax money flows out to the suburbs to pay for brand new roads and brand new sewers which these lightly populated areas cannot afford themselves"¹⁸ (2007: 48). The Depression undercut an Ottawa Electric Railway (OER) company already suffering from disinvestment, stockholder rapacity and competition from the flexible, if skillfully suppressed jitney industry

¹⁷ The greenbelt has persisted in contemporary planning as a tool of "smart growth." I take up this aspect of the Gréber Plan in chapter five when I explore the relationship between post-modernist planning, urban governance and population data.

¹⁸ Since the former councilor wrote this, however, the Glebe has in fact seen significant investment in the form of new sewers, pavement and sidewalks, as well as a massive, and highly controversial, sports and entertainment complex at Lansdowne Stadium that, to the chagrin of many people in the community, is proceeding without concomitant investment in public transit in an area with limited bus service.

(Davis 1992). More corrosive than any one thread of financial collapse, however, was an inexorable tide of automobile traffic. Numbering one for every eight residents in 1930 and one for every 4.2 by 1953, automobiles clashed with streetcars in several obviously damaging ways. They siphoned off patrons, regularly crashed into streetcars, and undermined their timetables through congestion and unregulated curbside parking. Because of these obstacles trams were slower in 1956 than they were in 1901 (Davis 2001: 352-4)! Less obvious, automobiles weakened the link between property values, employment centres, and dependable transit service, and thus incentives for TOD.

By the time Gréber came in to resolve the infrastructural mess at Confederation Square, the streetcar system was weak, a literal strawman for that which was holding back modernity. He wasted little time in trying to knock the strawman down. Gréber denounced urban trams as “relics of the days before pneumatic tires,” and urged the federal government in 1938 to completely remove them from Ottawa within 20-30 years: “It is ridiculous to have a railroad running straight through the center of a city. All large metropolitan centers are dispensing with or have long dispensed with street cars as a means of transportation in congested areas” (cited in Davis 2001: 360-68). It soon became clear that Gréber would be able to speed up this timeline. Through the war memorial project he managed to deprive the tramway of a pivotal node, convincing the City of Ottawa, on the eve of WWII, to pay OER to rip up track on Elgin Street, the memorial’s southern approach. This in turn had implications for other parts of the streetcar network with which the Elgin line was connected, cutting off service to Main Street to the south, and creating an effective wedge for the motor bus. Upon his return in the fall of 1945 as a consultant to the newly formed National Capital Planning Service (NCPS), Gréber’s mandate

had evolved into something much more ambitious. Planning the capital's "Parliamentary Precinct" had expanded into the task of designing a master plan for a National Capital District, a city-region spanning 900 square miles. On October 25th, through a speech held ironically in the Railway Committee Room of the House of Commons, Gréber introduced his vision before parliamentarians to produce a master plan for the capital region.

When reasonably conceived, [city planning] is as precious as life, because its aim is to organize life, with method, foresight, dignity, comfort and pleasure. A good city plan brings a good civic life, it is the material chart of social order, of strong finance, of sure prosperity. And the best plans are those of great vision. Daniel Burnham, the master of city planning in the United States ... used to stress this great truth: "Make no small plans, they are a waste." They certainly cost twice and give less satisfactory services than master conceptions. (Gréber 1945)

Five years later, Gréber's Plan for the National Capital was unveiled in the House lobby on a tapestry woven in silk and wool with colors inspired by leaves he gathered in the Gatineau wilderness park. Underneath the impressive "Beaux-Arts renderings" stood the fundamental tenets of modernist architecture: "land use segregation, expressways, decentralization, reduced densities, urban renewal, open space and the neighbourhood unit" (Gordon 2001: 49). A large-scale model was soon touring the country, part of a public relations campaign to circulate the plan and promote it as a national memorial. The outsized, traveling model could be viewed as a three-dimensional version of what Latour calls a "panorama." As a totalizing representation, "panoramas give the impression of complete control over what is being surveyed, even though they are partially blind and that nothing enters or leaves their walls except interested or baffled spectators" (Latour 2007: 188). The model capital seemed to serve several, mutually reinforcing purposes. Conceived through large surveys of traffic flows, natural systems and social conditions, it helped legitimate planning to the Canadian public as a scientific profession,

associate the automobile with national progress, and plant the idea of a master plan in the social imaginary. Through a beautiful tapestry and meticulously modeled panorama, Gréber and the NCPS could deflect attention from the social costs of the plan towards the objective planning technology that would modernize the national capital.

A central component of this modernization strategy was to decentralize the capital region in ways that evoked hints of Le Corbusier's Radiant City. Central government offices and national institutions were relocated to five suburban office parks, like Tunney's Pasture, named after the farmer who lost the lot where he put his cows to pasture to a set of grey, boxy office towers (Statistics Canada 1993: 71). Gréber's "parkification" took on more invidious tones of social engineering in the early 1960s. Under ethically dubious precepts of urban renewal, three thousand people who worked and lived in Le Breton flats (two-thirds French-Canadian, largely working class) were forcibly evicted from what the National Capital Commission branded as slum-housing (Jenkins 1996). Depopulation, both coerced and voluntary, indirectly made the automobile increasingly indispensable. More through everyday usage and engineering than design, parkways became conventional arterial roads where contemplation of waterways and carefully arranged vegetation posed a challenge. The Colonel By parkway that replaced the rail tracks into Union Station, for example, in conjunction with a boulevard named Bronson Avenue, turned into a fast and efficient conduit linking downtown to Confederation Heights, another sequestered office park, and eventually the airport. Consequently, what in Gréber's model had been expressed as an open, interactive relationship between the road and its surrounding greenspace, in practice took on a functional segregation that broadly characterized the capital's new urban form. Replacing a struggle between the streetcar and car-street, in essence, was one

between different roads that both catered to the automobile. The park road, meant less for speed, as we saw, than for easy connection from inner city parks to new leafy suburbs (Van Nostrand 1983: 4), clashed with a utilitarian model meant to propel motorists as efficiently as possible.

These new planning horizons were possible because of the extirpation of rail from urban Ottawa. The key that “unlocked the rest of the plan,” for Gordon, was the removal of the east-west Canadian National (CN) freight line, passenger railways (including Union Station), and their adjacent yards from the city centre to the suburbs (2001: 48). In a direct way, moving the rails made room for more roads. Finished by the late 1950s, the switch effectively opened up rare rights of way for crosstown boulevards and arterial parkways that merged large sections of road into a pseudo-grid. I concur with Gordon’s argument that removing the CN freight line and industrial yards that had bisected Ottawa was crucial for achieving other elements in the Gréber Plan, such as building a new superhighway, and that in a sense “it is hard to imagine how Ottawa would function without the Queensway,” which the superhighway came to be known (2001: 55). However, I disagree with Gordon’s argument that the 1950 Plan’s primary weakness or “Achilles heel” was an underestimation of population growth. While he acknowledges that banishing Union Station to the suburbs may in hindsight not have been the best idea, as it hastened the decline of commuter rail and its relationship with urban foot travel, Gordon fails to identify the abolition of street rail and tramway-oriented development as a shortcoming. Indeed, helping to retire the streetcar was one of Gréber’s decisive influences and departure from past planners. Cauchon, for example, while aiming to remove heavy rail from the core, called simultaneously for the *expansion* of electric rail transit (Taylor 1986: 146). Gréber depicted streetcars as ugly and depressing, easy targets for nuclear strikes, unworthy of a capital, and above all, “detrimental

to traffic circulation” (1950: 127; Davis 2001). Finally, in contrast to Gordon, I would not characterize the Queensway, the grand prize of rail’s extirpation, as a “strength” of the Gréber Plan. Arguably, Ottawa’s supposed “main street” has a much more ambivalent significance.

The Queensway slices through the heart of downtown Ottawa, like the heavy rail line it replaced, and forms an exemplar of Techno-Scientific and “City on a Highway” planning. It quickly left behind any “park road” pretenses of North America’s early superhighways toward aesthetic and civic elements associated with public space. Instead, the Queensway formed what I call a “machine road” characterized by a relentlessly linear, inward-focused design that materializes its instrumental function as a spinal commuter artery. Elements of such a machine road appeared early on in the freeway plans of the 1920s and 1930s that proposed to expand particular aspects of parkways, especially their limited access (Brown 2005: 9). Although these plans were delayed during the Great Depression, they were remobilized after WWII, using Germany’s autobahn project as a key “point of reference” (Furness 2010: 51). A well-oiled chain of interrelated actors, the machine road tends to dominate its surroundings. Unlike the park road, which manages but also cooperates with its context, trying to impress through every verge and vista its natural order upon the motorist, the machine road ploughs straight ahead, blinkered and efficient, while adjacent life turns it back. Today, Gréber is usually associated with Ottawa’s beloved green space, or more odiously the manner in which his team of capital planners condemned Le Breton flats. However, the lynchpin of the Gréber Plan, and Ottawa’s new system of traffic, was an archetypal machine road. To be sure, the wide right-of-way Gréber created by removing the east-west CN Railway freight line was an elevated wall of industrial infrastructure which already had machinic qualities. The new road built upon these qualities. It was designed to

“ensure speedy through traffic, reduce present obstacles to north-south traffic movements, rehabilitate adjoining lands and relieve traffic congestion” (Gréber 1950: 177). It took seven years to carve through the heart of Ottawa, and opened in 1965. Like the Toronto QEW, the Ottawa expressway was dedicated to Elizabeth II. Similarly, Ottawa’s Queensway subverted the traditional public meaning of Her Majesty’s highway as open to all citizens regardless of their means of conveyance.

New technical standards developed by the QEW since its pre-WWII opening to improve safety and efficiency were readily extended to Ottawa and other cities in Ontario. Unlike the Ottawa Queensway, the QEW was not foisted above grade on top of an existing heavy rail line. And as already mentioned, its initial construction featured outward-facing, park road gestures towards its natural surroundings. By the late 1940s, however, with the baby boom in motion and annual vehicle registrations quickly rising, the landscape surrounding the QEW was no longer “primeval” forest. Rather, it was a loose string of development that traced a “Golden Horseshoe.” Coinciding with the growth that it had helped stimulate, the QEW earned a reputation as a congested death trap, with accidents commonly occurring at intersections and in front of the many private homes that clung onto the highway like barnacles. In response, the Department of Highways turned to its engineers. During the 1950s, new service roads were constructed beside the existing highway in conjunction with grade-separated cloverleaf interchanges to limit direct access to adjacent properties. These innovations did not immediately limit the QEW as a public, multi-use corridor. As Van Nostrand details, the single-family homes that cropped along the first service roads actually faced the highway (1983). Interchanges started to attract community facilities like Dixie Plaza, Canada’s first shopping centre, whose posture also acknowledged the

highway as a public space. As Van Nostrand notes, “the overall effect was of a super-cornerstone located on a super-corner” (1983: 14). Safety and efficiency on the super-corner, however, proved elusive. Parallel service roads and grade-separated interchanges were extended along the QEW and became central mediators of machine roads. The development they attracted, in a positive feedback loop, kept inviting cars and their corollaries, traffic and accidents, and increasing demand for more structural “improvements.”

During the late 1960s and early 1970s, the Department of Highways engineered a solution which settled the Queen’s highways’ utilitarian focus. It began widening the QEW from four to six, eight, and even ten lanes, a solution to which the Queensway also became committed quickly after its opening. More lanes meant bigger ramps and interchanges and, obviously, more car drivers. These were the “freeway conditions” with which the Queen’s highways would cleanly cut through urban fabric and control automobile access. Freeways, however, were not a clean cut. They generated levels of traffic noise and tailpipe pollution that lessened the health of neighbours and reduced the value of adjacent property. Freeways also increased the amount of dead space which people had to hurry through at night, or the “structural holes” in urban space that can be dangerous particularly for women, older people and the disabled (Sheller and Urry 2000: 745). The machine road dominates its surrounding landscape, not by engaging it, but by disconnecting it from the view of motorists and the experience of car driving. Bombarded by various kinds of pollution, buildings adjoining the QEW, increasingly commercial and industrial, were not “rehabilitated” by the superhighway, as the Gréber Plan predicted (1950). In fact, to protect themselves, they turned and faced the other direction (Van Nostrand 1983).

To be fair, Gréber envisioned an expressway for Ottawa with a civically inspiring view of the nation's capital as it came into focus through the windshield. He did not foresee the giant earth berms and concrete barriers that later would be required to control the freeway's noise and other toxic emissions. Gréber also failed to foresee how explosive population growth, mixed with mass produced cars and an ever expanding, publicly subsidized road network, would undermine measures meant to contain sprawl, or car-oriented development (COD).

COD pivots on two, twin processes: the extension of urban roads into forests and farmland to service low density housing starts inaccessible by rail transit; and the extension of suburban style arterial roads into the old urban core. It contrasts with the mode of tramway-oriented development that coexisted with park roads, marking an increase in the power of the car to shape the built environment and tectonic shift towards neighbourhoods of automobility. Demolishing streetcars and urban commuter rail connections formed part of a larger policy of decentralization reinforced by the construction of peripheral office parks, low density suburbs and enrollment of rural roads into a hierarchical regional grid. Effectively, COD burst the compact "streetcar suburb," spilling its contents horizontally across extensive tracts of single-detached dwellings. Where earlier "developers would rarely build houses more than four blocks away from a streetcar line" (Hall 2002: 304), under COD houses and retail were being fabricated in cheap, interstitial zones set apart from the freeways to which they were umbilically connected by "collector" roads. Speedy development demanded standardized materials and mass production. Eastern Ontario's master builder, the Minto Group, got its start in 1955 after four Ottawa brothers, Louis, Gilbert, Irving, and Lorry Greenberg, concocted an assembly line strategy to build houses on multiple sites simultaneously. By 1960 Minto boasted seven starts a

day with a brisk 72 day completion schedule. Five years later, after building more than 5,000 homes in Ottawa, Minto was “well on its way to becoming the region’s largest private landlord” (Minto Group 2011). Owing in part to factors that were beyond the control of Gréber and the NCPS, self-sufficient “satellite towns” meant to grow on Ottawa’s outskirts, along with rural townships, were turned by developers such as Minto by the late 1960s into conventional suburbs (Gordon 2001). The city’s last streetcar retired on May 1, 1959, on the ambitious side of Gréber’s prediction, expiring a 69 year-old relationship between mobility and urban space.

The abolition of urban street rail marks the completion of a shift in everyday mobility that can be seen in both the street and the neighbourhood. On the street level, the park road, an ideal type of spatialized automobility based on integrating the car into its urban surroundings, gave way to the machine road, a modernist archetype that literally bulls through the city, repelling everything in its path. In the next chapter, I will consider a third ideal type that exists in tension with these two road models. On the neighbourhood level, car-oriented development eclipses compact, walkable neighbourhoods anchored on streetcar tracks, eclipsing these old neighbourhoods with sprawling satellite development tied to hierarchical road systems, at the pinnacle of which lay machinic and relentlessly linear superhighways. A fundamental assumption of ANT is that the introduction of novel actors that become highly connected with other actors results in a transformation of the entire network. Seen in this light, as actor-networks, neighbourhoods of mobility do not exist apart from one another in timespace, but rather interpenetrate, with processes occurring in one neighbourhood impacting those in another. To make this somewhat abstract point more plainly, in the second vignette I explore the particular perspective of Bronson Avenue, an arterial highway that manifests defining aspects of the

machine road, yet at the same time intersects with Sparks Street, where I began this chapter, in the very heart of downtown Ottawa. Bronson shows us that neighbourhoods of automobility do not, at least in a succinct manner, simply start where streetcar suburbs left off. Rather, like a complex network, neighbourhoods of automobility have brought profound impacts upon the “old city,” modifying old boulevards and railway neighbourhoods by introducing spatial functions and demands for which they were not initially designed. Bronson Avenue highlights how networks of automobility do not simply spread outwards, transforming urban spaces that exist *outside* the historic downtown, but also spread inwards, modifying neighbourhoods *inside* the urban core.

The Second Vignette: Bronson Avenue Express

Bronson Avenue used to be one of my city’s premier addresses. Bronson was a gracious north-south boulevard lined with grand homes and magnificent trees which cast a shady arch over the street’s entire length. Streetcars whisked quietly up and down each side of the trees. The sidewalks were broad. People strolled along the avenue on a summer evening. Today, Bronson Avenue is a broad, four-lane strip of asphalt lined with battered boarding houses, parking lots and small odd businesses looking for low rents. The houses that have hung on have done so by turning away from Bronson so that they are entered from a side street. High fences have been added to protect the property facing the Bronson side. The fences mimic suburban noise barriers along the traffic sewers we have built in the suburbs and give the street a shuttered, blind feeling. The trees have gone. (Doucet 2007: 50)

As noted by former Councillor Doucet, north Bronson today is a four-lane strip of asphalt. However, when Bronson reaches the Rideau Canal, just up the hill from Sunnyside Avenue and Carleton University’s front driveway, it becomes a six lane (44.5 metre) divided arterial highway to the airport parkway with off-peak speeds averaging well above the posted 70km/h. If four-lane Bronson betrays a “blind feeling” that spurns social interaction, six-lane Bronson Avenue

Figure 14: Dunbar Bridge consists of two prestressed concrete bridges that carry traffic on Bronson Avenue over the Rideau River (photo, author)

effectively cuts Carleton out of downtown Ottawa, even though the vibrant neighbourhood of Old Ottawa South beckons only 44.5 metres away. Unlike other boulevards that have since their modernist transformation considered a “road diet” (lane reduction), Bronson Avenue tells a story of unabashed faith in the tenets of twentieth century traffic engineering. It also tells a story of the disproportionate power wielded over traffic by a particular kind of scientific expertise.

The engineering firm retained in 1990 by the former (i.e. pre-amalgamation) regional municipality to draw up plans to repair Dunbar Bridge (see Figure 14) and improve traffic on

south Bronson grouped the road's problems into four evocative categories. First, Dunbar Bridge, where Bronson Avenue crosses the Rideau River and becomes the Aviation Parkway, was suffering from serious "structural deficiencies." Its reinforced concrete deck was eroding, its tired girders had caused reduced vehicular (and earthquake) loading and, among other troubles, structural steel damage had weakened its main girder slices, sidewalk brackets and diaphragm plate connections. The bridge was literally falling apart at its seams. Second, "traffic operational deficiencies" beset south Bronson. Dunbar Bridge was too low with respect to "current standards," causing large trucks to crash into and damage its girders. Even more critically, "the level of service provided at the Bronson Avenue-Sunnyside Avenue intersection is currently level F" (McCormick and Rankin 1991: 10), as in a "failure" of capacity to meet demand. Third, south Bronson, as a 34 metre wide, undivided, four lane arterial, failed to provide "for future traffic growth," heaps of which were expected given Carleton University's expansion and the continuing march of suburban development further south.

Finally, the Bronson bridge suffered from "environmental deficiencies." The problems posed to the environment that McCormick & Rankin considered did not relate to the thousands of motor vehicles that Dunbar help funnel in and out of the business district everyday. Rather, the traffic engineers had a more invasive species in mind. "The existing bridge has a form of construction which permits roosting of pigeons. This may be contributing significantly to pollution of the Rideau River" (1991: 12). By addressing the threat posed by pigeons to Ottawa's river system, the expansion of south Bronson into an arterial highway satisfied the obligatory Class Environmental Assessment (EA). The Class EA is a planning procedure that is meant to take into account the potential social, economic and environmental impacts of a city road project.

However, the terms of this assessment frequently prioritize narrow imperatives of economic growth over wider goals associated with society and ecology. These terms of environmental assessment were defined by the Municipal Engineers Association of Ontario and approved by the Ontario Minister of the Environment in 1987.

Although Bronson north of the Rideau Canal was spared the freeway treatment inflicted during the 90s upon its southern trunk, in the spring of 2010 the City began presenting plans to improve its slower, northern half. In addition to replacing century old sewers and watermains, the City is proposing to widen the avenue by an average of two feet along its length by thinning sidewalks and removing green space. More road, the city emphasized at the first Public Advisory Committee meeting, meant more room for cyclists and standard widths for an old right-of-way that evolved haphazardly over time. More road also meant, however, that there would be no room for the trees which dotted the architectural drawings, but this could be solved by installing plastic fake trees which required less space for roots and repelled salt. The city received a generally negative reaction from the public during the first consultation (<http://westsideaction.blogspot.com/search/label/Bronson>). It has since agreed to install pedestrian lighting at the curb line, which is helpful because it reduces “apparent” lane width and promotes a sense of safety among pedestrians. But officials still appear to support a standardized four-lane configuration.

The \$40 million project to fix north Bronson illustrates the challenge of living up to the City’s Transportation Master Plan (TMP) (2003), which can be read as Ottawa’s “traffic constitution.” The area’s city councillor, Diane Holmes, for example, agrees that the Bronson redevelopment plan contradicts the TMP, which places the priorities of pedestrians, cyclists and

transit above that of personal motor vehicles. “The reality is that the [revised plan] is still a four-lane highway mainly for commuters. ... We still have a long way to go to redesign Bronson.” Holmes laments that many city engineers still think solely in terms of suburban space, “and have probably never read the city’s transportation plan” (Lux 2010). Former capital ward councillor Clive Doucet, too, has long worried that city engineers are not tallying the social costs of extending suburban-style roads into the urban core. “How do you calculate the loss of livable environments?” (Doucet 2007: 50). Together with its speedy southern half, conjoined at the canal, north Bronson illustrates the perils of subverting a hard-fought constitution built on the noble premise of leveling opportunities between privileged and marginalized modes of traffic. Its changing form and function over time shows how, as an object of scientific engineering, traffic on Bronson has become abstracted from the scale and perspective of vibrant, resilient public space.

Chapter Summary

Taken together, the “ignition” of automobility (1901-1931) and the rise of car-oriented development (1945-1972) illustrate a far-reaching shift in relations between urban space and everyday travel. A novel assemblage predicated on the private motor car began to besiege the old streetcar city before the Great Depression, when a diverse and widely distributed set of actors, none of which were intrinsically related, either to each other or automobiles, started concatenating into an ensemble of associations. These actors included cheap combustion engines, electric lampposts, motor leagues, soundscapes, highways, print advertising, representations of

nature, vehicle registrations, signage, government bureaucracies, oil pipelines, cultures of touring and new habits of walking in the city. Using actor-network theory, I examined the hanging together of this eclectic group of actors as an open-ended process of “translation.” ANT emphasizes how emerging neighbourhoods of automobility resemble a relational topology or network, in which the nature of time and space depends on the ongoing deployment of associations between otherwise incommensurable entities, and associations between different actors are of more importance than intrinsic properties of actors themselves. After WWII, this network was transformed again by new ideas about cities, planning technologies and a reorganization of everyday life. The work of mundane movement became increasingly delegated to monumental, specialized infrastructures which acted to segregate different types of traffic, advancing the smooth displacement of cars at the expense of walking, cycling and public transit. Hierarchical street layouts, freeway technologies and urban decentralization helped elaborate neighbourhoods of automobility. While many elements of early motorcar networks remained intact, including city parkways and streetcar suburbs, they were nevertheless given new meaning inside a machinic assemblage. Both continuity and nonlinear sociotechnical change were at work. The cultural and infrastructural legacy of this urban assemblage, and contemporary attempts to take it apart, are the focus of the next chapter.

Chapter 4 – The Production of New Urban Space

The dramatic changes explored in the last chapter have left a social and technological legacy that both constrains and inspires twenty-first century efforts for urban reform. As the storyline of Bronson Avenue suggests, old boulevards in the city core that once contained the power to anchor multiple neighbourhoods of mobility, face significant pressures by the city and the car driving public to conform to the spatio-temporal demands of automobility. King Edward Avenue is another case of this inward incursion of machinic roadways, and forms the subject of the third vignette. Like Bronson, King Edward tells the tale of a complex urban ecology upended for abstracted spaces associated with economic growth, national progress and private automobility.

However, King Edward Avenue introduces several new characters (e.g. tractor trailers, planning blight) and a sharp political edge to the narrative of mobility and urban space I have detailed so far. King Edward's obdurate and contested status as a major trucking route, a product of both historical and contemporary politics and neighbourhood-level power relations, opens up a different, yet related set of conceptual concerns than those pursued in the last chapter. In this chapter, I use King Edward Avenue as a jumping off point to examine neighbourhoods of mobility in the first sense of this term, where neighbourhood does not refer to a dislocated actor-network but a bounded and conventionally recognized area of the city, where multiple mobilities intersect. I explore contemporary efforts to transform urban development and elaborate a critical politics of mobility, using Lefebvre's work on the production of space to interrogate opposition to car dependence and the sociotechnical challenges of putting alternative conceptions of neighbourhood and mobility into practice.

The Third Vignette: King Edward's Very Large Trucks

Figure 15: A pedestrian walks beside a large truck along King Edward Avenue (photo, author)

The area's harsh street environment will soften through abundant tree planting and streetscape improvements. ... Secure, inviting, pedestrian corridors will result, creating a sense of cohesiveness with neighbouring areas. In particular, efforts will focus on improving pedestrian safety and access across King Edward Avenue, thus reuniting the Lowertown community. (City of Ottawa, "Official Plan" 2003, Vol. 2a, Sec. 1.81)

Let's put it plainly. King Edward Avenue is a civic disgrace. The street has been destroyed by excessive traffic and the city has failed to return it to a liveable standard, even after an order by the Ontario Municipal Board. It's time to put people ahead of cars and do something about this problem. (Denley 1998)

Figure 16: A truck idles on King Edward Avenue (photo, author)

Looking down from an overpass along the stately Sussex Drive, I watch a grisly parade of tractor trailers rumble down King Edward Avenue. These are the diesel workhorses that drive North America's economy. You can feel their kinetic energy as it pulsates through the sidewalks, bridges, homes and office buildings that line King Edward (see Figure 16). This truck traffic has been the bane of local residents' existence since 1965, the year when the grand boulevard's great elms came down and the interprovincial Macdonald-Cartier bridge went up. During this time in Lowertown, a relatively poor and diverse neighbourhood in downtown Ottawa, King Edward's four lanes became six, and six nearly became more. An American consultant was retained that

year to produce a far-reaching traffic and transportation plan for Ottawa¹⁹. It recommended an extensive system of limited-access expressways to head off a looming crisis of traffic congestion, (Smith 1955: 173) and in 1967 the area's residents were informed of the eventual demolition of their homes for a freeway. The freeway remained theoretical, it was never built. But it dealt a material blow from which Lowertown has never fully recovered. City consultants discovered in 1975, before the project was officially canceled, that "the effect of the Freeway proposal has been neglect of properties in the [40 acre] study area," and that much of the surrounding neighbourhood was "characterized by planning blight." Although most of the buildings, according to the consultants, had not been directly affected in a "physical sense" by the hypothetical freeway, ninety-one buildings within the study area (44%) were found to be structurally unsound (Murray & Murray 1974: 2-3, 6). With an impending freeway hanging over their heads, the local area residents had little reason to invest or care for their homes and businesses that were supposed to be demolished.

Another social consequence of late 1960s superhighway fever was the mobilization of community organizations, especially in relatively wealthy neighbourhoods. The New Edinburgh Community Alliance, for example, became mobilized in opposition to plans to complete a proposed road called the "Eastview Vanier Arterial." In 1973, and for more than 25 years thereafter, Eastview, an extension along an abandoned railway right-of-way, was recommended as a less destructive route on the urban periphery for truck traffic than King Edward in the downtown core. It was in the form of an "interim measure" that King Edward was dealt the full flow of traffic fit for a theoretical freeway before Eastview could share the load (Todesco and

¹⁹ The consultant was Wilbur Smith Associates, founded by Wilbur Smith, South Carolina's first state traffic engineer, and his brother. In 2011, Wilbur Smith Associates merged with Camp Dresser & McKee Inc. to become CDM Smith, a multinational consulting, engineering, construction and operations firm (<http://cdmsmith.com/>).

Rice 1990: 5). Owing in part to the greater clout and affluence of New Edinburgh's Alliance, The King Edward Avenue Task Force, representing Lowertown, finally lost its bid before the Ontario Municipal Board in 1999 to keep Eastview alive. Currently, King Edward Avenue distinguishes Ottawa traffic by mingling a heavy flow of very large trucks, 2100 rigs every day, with pedestrians and cyclists in an urban core (Butler 2011).

King Edward suggests that automobility is not simply a story about the car, but also in a critical way a story about the truck. Reliance in North America on the motor truck for transcontinental commerce has grown over time, along with the size of the trucks. The vast majority of freight is now moved in and out of Ottawa on arterial roads and highways by this method (Gilbert 2009: 7). In late summer 2009 after harmonizing its policies with that of the United States and Quebec, Ontario opened its roads to vehicles "made up of a tractor pulling two full-length semi-trailers up to 40 metres overall length" (Ontario Ministry of Transportation 2010a). It cited economic benefits, lower fuel consumption costs and increased safety based entirely on findings from Western Canada and the U.S.²⁰ Truck trains represent a dramatic shift from the smaller lorries that once ferried freight back and forth over the Ottawa River. They require large, long lanes and wide intersections that produce a threatening passage for pedestrians and cyclists. They also have helped mobilize political opposition to truck highways running through dense, urban neighbourhoods.

After an elderly pedestrian was fatally struck and dragged 18 metres by a truck on King Edward in 2006 and when, a year later, an engineering firm the city was consulting concluded that a badly needed crosswalk was too dangerous, the King Edward Avenue Task Force rose

²⁰ For a countering European perspective, see <<http://www.nomegatrucks.eu/>>.

again from five years of abeyance. It sought allies and successfully lobbied the city to conduct a lane reduction study (King Edward, they argued, was about to be narrowed for scheduled repairs anyway). The study argues, provocatively, that a lane reduction would have only a minimal impact on the level of service, refuting the main political and technical argument used to support the status quo (Dillon 2009: 34-45). To be sure, the city will not lower the “level of service” on King Edward without a protracted fight. For example, in April of 2011, the city’s transportation committee resolved to implement King Edward’s so-called “road diet” only after a new interprovincial bridge is constructed, which may take decades. On the other hand, ever since traffic surveys in Canada were first conducted in southern Ontario almost a century ago (Davies 1989: 124), scientific models of traffic produced by experts have loomed large in contests over street space, and local community groups and some planners at the City of Ottawa have increased the political pressure for a lane reduction. For all its truck traffic, King Edward Avenue is nevertheless striving to implement a new vision of urban space.

New Urban Roads: A Third Way for Automobility?

Unwavering local support for a road diet on King Edward fits into an emerging narrative of “smart growth” in Canada. In chapter one, I described how assembling the city around car-use has taken a heavy toll on the environment and human health in Ontario through sprawl, accidents and emissions. Although cities continue to implement car-oriented development, this has not gone unchallenged by new planning movements. Since the late 1990s planning policy in Canada has undergone a shift away from 1950s style planning – at least on paper. Cities have

increasingly focused on stimulating compact, less environmentally damaging forms of development that combine multiple land uses and encourage walking, cycling and transit. These principles distinguish “smart growth,” as Pierre Fillion argues, from the postwar “sprawling form of urbanization, characterized by low overall densities, a rigid specialization of land uses and a near total dependence on the automobile” (2003: 2). Smart growth strategies have been taken up in recent legislation and policies supported by the Ontario and British Columbian provincial governments (Grant 2009; Fillion et al. 2000). For example, Ontario’s landmark development plans, *Places to Grow: Growth Plan for the Greater Golden Horseshoe* (2006) and companion *Greenbelt Plan* (2005) adopt urban containment strategies, active transportation and transit-oriented development (TOD). Under provincial jurisdiction, municipalities are obligated to adopt these planning strategies. Furthermore, on a city level we have seen the rise of cycling plans that attempt to raise the small percentage of “utility cyclists,” or people who use a bicycle for daily transportation, above one or two percent of the Canadian population (Statistics Canada 2008).

Two other planning movements similar to smart growth have helped define a new relationship between urban planning and mobility. The first is “new urbanism.” It gained clout in the 1980s, inspired by Jane Jacobs who mobilized local opposition after Robert Moses, New York’s master builder, announced his intention to destroy her neighbourhood so that he could build a freeway. Related to transit-oriented development, new urbanism promotes dense, interconnected street patterns which support multiple, coexisting uses. The second approach is “sustainable development.” Since the Brundtland commission, this has meant planning for long-term stewardship of natural resources and environmental responsibility through such planning devices as greenbelts and watershed management. These two approaches clearly overlap with

smart growth, which emerged initially during the late 1980s as a pragmatic response to car-oriented development. Smart growth coalitions began to seek ways to manage suburban sprawl and coordinate jobs and housing, for example, by creating compact, mixed-use districts within car-oriented suburbs (Filion 2003). In practice, smart growth, new urbanism, and sustainable development have become “increasingly fused together” (Grant 2009: 13). In my usage here, smart growth refers to their mutually shared principles. Smart growth may herald not simply a new kind of road, but also a new relationship between mobilities, city planning and the built environment. We might call this new relationship a “new urban road” and contrast it with two previous relationships between planning and automobility.

The new urban road diverges from the machine and park roads described in the last chapter. It diverges sharply from the machinic highways produced in the mid and late twentieth century, and bears a more complicated relationship with park roads. By design, the park road was imagined as an effective way to connect car drivers with a stylized form of nature in the city, crafted for the motorist’s gaze. Such outwardly focused pretenses were all but abandoned by planners and engineers after WWII as they turned their attention towards a more utilitarian assemblage. In continuity with the park road, the machine road caters exclusively to the car driver, but introduces an overriding concern with increasing power and rationalizing circulation. The new urban road defined by smart growth, in contrast, challenges the assumption underlying both of these models that roads should exclusively privilege the uninterrupted displacement of motorists. Instead of this exclusivity, the new urban road supports the co-presence of multiple mobilities, including non-motorized modes of “automobility” such as cycling (Furness 2010). However, like the park road, the new urban road attempts to insinuate itself within its

surroundings in order to produce a landscape conducive to civic interaction. In other words, it rejects the impermeability of machinic roadways. But the new urban road trades the romantic panorama of nature and war memorials that characterized many previous parkways for the unpolished, unpredictable mixture of cultures and spaces that define urban coexistence. As Jane Jacobs pointed out, advances in sanitation and public health have made city density liveable. As she put it, “things have changed since the days when Ebenezer Howard looked at the slums of London and concluded that to save the people, city life must be abandoned” (1961: 218). By not throwing the baby out with the bath water, the new urban road may be a unique planning moment that validates, and even promotes, forms of mobility other than car driving that make a difference to urban life.

A crucial question moving forward is whether cities that are dominated by cars can capitalize on this third configuration of automobile space and actually *build* the new urban road. Canada’s capital city and most populous province have moved away from modernist urban renewal schemes of the 1960s, but the region has had only limited success in implementing smart growth (Grant 2009). It is not for lack of rhetorical support. In a complex planning arena shaped by federal laws, provincial policy, municipal regulations and consumer choices, new urban roads enjoy nominal support in sub-national jurisdictions. Ottawa’s first “master plan” as an amalgamated city-region in 2003, for example, reflects Ontario’s new smart growth planning policy. The City’s Transportation Master Plan (TMP) stresses the importance of coordinating land-use and transportation policy to stimulate compact communities in which people can walk, cycle and take public transit as well as drive (2008). The TMP pictures the expansion of shared roads which move car drivers from point A to point B, but are slow enough to also produce busy

sidewalks, bike lanes (segregated or not), and dense, adjacent spaces of multiple uses that open onto it. Currently, this kind of road lies near the bottom of the traffic food chain in the downtown core, and the new development that continues to leapfrog over greenbelts tells a much different story. As Jennifer Grant argues, while the ideals of smart growth have caught on, “garage-front suburbs with cul-de-sacs of large and expensive homes remain common place,” and “private communities” organized around the car continue to proliferate (2009: 15). The Queen’s highways to which these cul-de-sacs eventually drain in Ontario’s vast commutershed, moreover, continue to grow independently of smart growth projects. For example, the Queensway will have more lanes soon in order to service Ottawa’s eastern, southern and western bedroom communities (Ontario Ministry of Transportation 2010b). Its only nod to smart growth, following the QEW, is carpool lanes to encourage passengering.

The success of the new urban road is contingent on the ability of cities to change the manner in which urban space is produced. The dominance of machine roads like the Queensway lies in its capacity to persist as an inward-focused, utilitarian corridor monopolized by the “driver-car assemblage” (Dant 2004). It does not persist as a static and path dependent object, however. This kind of corridor persists because of a dynamic, open-ended “production of space” in which many social and technical actors participate, including planner-engineers, cement rollers, suburban councillors, hydrocarbons, stimulus spending and the Ontario Municipal Board. Notwithstanding its dominance, the machine road has failed to fully efface earlier “sedimentary layers” like the park road (Lefebvre 1991: 229). The National Capital Commission’s parkway system offers a living testament to pre-machinic urban design where car drivers can access nature (supposedly) at 60km/hr on exclusive roads with no commercial vehicles, limited signage

and lighting, and carefully sculpted views of rivers and canals. Today the park road describes an anachronistic, nostalgic landscape. It facilitates anti-urban rhythms that were unforeseen by those who designed it, like commutes to bedroom communities and a car-dependent international airport. As the National Capital Commission puts it, “it is unlikely that such parkways will ever be built again. They should be cherished, therefore, as monuments to a bygone era in urban planning” (2011b). But have they nothing to teach us about cities today? Park roads, and the old streetcar wards in which they reside, have in spite of their enrollment into the “machinic complex” of automobility (Sheller and Urry 2000: 738) contemporary relevance with respect to integrating cars with cities. The new urban road can borrow the outward-seeking connectivity sought by this earlier form of auto-space. The challenge is gearing this kind of connectivity towards multiple kinds of traffic in the context of smart growth.

Mobilities and the Production of Space

Smart growth aims to unbuild the machinic auto-complex by altering basic ideas about what a city street is for and what sorts of people and things belong there. To theorize this process of contesting how street space is socially and technologically produced, I rely on the conceptual work of Henri Lefebvre. *The Production of Space* (1991) is a familiar citation in the mobilities literature. Lefebvre provides a way of approaching the problem of automobility and the issue of planning a new urban road that complements an ANT approach. As already mentioned, a key criticism of ANT is that while it accounts for the translation of novel sociotechnical networks, it fails to adequately explain network exclusion, or why some actors eventually gain and

consolidate more power than others (Hess 2001). Lefebvre's work, in contrast, coming out of a critical tradition of Marxist-Humanism, focuses explicitly on how structurally unequal power relations become manifested in space. On the other hand, Lefebvre defines power relations in a similar way as ANT. He conceives of power not as some kind of centrally controlled resource, but as something wielded unevenly across a wide array of spatial producers and products, both material and symbolic, all of which resonates with ANT's "distributed" notion of agency. In fact, Lefebvre's emphasis on the irreducible plurality of space parallels the relational topology proposed by ANT. As a complementary way of approaching car-dependence, *The Production of Space* can help us understand the challenge of building a new urban road.

The kernel of Lefebvre's approach is that we cannot draw a rigid distinction between space as a "subject" and space as an "object." He objects to the way that certain geographical sciences and transport geography have used Euclidean assumptions to portray space as an empty, neutral grid or "passive locus of social relations" (1991: 11). He argues, instead, that space has generative effects. Seeking to bolster the agency of space, in Latourian language Lefebvre describes space as "concatenations of bodies" that

touch one another, feel, smell and hear one another. Then they contemplate one another with eye and gaze. One truly gets the impression that every shape in space, every spatial plane, constitutes a mirror and produces a mirage effect; that within each body the rest of the world is reflected, and referred back to, in an ever-renewed to-and-fro of reciprocal reflection, an interplay of shifting colours, lights and forms. (Lefebvre 1991: 183)

Instead of Euclidean grids of neutral and empty space, Lefebvre imagines space as an active topology of objects and subjects, ideas and physical artifacts, experiential phenomena and large technical systems. Such a topology, as with ANT, allows us to "reshuffle spatial metaphors that

have rendered the study of society-nature so difficult: close and far, up and down, local and global, inside and outside” (Latour 1997a, n.p.). Lefebvre argues that these qualities and quantities are defined dialectically in particular settings, and that specific pieces of space or architecture should always be understood in relation to the other pieces and sites to which they are connected. In this vein he suggests

to think of architectures as ‘archi-textures’, to treat each monument or building, viewed in its surroundings and context, in the populated area and associated networks in which it is set down, as part of a particular production of space. ... These networks are not closed, but open on all sides to the strange and the foreign, to the threatening and the propitious, to friend and foe. As a matter of fact, the abstract distinction between open and closed does not really apply here. (Lefebvre 1991: 118)

Applying Lefebvre’s theory to everyday travel, we can think of mobility “archi-textures” and their “associated networks” as the manner in which different mobilities define neighbourhood space.

Lefebvre summarizes his approach to the production of space through three orders or “moments” of production (1991: 36-46). The first moment, *representations* of space (or conceived space), refers to scientific conceptions and ideological frames that punctuate some aspects of daily life while obscuring others, often with the intent to impose order upon it. Lefebvre describes this as “the space of scientists, planners, urbanists, technocratic subdividers and social engineers, as of a certain type of artist with a scientific bent” (1991: 38). City streets, for example, have multiple representations, from functional and utilitarian models of circulation to public conceptions in which congestion and idling take on positive meanings. The capital city is another complex example, a local living space that doubles as a conceived “national” space. The second moment is spatial *practice* (or perceived space), or what Lefebvre refers to as space

as commonly perceived. Here, space becomes coherent through routine rhythms and everyday actions. Daily routines, for instance, tend to pivot on a commute to work, a common “quilting point” (Lefebvre and Regulier 1999: 6) that weaves together familial and occupational spaces within a particular infrastructure. According to Statistics Canada, work commutes are growing in duration and velocity between suburbs along arterial highways and freeways (Heisz and LaRochelle-Cote 2005). Finally, the third moment of production consists of *representational* space (or space as “directly lived”). This moment captures the dynamic and artful inevitable reconfiguration of conceived and perceived space by inhabitants or users. This “third space” illustrates a major limit of capital and central planning, namely that these dominant strategies fail to fully comprehend space as a lived experience. Representational space therefore expresses an “underground” potential to destabilize power relations. It flickers on the margins of dominant space where order starts to break down, like the fleeting “mobility insurgents” of Critical Mass (Furness 2007) who appropriate the street on bicycles for a moment on the edge of a regular work week.

Lefebvre’s triadic model helps account for the power relations and exclusionary practices that privilege automobility through the production of space. Acknowledging that mass car travel is supported by heterogeneous networks, his work helps elaborate how western societies systemically favour the car through the technical organization of spatial routines and infrastructure. Lefebvre is concerned with how technocratic representations of space, spaces which have in North America become deeply insinuated with the car, are materialized in common physical settings. His larger concern is how certain abstract representations have in general come to dominate directly lived space, or how planners, architects and developers

conflate theory with practice, or “identify what is lived and what is perceived with what is conceived” (1991: 38). He argues that if the production of space remains fragmented across disciplinary silos, commodified spaces that reinforce existing inequalities and capitalist visions of technological expansion will extinguish reflective, representational spaces that can defamiliarize hegemonic spaces and express alternative ways of living together. Following this concern with spatial domination, we can place Lefebvre’s analytical tools in tension with a parallel concern with the domination of “representational mobility” that make conditions of car-dependence seems strange. A latter-day modernism in which the car is equated with human freedom and progress, qualifies as the kind of technocratic narrative with which Lefebvre’s work is concerned. Although he never scrutinizes the automobile in and of itself, he constantly uses the car and its connection with space to illustrate relationships between key actors, including governments, oil companies, car manufacturers and “compulsory” consumption (Soron 2009). These actors define “asphalt’s magic circle” (Goodman 1972), wherein “every additional mile of highway translates into increased car sales, which in turn increase petrol consumption, hence also tax revenues, and so on” (Lefebvre 1991: 374).

The auto-industrial complex, for Lefebvre, imposes abstract, commodified space onto complex city passageways. Presaging recent analysis of mass automobility as “an extension of ideologies and normative values about how the city should be configured and by whom” (Henderson 2009: 149), Lefebvre characterizes the car as “the current pilot-object in the world of commodities” (Lefebvre 2003: 167). This pilot-object affords a publicly subsidized form of private mobility that creates a social dilemma, or collective action problem, that epitomizes the contradictory nature of what Lefebvre calls “dominant space.”

Owners of private cars have a space at their disposition that costs them very little personally, although society collectively pays a very high price for its maintenance. This arrangement causes the number of cars (and car-owners) to increase, which suits the car-manufacturers just fine, and strengthens their hand in their constant efforts to have this space expanded. ... There are two ways in which urban space tends to be sliced up, degraded, and eventually destroyed by this contradictory process: the proliferation of fast roads and of places to park and garage cars, and their corollary, a reduction of tree-lined streets, green spaces, and parks and gardens. (1991: 359)

Space that fails to foster productive consumption and generate profit has become associated with space through which cars, and the capital that cars help distribute, cannot effectively circulate. This includes forest space and fallow outskirts but also knotted urban passageways. As a result these kinds of spaces continue to be rationalized, straightened out and rendered “legible” in the eyes of the state, which is to say opened up for mass car travel (Scott 1998). Lefebvre argues that the car not only thrives in but also generates “conceptualized space,” or representations of space. This is the abstract space of technocrats, planners, and engineers who conflate formal intellectual deductions, which often focus on improving spatial efficiency, with the qualitative experience of space in everyday life.

When an urban square serving as a meeting place isolated from traffic is transformed into an intersection or abandoned as a place to meet, city life is subtly but profoundly changed, sacrificed to that abstract space where cars circulate like so many atomic particles. It has been noted time and again that Haussmann shattered the historical space of Paris in order to impose a space that was strategic - and hence planned and demarcated according to the viewpoint of strategy. The critics have paid insufficient attention, however, to the quality of the space that Haussmann thus mortally wounded, a space characterized by the high and rare qualitative complexity afforded by its *double* network of streets and passageways. (Lefebvre 1991: 312)

Like Jane Jacobs (1961), Lefebvre is clearly critical not of the car per se, but of the web of power relations which position the automobile as an organizing principle of the city. He alerts us to how the car depends on the scientific capital of transportation engineers, hierarchical relations of

production, and the imposition of abstract space, formal and quantitative, which tends to erase bodily and biographical distinctions (Lefebvre 1991).

Some question the capacity of this line of thinking to motivate a critical politics of mobility. Tim Edensor, for example, takes issue with Lefebvre as someone who depicts car travel as “inherently malign” and productive of a linear, dehumanizing, and potentially “dystopian” environment.

For instance, Henri Lefebvre (1991) complained that the driver moves through an “abstract,” “flattened” space and is concerned only with reaching a destination and therefore “in looking about sees only what he needs to see for that purpose.” The route has accordingly been “materialised, mechanised and technicised,” and the driver is able to apprehend only the spatial qualities of “functionality: speed, readability, facility” (p. 313). (Edensor 2003: 152)

Against this notion of car travel as an alienating activity that desensitizes people to their surroundings, Edensor argues that car driving is characterized by “irruptions of fantasy and reverie.” Drawing on his own experience along England’s M6 route, he shows how “routine motorway travel can foster familiarity and modes of homely comfort, provoke affective and imaginative connections to other times and places, facilitate kinaesthetic pleasures, and construct complex topologies of apprehension and association” (2003: 152). Lefebvre’s account, suggests another criticism (Frow 2002), may also imply nostalgia for preindustrial, pre-automobile times, when the human lifeworld was unified as a coherent whole and more connected to nature. “Slicing through space like a great knife” (1991: 164-5), the motorway for Lefebvre materializes a broader fragmentation of culture and dissection of social space. He responds to this fragmentation with his triadic framework which he calls a “unitary theory” of space reaching across and connecting the different silos of conceptual space with everyday practice (1991: 11).

Insofar as Lefebvre laments the erosion of “significant totality” closely associated with modernization and the rise of the private automobile, perhaps he is romanticizing a pre-car world of collective mobility or even working to bring about its “redemption” (Frow 2002).

These criticisms are valid but arguably rely on a relatively narrow reading of Lefebvre’s theory of space, and obscure how this theory could be helpful for a politics of mobility. Despite Lefebvre’s many critical associations of automobility with dominant (and dominated) space, it is unfair to say that he characterizes car travel as “inherently malign.” His writing does not deny the creative and sensual possibilities that may come with dwelling in the car or the skillful habits and communicative dexterity involved in a mundane commute. Where Lefebvre comes down hard on mass car travel (and where Edensor fails to tread) is on the ways in which car-dependent cities sustained by the profligate consumption of nonrenewable resources inure people to environmental degradation and everyday violence (Peden et al. 2004). On a phenomenological level, perhaps, car driving offers a rich and periodically marvelous site of semi-automatic action. On a collective level, however, as Michael Gardiner argues, “*enforced* routinization in the service of the reproduction of global capital, in a manner that alienates us from the rhythms and desires of the human body, the moral fabric of our intersubjective relations, and the cycles of the natural world ... is something that needs to be understood critically and ultimately transformed” (2004: 244). Linear, flat and smooth highway alignments with restricted access standardize precisely the conditions which breed detachment from, and misperception of, one’s immediate surroundings. If this were not the case, they would not be considered safe to drive on at speeds for which human sensory organs have yet to evolve (Vanderbilt 2009).

Furthermore, Lefebvre's account of space does not attempt to valorize a pre-automobile past so much as emphasize relations among different kinds of space. The "totality" or unifying aspect in his work does not refer to a closed or complete system but to an open totality that continually gathers together difference. For example, the polarization of cities through the proliferation of private communities in exurban space and the encroachment of arterial class roads into historical city centres (Doucet 2007) expresses a need "to think of the city as a totality, not in the sense of an inventory but as a concept to be constituted, as a whole that articulates relationship between elements" (Kofman and Lebas, in Lefebvre 1996: 40). Lefebvre elaborates this relationality in his later work on spatial rhythms. He distinguishes linear repetition, based on "consecutiveness" and standard measurement (e.g. clock time, speedometer), from cyclical rhythms associated with biology and nature (e.g. tides and circadian cycles) (1996: 230-31). These two patterns are not opposites. They form a "conflictual unity," a "ceaseless struggle that oscillates between compromise and perturbation" (Lefebvre and Regulier 1999: 7-8). In contrast with overdetermined dualisms whose difference is closed off to outside interference (a perfect opposition), conflictual unities open onto both wider power relations and unpredictable variation. For example, as an open container or "packet of rhythms" (1999: 10), a city neighbourhood expresses an isotopic quality of identity and homology, "everything that makes a place the *same place*," yet simultaneously implies heterotopy, "the other place, the place of the other" (Lefebvre 2003: 37-38, 128).

Following Lefebvre, a critical mobility politics must open up auto-space to a "radical otherness," a lived temporality beyond the spectacle perceived through a windshield (Seigworth 2000: 248). "Locked-into" the car by the pragmatic constraints of low density, single-use

development, many people do not regularly experience neighbourhood space outside of automobility. Paradoxically, in this context neighbourhood disappears, or its difference loses significance. Through “massive use of the car” and associated ways of ordering and arranging everyday life, “neighbourhood and district fade and crumble away: the people (the ‘inhabitants’) move about in a space which tends towards a geometric isotopy, full of instructions and signals, where qualitative differences of places and moments no longer matter” (Lefebvre 1996: 127-28). The car-street functions more as a disciplinary space of risk management than as a space of play and adventure, especially for children. Enacting their role as marginal traffic participants, children learn early on to detect ambivalent “spaces of fire,” or the way their safety depends on an absence of violence secured only by vigilant rule-following (Kullman 2009): *Stop! Look! Listen!* In car space, the price of aberration or adventure, or strange moments of mobility which pull one “outside the usual continuity of this life” (Simmel 1999: 222), is frequently life itself. That is, the sudden car crash, a prototypical discontinuity with the usual flow of traffic, is unforgiving with respect to the human body, even at low velocities (Peden et al. 2004).

To open neighbourhoods of mobility onto a radical otherness outside mass car travel, in sum, will require transformative change, in terms of how we conceive of space, how we perceive and practice space, and how far we open space up to creative potentialities. Such change is the focus of a critical politics of mobility, to which Lefebvre, I have argued, contributes significantly by emphasizing, to a greater degree than actor-network theory, systematically unequal power relations. By viewing neighbourhoods of mobility as an ongoing production of space, a critical politics of mobility must challenge hegemonic conceptions of space as well as dominant spatial

practices, or the “auto-habitus” of embodied dispositions that encourage habitual car driving.²¹ Lefebvre recognized the significance of conceived, technocratic space as well as “the importance the car holds in our everyday life (or should we say, in our culture and in our civilization?) (2008: 212). Following his concern with reconfiguring prevailing understandings and practices, a critical mobility politics must critique the hegemonic spatial imagination but also promote alternatives practices of mobility, namely cycling, walking and public transit. In the following section, in an attempt to lay some of the groundwork for such a politics, I, apply Lefebvre’s triadic model of space to Ottawa’s turbulent struggle to produce a new urban road and alternative neighbourhoods of mobility. I investigate the challenge that rail presents to dominant conceived and perceived spaces (Lefebvre’s first and second moments), and explore cycling as an emergent representational space (Lefebvre’s third moment).

Producing New Urban Space I: Neighbourhood Train Travel

In a remarkable confrontation with dominant conceptions of urban space, electric trains are set to return to Ottawa. For over half a century, as the National Capital Region grew from 500,000 to over one million people, the city of Ottawa has evolved without mass rail transit and is currently the last large (million plus) metropolis in Canada to rely on automobiles and buses. In 2001 Ottawa took its first practical steps towards breaking up this rubber-wheeled monopoly. It began a pilot railway project, creating a miniature commuter service called the “O-Train” along an old

²¹ Habitus is useful in understanding how space is produced because it reminds us that even as mundane, daily car driving routines invoke spontaneity and individuality (as per Edensor) they reproduce received social space, the space that produced them, and power relations favourable to existing distributions of capital. “As an acquired system of generative schemes,” according to Bourdieu, “the habitus makes possible the free production of all the thoughts, perceptions and actions inherent in the particular conditions of its production - and only those” (1990: 55-7).

north-south Canadian Pacific freight line with three diesel-powered trains. The City had planned to expand this eight-kilometre, five station experiment if it proved successful, which it did (reaching five million riders by January 2005), into an electric tramway or light rail service that reached into the city's urban core. That plan was scuttled in fall of 2006, however, notably after the intervention of Federal Minister John Baird. The Conservative MP for Ottawa West-Nepean demanded to review a City contract with Siemens-Canada Ltd. for an expanded north-south LRT line, saying it failed to adequately cost a maintenance yard and contingency funds, and ordered council to re-vote after an upcoming city election. Baird's subterfuge, coupled with a somewhat "exclusive and often secretive approach to planning" adopted by city officials (Hilton and Stoney 2008: 84), helped kill the project and saddle the city with its sunk costs. Two years later, though, the City turned a new page. Smart growth was gaining momentum in Ontario through landmark legislation that compelled municipalities to adopt compact, transit-oriented forms of development. The result in Ottawa was a revised 2008 Transportation Master Plan (TMP). Updated from 2003, Ottawa's TMP now prioritizes electric trains. Even better, these trains will not be sequestered on freight tracks that are located out of the way by design, but run on new lines radiating outwards from the urban core along east-west corridors already defined by the city's Transitway, a bus rapid transit (BRT) system in which buses, many of which are articulated (or "accordion" buses), enjoy dedicated rights of way. The new rail will move more people, but it will also help change the course of sprawling urban development. As the TMP puts it, the goals of alternative mobility and smart growth are interwoven.

The new transit network will create the conditions needed to support mobility and a reduced reliance on individual cars as a means of transportation while contributing to broader goals of sustainable development (City of Ottawa 2008: 5)

Ottawa's ambitious new TMP, to frame it in Lefebvre's terms, intends to alter how space is collectively produced, how it is represented, practiced, and ultimately re-imagined. The resurrection of neighbourhood train travel, in particular, has the potential to transform private and public spaces to which transit networks are connected. The City, however, stops short of compelling people to adapt their daily mobility routines to the new system, as was necessarily the case when Gréber abolished Ottawa's streetcar system. Rather, in order to redistribute what planners term "modal share," or the distribution of daily travel by mode (car, tram, commuter rail, bicycle, feet), Ottawa has created a non-coercive strategy that will continue to accommodate high levels of car driving on publicly subsidized urban streets. I asked Nancy Schepers, Ottawa's Deputy City Manager of Planning and Infrastructure, or the portfolio which encompasses the Planning & Growth Management Department and Rail Implementation Office, to describe this "carrot-driven" strategy in the context of the city's new TMP.

Nancy: Fundamental to Ottawa's transportation management plans are policy assumptions and targets for modal share. Clearly those assumptions on modal share for transit, cycling and pedestrians, by definition, mean less dependence on vehicular transportation. In terms of actually implementing and monitoring these assumptions and targets, we recognize that there is a big gap with respect to the social change that has to accompany this transformation. This is where the carrot/stick approach, or using positive/negative motivation, can be applied. At this point, the City of Ottawa is focusing a lot on the infrastructure, which is the carrot. We want to entice the public towards a new transit system, cycling lanes, and segregated cycling lanes in the downtown core. Regarding transit, our current marketing focuses on "take this service, it's great" as opposed to trying to tap into people's social conscience and encourage them to take it because it's the right thing to do. The City of Ottawa is not doing a lot on the stick side; we are not doing a lot of social marketing, although we are in the process of developing a Transportation Demand Management strategy that will encourage people to look at transportation alternatives to car trips.

Enticing more people onto transit by building infrastructural "carrots," such as LRT, forms the centerpiece of Ottawa's TMP. This strategy has direct ramifications for other mobilities –

negative (quantitatively speaking) for automobility and positive for cycling and walking. This ordering of mobilities differs from that of some other cities. It reflects Ottawa's existing strengths with respect to smart growth and shapes what sorts of spatial constraints the city faces in expanding alternatives to the car. Mona Abouhenidy, a civil engineer and strategic planner in Ottawa's Planning and Growth Management Department, elaborates on these strengths and limitations.

Mona: I think the main objective of the Master Plan is to try and shift people away from the single occupancy vehicle towards other modes. In terms of transit I believe we have gone a long way. Our modal share is the highest in North America of any city our size. We had people from Copenhagen last week, and they were talking about their cycling, but their transit share is lower actually than ours. Yes they have more people cycling, but I think for us, because of the way the city has developed, transit plays a much bigger role than either cycling or walking. We are at 23% whereas our target is about 30% in 20 years. So I think in terms of transit we have succeeded, we are actually now almost suffering from that success. We don't have enough capacity to run the system.

Mona's observations suggest that in order to represent transit in a new way and affect the kind of systemic social change to which Nancy is alluding, Ottawa needs to build upon its earlier successes in facilitating mass transit. While the capital region has failed to produce new urban space for rail, what it has successfully implemented is a bus rapid transit system with "rail-like" qualities. As per Lefebvre, the "sedimentary layers" that make up Ottawa's Transitway, the physical space of grade-separated infrastructure, but also the social and habitual spaces of transit practice that persist alongside an autoscope, provide a valuable toehold for a new transit network based on rail.

Unlike many advanced bus systems in North America, Ottawa's was originally designed so that it could eventually metamorphose into a rail network. Conceived in the late 1970s, and

first implemented in 1982, the Transitway was designed, from the curvature of corners to the amount of space underneath bridges, to accommodate rail vehicles. Articulated buses whisking

Figure 17: Articulated OC Transpo buses run up and down the Ottawa River west of downtown (photo, author)

along parkways already hint at a train-like operation (see Figure 17). It was initially envisioned as well that a grade separation like a subway tunnel would be constructed through the downtown core where capacity is extremely strained. Buses currently bottleneck on Slater and Albert streets at peak periods, and a single car driver who impatiently enters and then fails to clear an intersection routinely delays the passage of thousands of transit commuters. Interestingly, the conceptual logic behind the conversion of BRT into an LRT network has only recently become

identified with new representations of the city tied to smart growth. LRT was originally conceived and continues to be represented primarily as a way to increase efficiency and economies of scale, particularly in response to population pressures. It was seen as critical when Ottawa reached a population of 1 million people, thought in 1982 to occur in roughly 25 years. As it turns out, this was essentially correct. Given significant misestimations of population growth that have occurred in Ottawa's recent history (the significance of which is discussed in chapter five), as senior transportation planner Colin Simpson observes, "it is pretty amazing how they forecasted that." The right time to build rail, it seems, has already passed, so I asked Colin what he thought was the most significant obstacle now to producing LRT in the capital region. I also asked him how the City intends to frame new urban rail for a car-dependent public.

Colin: I would say that the dollar figures is probably the major stumbling block for the project. Recognize that right now we only have a 23% transit modal share, so that means 77% of people travel by other means. So to have such a significant investment for a minority of people is a major stumbling block. We need to sell the idea that even if you don't use transit, you benefit in other ways. By putting people on transit, you alleviate road congestion and provide more space for those people that travel by road. In economies of scale, one standard 40 foot bus has a design capacity of about 40 people. An articulated bus has a design capacity of 75 people. Light rail has a design capacity for 135 people. We are planning for six-car trains. Six-car trains will carry almost 900 people. So when you start to compare the economies of scale of having one train for 900 people, versus one bus that carries 40 people, you can quickly see that they are more in favour of rail transit. So we can sell it to people as \$100 million annual operating savings, relieving road congestion, and air emissions benefits. There's a lot of benefits even for people that don't use transit to move forward with this project.

The high dollar figures incurred as capital costs belie the long term savings associated with rail. These savings result through lower operating costs and, more significantly, through the lower damage that rail inflicts on collective public health and the global environment. Notably this latter source of savings, as Nancy hinted above, has yet to enter the marketing calculus.

While Ottawa's intention to re-conceive mass transit through rail relates to the inherent efficiency and higher capacity of rail relative to the bus in population-intensive spaces, it also relates to the unique ability of rail to *generate* population-intensive spaces. This ability speaks to the power of mobilities in the sense that they do not passively facilitate social action, but in fact play an important part in determining the nature of that action. Not all mobilities, however, are equal in their ability to shift prevailing spatial practices and patterns of urban growth. More than bus systems, rail networks trigger transit-oriented development (TOD) through their unique stability and smooth displacement. In fact, because it was originally designed to be a future light rail system, the Transitway has not been immune from this type of development. As Colin explains:

Colin: When you look at rapid transit networks in other cities, putting down rail lines is seen as a permanent fixture that doesn't blow in the political winds of routing. So when commerce or businesses see rail lines [they] are more eager to invest and develop along those rail lines because they know there's less chance of rerouting that system. I think the same thing can be said of the Transitway. The Transitway is in place and they know that it isn't going to be rerouted, so more investment is directed towards that corridor as opposed to, say, route numbers one or two that currently go down Bank Street or Richmond Road. If there are political winds, because buses are too noisy, [they] could easily be displaced to Byron or to Bronson. So there is less focus on encouraging investment to occur along those places where change can happen.

Rail is spatially productive in the sense that unlike buses and other car-like technologies (e.g. jitneys, paratransit, airporters), trains can weather "political winds" and centripetally reassemble the built environment that surrounds it. To some people this is a dangerous quality, and has been portrayed by detractors as an inappropriate, foreign imposition on a suburban city. A frequent argument against urban rail at city hall, according to former Capital Ward councilor Clive Doucet, is that Ottawa lacks "European-style" population densities and the urban form to support

trams or LRT vehicles (2007). I asked Colin, as a transportation planner, how he would respond to this argument.

Colin: I disagree because Ottawa has the highest transit ridership in any similar sized city in North America. We have a world-renowned bus rapid transit system, and that is just based on our current densities. So, it's not a transit ridership issue, it's a technology issue and we are trying to make it a more efficient system. That's why we are moving to rail. We are not moving to rail because of densities, in fact if you look at the attractiveness of the different technologies, it is well documented that LRT has a wider catchment area. More people are willing to walk further for a higher level of service. An 800m radius is a typical catchment area for an LRT station. A BRT station would be 400m to 600m. People are less likely to walk to catch a bus then they are to walk to catch a train. If [rapid transit] is working with smaller catchment areas, like the BRT system, surely an LRT system that has more attractive qualities, more comfortable ride, and more reliable service will have a wider catchment area, regardless of the density factor.

With larger “catchment areas” LRT networks are able to draw in a higher number of people who live or work near stations and attract people over a greater distance. This means less people on any given day driving automobiles, burning fossil fuels and sitting idle in traffic. Of course, there will be immense political and bureaucratic pressure to devote any significant new capacity (or room to move on the roads) that opens up as a result of a more efficient public transit system, not to new bike lanes, wider sidewalks or other elements of new urbanism, but to expanding automobile circulation, even though traffic jams in Ottawa are much less of a problem than many other Canadian cities (a point I return to below in the discussion of cycling).

Like light rail itself, the spatial development with which it is associated is often represented or conceived, as Lefebvre observed of urban spaces more generally, in economic terms and its ability to generate profit. LRT in Ottawa has been framed as generating various economic benefits and urban efficiencies through TOD, although again, depending on how you measure it, the health and environmental benefits of producing a new spatial practice through

walkable and sustainable communities may be much more significant in the long-run. To explore the benefits that Ottawa hopes to create through its new east-west LRT line, I discussed this topic with the senior manager of Rail Planning, Dennis Gratton, who is currently working to implement the Downtown Ottawa Transit Tunnel (DOTT). I was surprised to hear Dennis talk broadly of TOD potential, not only in the downtown core, but well into Ottawa's car-dependent suburbs. The previous TOD projects with which I was familiar, such as Pearl District in Portland, Oregon, were confined to fairly central urban areas adjacent to central business districts, where it may have been easier for municipalities to make an economic case for new rail transit.

Dennis: On the north-south line we actually did a business case - now that council has transit oriented development (TOD) guidelines and densification around stations - that talks about the uplift opportunities the city has. It is good for the city because we can raise more tax revenue, but also because property values go up. On average in North America the examples we saw were about 14, 15%. It could be as low as five, could be as high as 25%. Every city we visited and talked to about this issue said they always underestimated this type of redevelopment around stations and economic uplift. It certainly is better in older neighbourhoods where parcels can be assembled or there's some vacant land. We've seen different examples of even building a light rail station in the middle of nowhere, and in 10, 15 years it got a couple of million square feet of offices and condos and that sort of thing. We've witnessed that in DC. Those are the type of things that we're trying to institute here now. We've got three or four stations that developers, whether private or public sector, are looking at a complete redevelopment of probably three to four hundred metres from the station, and building big TOD multi-mixed-use, high density developments. That will be coming within the next 10 years, and I think, when we see that success, as we expand the system there will be more opportunities to grow and get to the suburbs where land values are probably more susceptible to fluctuation or uplift once the LRT is in.

"Uplift opportunities" constitute one benefit that comes with the sense of stability and efficiency engendered by rolling stock. There is an aspect of light rail, however, that gives it an advantage over the bus that relates to cultural and social representations of these different mobilities. This

aspect came to the fore when I asked Dennis what the difference was between riding a bus and riding a train.

Dennis: From what I see, even people who haven't ridden the bus or train, when we take them out by bus to the O-train they'll think, okay, this is alright, but I wouldn't want to do this everyday. Then as soon as you get onto the train there seems to be a better degree of comfort. The windows are bigger, the seats are more comfortable, the aisles are bigger so, people associate that with perhaps an upscale or more upscale type of way of commuting to work than the bus. ... Some people like the convenience and comfort, and maybe there is a stigma associated with buses, so that's where light rail might change it a little bit.

The social stigma associated with public transit buses is enmeshed in a history of racial and classist exclusion that continues to plague the car-less population in North America, especially in the United States (Bullard et al. 2004). It is not immediately clear if urban rail can change the lingering perception that public transit is the domain of the poor, racialized other, while private automobility is more respectable and safe, notwithstanding the intensive use of rail transit among affluent groups in large cities like Toronto. While rail might unsettle broader stereotypes about transit by offering a smoother, "upscale" type of transit, it may just as well concentrate negative perceptions on public buses, and only reduce the stigma of upper tier systems to which marginalized and working class populations have the least access, spatially and economically (Bus Riders Union et al. 2011; for a Canadian analysis, see Lea 2000).

The sociotechnical difference between bus and train travel is further complicated in Ottawa's case by the fact that LRT, at first, will only integrate a tiny portion of transit space. The new east-west line extending from the DOTT to Tunney's Pasture in the west and Blair Road in the east will operate in the context of a much larger, highly *disintegrated* suburban carscape. As a result most transit-goers, most of the time, will still have to rely on buses. The dollars-and-cents

argument and reducing congestion for car drivers may appeal to suburban and exurban communities, but they still stand to benefit far less from LRT than the core spaces where LRT is established in the first place. The stigma attached to public transit may concentrate in these politically and economically powerful neighbourhoods on the urban periphery, and help fuel resistance to the extension of rail outside the greenbelt. Dennis is ultimately sanguine about this extension, yet equally aware of the social turbulence that it will create, often in the same breath:

Dennis: I think it will be very difficult, it's just the nature of our lifestyle. It will adapt, I am sure, over the next few decades and people will accept rail as a good way to commute to work. I think the city is designed for auto dependency so punching through new routes to serve communities sometimes is a challenge. Even trying to get a route out to the east end, there's too many obstacles and constraints, and communities just don't want to have that customer service to come through their area because they think it's going to be noisy and that sort of thing. And of course it isn't, but maybe over the years this stigma will, we'll understand it a little bit better.

This evocative image of needing to “punch” rail transit into suburban Ottawa jives with historical experience; the same fallacious argument about noise (the friction of rubber tires on tarmac is much louder than the creakiest of electric trains) was successfully deployed to prevent the extension of streetcar service down Bronson Avenue towards Carleton University in the mid-twentieth century (Davies 1989). Furthermore, the more truncated the LRT network, the more riders will have to transfer, a surprisingly high hurdle in cities where the car offers a relatively seamless spatial practice, or the perception of a continuous space. Mona, who like Dennis self-identifies as a bus commuter but starts farther afield in a new development, emphasized this point when elaborating on the difference between buses and trains.

Mona: With LRT,, yes you are getting a more quiet ride, it's more convenient in terms of the nice sitting, [and] it's electric and better for the environment. But you will have to transfer. And also it's more expensive to provide LRT. Basically, unless you expand LRT to everywhere in the city, people will have to transfer. In the way that it is being done now, it becomes more cost effective to provide LRT within the greenbelt where you get all your ridership combining, that is where LRT capacity is higher than BRT bus capacity. But once you go to the suburban areas and you start splitting ridership, we are not there yet in terms of the number or the mass of ridership that justifies LRT.

Mona's comments cut to the heart of Ottawa's dilemma in selling trains to the new suburbs: while BRT can exhibit "rail-like" qualities, only LRT may be able to generate the critical mass of ridership that economically justifies moving beyond BRT. This introduces an element of risk into expanding light rail, risk that is compounded by the presence of multiple planning jurisdictions and competing transit agencies. The production of space in Ontario does not neatly overlap with the production of space in Quebec. As Mona explains, Gatineau and Ottawa operate different transit systems, and Gatineau has shown little interest in moving beyond a bus-based system, creating a bigger issue of how to integrate different technological systems as commuters move across the Ottawa River.

Mona: The NCC can't agree on how people will get to the other system, whether their riders should be transferring or our riders should be transferring, and where is that transfer going to be. Gatineau has already made the decision that it's going with bus rapid transit, which means they are going to have more buses in Ottawa. We've said there will be no more buses in Ottawa, because if you look into the environment on Wellington Street or Rideau Street right now, imagine Gatineau's planned increase in those numbers! And we are moving into rail, trying to reduce the number of buses from the service. We don't want to put our investment in building light rail and tunnels, and then add more buses from Gatineau, so basically we haven't done any improvement to the streetscape in Ottawa. This is a major issue.

The incompatibility of adjacent, but politically distinct productions of space illustrates another instance like the new subway, where any new capacity generated by relatively efficient and

sustainable mobilities, in a counteracting loop, feeds into the expansion of car and bus dependence. The dilemma confirms that producing new urban space for rail goes beyond any single service. Even sea change projects like Ottawa's east-west LRT line must be located in the larger fields of planning and development that often hamstring the ability of cities to use mobility as a tool of smart growth. In a move that suggests that transit still ranks far lower as a priority for public subsidy, for example, not long after it was announced that the City would start building light rail, "improvements" to Ottawa's freeway (an extra lane in each direction) from Nicholas Street to "the Split" (where Highways 174 and 417 diverge), were rubber-stamped with little controversy, and certainly without the federal government intervention, revolt on city council, and intense public consultations that came with the birth of LRT. As the Ottawa Citizen wryly remarked: "Need a road, Ottawa? No problem. Build it in a jiffy. Need transit? Well that takes intricate planning, a decade or two worth of debate, a change of plans or two" (April 2, 2011).

A bigger urban freeway, unfortunately, may ultimately have more impact than LRT on metropolitan-level car-dependence until rail extends well beyond the greenbelt. This tendency of Ottawa to take one step forward, two steps back has left the City's new mobility planners with a keen sense of pragmatism. A common theme running through nearly every interview I conducted was that although Ottawa is working to change the conceptual terrain of planning through smart growth, moving slowly towards the production of a new urban road, this shift is tempered by the contractual obligations of a city already heavily invested in subsidizing automobile use. At a couple of points Dennis paused to reflect on these constraints. He explained why planners need to be pragmatically optimistic about reducing car dependence.

Dennis: I don't think anyone's fooling themselves by thinking everyone will take transit to work. If we can get to 30% of commuters I think we've accomplished something that any body in North America couldn't. And we're close to that right now. We'll always be car dependent, but I think by not giving too many incentives to help the car commuter to facilitate that commute, and make transit more attractive, I think that's where we'll get that 30%. But there will always be people that have different types of schedules, jobs and needs where, and that's just the way our culture, our society is set up.

In a related observation, Dennis elaborates how Ottawa, if left to grow and develop along its current trajectory, will through sheer inertia end up further than ever before from the goal of reducing car-dependence unless it alters this trajectory through “concerted” collective action.

Dennis: With the infrastructure we have, the roads, the buses that we need, we have to keep that going, so the money seems to be supporting the lifecycle needs of the infrastructure we have already. As the city grows we expand and new stuff gets put in, new roads and all that... It's just a vicious cycle, but I think now, at least there is a concerted effort politically and economically to try and push as much money towards transit to at least give it a good go for commuters' money.

In a similar vein, Mona speaks of the need to target transit services to the narrow slices of “market space” where it has a competitive advantage. Reaffirming the carrots-over-sticks approach of seducing commuters away from the car instead of dictating how they travel, she distinguishes these competitive market spaces from suburban areas where transit merely serves as a safety net.

Mona: We have to realize that transit can't compete everywhere. So you have to choose the market where you will have an advantage in terms of congestion, where there is a limited supply of parking, and this is where you can compete. Trying to compete with transit to the business park, where you have all this free parking space, I don't think it will be a success. Transit is there because we have to try to provide minimal service so people can still access their jobs without having to own a car. But it won't compete if you do have a choice.

But this begs the question, if we know that it runs against the goals of Ottawa's master plan, why do we *continue* to build more car-dependent office parks and expand highways to service far-flung bedroom communities? Why continue to build suburbs and exurbs outside the greenbelt that stand no chance of contributing to the kind of compact catchment area or market space that can support a vibrant, economically justifiable transit system?

An incisive challenge facing the production of new urban space is that automobility poses a "vicious cycle," to use Denis' term, over which planners often have little control. At least part of Ottawa's planning staff appear to cling to Jacques Gréber's idealistic vision (and that of early Garden City reformers before Gréber) that "satellite communities" outside the greenbelt may someday help sustain themselves and pay for their municipal services. Yet in reality, without public enforcement of *Places to Grow* (2006), Ontario's smart growth legislation, larger market forces will promote suburban sprawl which governments will continue to subsidize; development follows the market, buyers follow the services (and other buyers). Without being fatalistic, Mona expressed this sentiment when describing what she saw as the major obstacle to TOD or mixed, compact development in the suburbs.

Mona: I think the demand is not there. There is no institution or major office that would like to relocate there. And there is pressure from developers that want to build more houses, because this is where there is demand, and they are always looking for rezoning from employment lands into residential land. That happened in Orleans. ... Our town centers have always been planned to be eventually mixed use development. But so far it is all big box stores where there is tons of parking, and if I tried to go from one store to another I have to hop into my car. And basically all the stores are converting into those mega stores where you can't even go on your bike and buy small things. They are all becoming, you have to drive. You see this in Barrhaven, where transit eventually will reach the town center, same thing in Kanata, and the town center in Orleans, same thing. So this is something that [bus] transit hasn't changed.

Orleans, Kanata, and Riverside/Nepean South (which includes Barrhaven) comprise Ottawa's three major satellite communities, in which the City is finding it especially difficult to apply new conceptions of urban space. They came up as recurring examples of suburban places that exist within the orbit of rapid transit, albeit at high collective cost, yet beyond the pale of transit-oriented development. Steven Boyle, a senior transportation planner in Ottawa's Strategic Planning Unit with an expertise in zoning, was equally blunt in his assessment of the failure of bus-based transit to instigate TOD and improve the way that space is produced in the places where suburbs are growing fastest.

Steven: Transit has been to Orleans for some time. And it is going to Kanata next year to south of Strandherd, but you don't see that town center, when you think of that term you look at planning books, and you look at European examples, it is truly a town center. You have four or five story buildings, you have institutional uses, you really have the town center that I could live and work in. But if you look at Orleans, it is a big shopping center in the middle, with a sea of parking around it. And maybe not just one big shopping centre, but it's your big boxes in Barrhaven and Kanata. Yes, the city may have those [TOD] policies, but unless there are investment dollars to get a real town center developing, it isn't happening.

The sense of pragmatism expressed by Steven, Mona and Dennis with respect to advancing new urban space shows that the City faces a number of challenges for which municipal governance is ill-equipped. The production of space appears to be sufficiently fragmented across public and private entities, as Lefebvre suggests, that commodified spaces driven by the decisions of a capitalist market tend to prop up dominant spaces associated with automobility. On the one hand, this suggests that planners need to create allies with developers and higher orders of government. On the other hand, it suggests that in order to produce new urban space through new "light rail suburbs," the City may need to use more "sticks," or public policies that alter habitual, practical knowledge, or how people collectively embody and perceive city space.

Several respondents alluded to the significance of considering habitual practices, or what Lefebvre calls “perceived space,” alongside the dominant economic logic of urban rail. The two-month OC Transpo strike in the winter of 2009/10, in particular, was held up as an example of how fragile an everyday practice like transit-going can be despite its historical success in Ottawa. As Dennis describes, with the help of a religious metaphor, maintaining ridership depends heavily on routine.

Dennis: I think we had a setback when we had the strike. It took a lot of work to get ridership back, and I think only recently in the last few months we’re back up to the numbers we were at before the strike, and that’s because we broke the pattern for transit users, and then all of a sudden they started driving the car and went, hey, this isn’t so bad. You don’t want to lose the existing users, you’ve got them converted, and you don’t want to have a situation like the bus strike where all of a sudden you’re trying to reconvert them.

Like a minority religious group under threat of losing members through defection, alternative mobilities such as transit rely on a ritualistic, embodied practice to maintain commitment. Automobility, in contrast, requires little social commitment and easily pulls in new converts. As the dominant spatial practice, car driving makes the built environment in which most people find themselves intelligible, or socially and physically easy. In order to grow its “flock,” transit must become as easy and practical as car driving. Luckily, LRT has a significant advantage in this respect. With trains you can precisely time headways, how long doors are open, when passengers will reach the next station and so on. Simply by always being there, trains can be taken for granted. As Dennis describes,

Dennis: Reliability is really important to making people use transit, and that's what is the problem downtown. If you look at Albert and Metcalfe Street, everybody's rubbernecking to find out when their buses are coming, looking at their watches to see if it's on time, you got 10 buses every light sequence coming in there and filling up and leaving. At least you know when you get on a light rail system here, every train that comes is your train. You don't have to wait for a number, you know the 90s series or an 87 or whatever it is, you just get on because you're going to Tunney's, you *know* you got to get Tunney's. Or if you're going to Blair you know you're on it for the next 20 min. and then you will be transferred, so that reliability helps a lot.

The dreaded transfer, however, even if "every train is your train," can throw a wrench into making transit seem as reliable and easy as a car trip. People desire and have come to expect through automobility "seamless" trips with minimal interruption, including walking distance to and from a transit station. Mona, whose training as a civil engineer started in Egypt, described how OC Transpo feeds into this desire. Interestingly, she addressed this issue when I simply asked her what was so annoying about transferring.

Mona: People here in Ottawa are spoiled. They are used to thinking of the bus as in front of their home if they wanted to take the bus to their destination. Even taking local service, there is a stop every, I don't know, hundred meters. I think we have a higher standard of walking distance. I think that is what Ottawa is used to. But once we grow like other cities the transfer becomes, like with LRT, there is no choice.

Not just an irritating interlocutor between trains and buses, the transfer creates a rupture in transit time and space

Another dimension of spatial practice deals with the habits of planners and engineers themselves. I asked the deputy city manager if Ottawa is still stuck in an engineering-dominated conceptual space beholden to the car at the expense of its alternatives. Nancy argued that it was not necessarily the case that all engineers need to change, but "we need to change who is at the table making decisions so that all perspectives are there." Traffic engineers play an important

role, particularly with respect to maintaining operational efficiency. But as Nancy elaborates, “it is one thing to solve a traffic problem with a typical engineering solution versus to solve a problem with a sociological solution. To become more sustainable we need to have both perspectives at the table.” What about a road diet, I asked, like the one currently being considered again for King Edward Avenue – is that not a case where engineers locked into an outdated car mindset continue to thwart the regeneration of a liveable community space?

I really struggle with King Edward Avenue. The City’s Transportation Master Plan envisions that King Edward will be brought back down to four lanes once an additional interprovincial bridge is constructed. In the meantime, we have traffic and we have to accommodate it, while at the same time pushing for change. The problem is that we are in a period of transition, and people don’t change overnight. Often I use the example of smoking. If I told people twenty years ago that they would not to be allowed to smoke in Tim Horton’s in the future, people would have never believed me. I think we’re going to get a similar social shift towards sustainable transportation, but it will take some time. So with King Edward we are pushing the envelope, but at the same time we have to accommodate traffic, particularly commercial traffic, to keep our economy moving.

Like smoking cigarettes inside buildings, spewing high-decibel noise and carcinogenic particles deep into people’s lungs outside may one day be deemed an unacceptable health burden. Currently, it appears as if abstract representations of space associated with engineering, in conjunction with spatial practices of automobility, take precedence over other ways of conceiving of and practicing space that consider such health considerations. On this point, I asked Dennis if there was any high-level conversation about the social and health contributions of mobilities to cities, and how LRT might improve our quality of life. He said, pensively, “I don’t think we’ve gotten that far yet, no, we haven’t really had that many discussions on it, I don’t think we’ve actually gone there at all. Which is interesting.” The social health dimensions of the urban environment, however, as well as attention to reconfiguring dominant relations

between perceived and conceived space, play a more prominent role in efforts to expand everyday cycling.

Producing New Urban Space II: Cyclomobility

Like light rail, with which it positively interacts, cycling is at the forefront of the production of new urban roads. Having focused on the ways in which urban rail is challenging dominant representations of space and spatial practice in Ottawa, I turn now to focus on how cycling is helping to defamiliarize these representations and practices as part of an emergent, *representational* space, or Lefebvre's third moment in the production of space. This third-space refers to the artful reconfiguration of conceptual and perceived space, often through disruptive or unconventional situations. Accordingly, the representational spaces of cycling or "cyclomobility," to use Paul McIlvenny's term for a system of everyday bicycle travel (2010), must be taken up in the context of existing conceptions and practical perceptions of cycling. Until quite recently, cycling has been conceived by the City, the National Capital Commission, and much of the cycling community as a sport, recreational activity, and leisure past-time. True to this representation, on any nice weekend you see tight swarms of spandex-clad athletes clipped onto carbon-fibre frames streaking along Ottawa's parkways; on the slower pathways by the canal you find the opposite, tourists sitting upright, wobbling from side to side, taking in the beautiful scenery and content to meander by pedestrians walking their dogs and the rollerbladers. Dominant conceptions of cycling as sport and leisure, in other words, for the most part closely overlap with spatial practice. Over the last decade, however, a third ideal type has emerged,

bringing with it a set of social and spatial assumptions that threaten to upset this dominant order. In response to growing commute times, rising obesity, environmentalism, the price of gas, and the fact that other cities nearby are doing it, many Ottawans have begun to see the bicycle as a tool of transportation. This third type of cyclist, not really enamored by spandex suits or spending thousands of dollars on a tour bike but interested in finding safe and efficient routes to workplaces, schools and grocery stores, has become known in municipal planning-speak as the “utility cyclist” or “commuter cyclist.”

The City has started to recognize the health benefits and cost-savings associated with cycling and promote it as a legitimate form of everyday travel. Ten years ago Ottawa hired its first full-time cycling planner, Robin Bennett. Working over the last decade as a one-man cycling department, Robin has become an important part of the Strategic Planning Unit in charge of finding ways to implement alternative modes of transportation. In summer 2008, fulfilling a policy of the TMP, City Council took a significant step towards this objective by passing the Ottawa Cycling Plan (OCP). The OCP is Ottawa’s first strategic or long-term plan that specifically targets utility cyclists, or “those who ride a bicycle for utilitarian purposes such as commuting to work or school, running errands, going shopping or visiting friends” (2008: 1-5). In a twenty year-plus planning horizon, the OCP aims to link up, rationalize and expand Ottawa’s existing cycling facilities in order to make streets in urban, suburban, and rural Ottawa more “cycling-friendly.” The Plan is guided by an inclusive, far-reaching vision:

“Develop a city-wide, visible and connected cycling network of on and off-road facilities that is actively used by all types of cyclists. This network will be supported by various programs, policies and strategies that will help to identify Ottawa as the premiere cycling capital of Canada, and as one of the most sustainable transportation cities in the world.” (E-2)

By improving infrastructure for cyclists concerned about riding beside motorists, promoting cycling as a “healthy lifestyle,” and educating cyclists and motorists on traffic safety the OCP intends to triple the number of person-trips made by bicycle from 4,500 (2001) to 12,000 by 2021, or double its modal share from 1.7% to 3%. Although this 20 year target is not exactly inspiring, the OCP, as Robin observes, “is an excellent plan for the time.” It delves into different facility types for the first time, provides detailed cost estimates, and perhaps most importantly, says Robin, “we have a plan that we can show to people.” This provides institutional momentum: “the plan was being used long before it was approved, we would say [to staff] this is going to come in so you might as well think about it now.”

Notwithstanding these strengths, the thinking on everyday cycling is evolving quickly and two key limitations have already become apparent in the OCP. The first limitation is one of scope, and speaks to the constraints of the conceived space, rooted in a car-oriented planning tradition, that Ottawa’s new mobility planners have to work with. Instead of a neighbourhood-level focus, The OCP takes as its scope a city-wide horizon, a 2800km² expanse half the size of PEI. As Robin laments,

Robin: we tried to make the entire city cycling friendly, and that created a new set of challenges. Where a lot of resources have spilled out to suburban and rural areas, that has hurt us. Where cycling, where the biggest problems are and the greatest potential, is more in the central part. It has been a little bit left out because of this need to include all of the city.

If public transit is reduced to a social safety net in the sprawling suburbs serviced by high speed roads, utility cycling is like a fool’s errand. If a conceptual shift in cycling is to have a practical effect it must be supported locally by spatial conditions which make cycling imaginable, namely density, land-use diversity, and interconnected street patterns (Jacobs 1961). These conditions

define *neighbourhoods of cyclomobility*; like rail, which has the potential to greatly expand these neighbourhoods, cycling must start from the core out.

The second limitation of the OCP relates to its target audience, people who do not regularly cycle. The OCP is based almost exclusively on a “share-the-road” model that expects cyclists, in practice, to rub shoulders with automobiles. For example, the vast majority of proposed bikeway facilities are either paved shoulders (757km) or “signed-only routes” (622km); by contrast, painted lanes, which only marginally separate cyclists from motorists anyway, make up only 134km of proposed facilities (OCP 2008). Integrated facilities may appeal to seasoned cyclists and especially the John Forester school of “vehicular cycling,” a small hardline group active in Ottawa that argues bicycles should be treated no differently than cars on the road. Seasoned cyclists, however, are few and far between and, more importantly, unrepresentative of the larger population which the OCP is reaching out to. Robin made this point more bluntly.

Robin: A lot of people, the majority view in Ottawa I would say, at the city and in the general public, do not understand that you can actually travel by bicycle. You really can! They don't get that, and its a very hard thing to do, when the perception is it's very dangerous, and why should I, I can just jump in the car. And we continue to build the city to accommodate the car. This city, no matter where you go, whatever time you go at, it is easy to get around by car. We did an excellent job.

Ottawa's Strategic Planning Unit has come to accept the fact that an “in traffic-only” approach spread across the entire metropolis will neither appeal nor seem safe to the vast majority of the *non-cycling* public and therefore not significantly expand modal share.

To come up with new ways of expanding cycling infrastructure, the City relies on planners who have practical, experiential knowledge of cycling in Ottawa (as is the case with

transit). This practical knowledge is not an explicit requirement for joining the strategic planning unit. However, it appears to play an important role as planners 1) devise creative, practical solutions for accommodating cyclists on streets designed for automobiles, and 2) try to insert bicycle travel within larger planning procedures, such as road design and environmental assessment, and a planning culture at the City which treats cycling as a foreign, peripheral concern. I asked Mona if she could describe the level of practical cycling expertise in her group.

Mona: In my group the two people who are involved in cycling have been cyclists all their life. Robin has been the cycling coordinator for ten years, and he cycles almost every day. Sometimes he uses transit, but he knows every area in the city, every single right turn, left turn problem. The other one, he joined us recently, was president for Citizens for Safe Cycling. And we brought him on board because he knows the cycling community very well. We tried to have people with experience, and also people who not only study it and do the work, [but also] know and are actually living it and believe it. We also have Steven and Colin who are helping in the bigger planning picture, like more environmental assessment. Both of them they are cycling users, and actually I don't think I have anyone in my group who actually drives to work. We don't have any. [As] a group we plan for everything, we plan for roads. You can ask me the same question, how can you plan for roads if none of you are driving [a car]? But we drive on the weekend.

Interestingly, at the end of this comment Mona betrays the dominant bias that roads are meant for the purpose of car driving, which speaks to the prevalence of this assumption. However, what makes her group interesting, in terms of larger narratives of urban space and mobility, is that it also promotes alternative representations and perceptions of the road and, crucially, has an institutional space in which to implement certain aspects of a new urban road.

Before following this line of analysis, I wanted to know more about what the actual experience of cycling was like for cycling planners. Colin, for the most part, was typical in his description. Like each of the planners I talked to, I asked Colin what he found most pleasurable about his daily travel routine, followed by what he found most frustrating.

Colin: Well today again I biked. I'm part of the 2% of people who cycle to work. I do that for eight months a year, from March to October, and then I'm part of 23% of the population here who takes the bus in the winter. Biking is great, it's one the most pleasurable parts of my day, getting fresh air and cycling along the canal, taking in the beauty of the flowers and the trees, and traveling at a speed that's comfortable to stop and to say hello to people. I'm kind of my own person on my bicycle. I'm not confined like I am in a car, in particular lane or particular route, or particular speed. [I have] a bit more flexibility on my bike and I like to travel that way.

Colin is one of the many cyclists in Ottawa who uses the NCC pathways, which were originally designed for recreational purposes, not for routine travel. Robin identifies this "hidden capacity" as an early and ongoing source of momentum for Ottawa's cycling culture: it "allowed people to travel some distances here without having to worry about traffic and so on. And it just caused more people to just try out a bike, although it is still a small number of people." As for the most frustrating part of Colin's commute, that happens before he reaches Old Ottawa South on Bank Street. On his way to work on Elgin he crosses between the two neighbourhoods of mobility linked by Billings Bridge, the experience of which I described at the beginning of chapter one.

Colin: While biking, my experience on Bank Street in front of Billings Bridge Mall has been quite frustrating. I got hit by a car twice there, one was pretty serious. About two years ago a lady, an older lady pulled in front of me as I was coming down the hill and I didn't have time to stop, so I badly injured my shoulder. It took me about a year of physiotherapy and I couldn't play golf for at least two years, so that was very frustrating. There are so many access lanes, and the road is so wide, and traffic is so fast. That is a very dangerous section of roadway. And actually if you look at the traffic reports throughout the city it is that stretch of road, between Riverside and Alta Vista, that has some of the most accidents and bicycle collision accidents in the last three or four years. So I'm not the only one that finds that route very difficult.

Indeed, four years ago I was struck or "right-hooked," which happens when a motorist suddenly turns right after not fully overtaking a cyclist, at that exact spot in front of Billings Bridge Mall. There are countless intersections where busy streets shared by motorists and cyclists increase the

risks of “right hooks” and other kinds of collisions. For Colin this bout of violence became a pivotal experience, spurring him to re-imagine and reconfigure everyday infrastructure. He is currently senior project manager and engineer for Ottawa’s most contentious piece of new infrastructure in 2011, the Laurier east-west segregated bike lane²². Frequently used in Europe,

Figure 18: A cyclist travels alongside several large trucks on Rideau Street approaching King Edward Avenue (photo, author)

and already used in Montreal, Laurier marks the first time this particular technology will be used in Ontario.

²² See http://www.ottawa.ca/videos/public_consult/segregated_bikelane/segregated_bikelane_en.wmv for a promotional video.

Underlying the choice of road technology for the Laurier lane is a shift in institutional power relations at the City, a crucial, if easily overlooked moment for a critical politics of mobility. It was not until I interviewed Mona that this institutional shift, which was periodically alluded to yet never fully acknowledged, became clear to me.

Mona: Cycling and pedestrian [planning] and Transportation Demand Management [TDM], unfortunately before last year they were under Traffic Operations. So you can imagine [Traffic Operations] has a completely different interest in completing day-to-day traffic operations and parking. Actually the group was called Traffic and Parking Operations. So cycling and pedestrian and TDM were in that group. You can see the dilemma we were in. [Traffic Operations] are the people who are getting all these calls [about broken or slow] signals, that people are waiting forever, the congestion or the accidents that cause the 417 [to jam]. Whereas our group, our main objective is to encourage all these modes, so we all almost think at the same level. Our group is called Transportation Strategy Planning, it's part of a bigger group for transportation planning. Transportation planning has four groups. Our group is the start, it's more like the visionary group, the one which determines where is the master plan objective, and also to set the infrastructure to do it. Some of our work, because we work with cycling and pedestrian and because it is more of a refined scope, [is] coordinating the implementation. There is no other group in the city that actually does that.

This shift out of Traffic and Parking Operations and into a variegated Transportation Planning group mobilized a previously negligible group tasked with, in Colin's words, "trying to change demand, auto dependency." This came with a crucial change in leadership that effectively empowered high level cycling planning at the City for the first time, matching practical, embodied knowledge of cycling with an institutional conduit of power. As Steven elaborates, "it is fine to have staff who understand things at this [practical] level, but it's senior management and the politicians who make the decisions." Steven emphasized the importance of having the deputy city manager "on board." Having Nancy at the table to counteract the typical traffic engineering and operations mentality has emboldened planners with practical knowledge of cycling to challenge the status quo in Ottawa. Equally important, given Ottawa's fractured

planning landscape, has been the buy-in of National Capital Commission (NCC) CEO Marie Lemay. In spring of 2010, Lemay led a delegation of local city leaders on a well publicized fact-finding tour of world-class cycling facilities in Northern Europe, culminating in the Velo-City Global 2010 cycling conference in Copenhagen. The delegation returned with a proposal to expand segregated cycling lanes across the capital.

The Laurier bike lane (see Figure 19) has become a dynamic and contested representational space and ground zero for a critical politics of cyclomobility in the capital region (comparable, perhaps, to the controversial Jarvis Street bike lanes in Toronto). Unlike other representational spaces that challenge the imposed order of automobility, such as Critical Mass and countercultural groups like messengering and bicycle croquet, the Laurier lane has the potential to reach out to the average citizen. It has the potential to help mainstream cycling and reconfigure it as a non-fringe practice accessible to typical people wearing normal clothes doing mundane things. As Mona describes, this normality is well-established in places like Copenhagen, clearly one source of inspiration for the Canadian capital, where a third of the population uses a bicycle to get around.

Mona: In Ottawa I think it is more about the environment, and people who were against [high gas] prices, and people who are fed up with being in congestion. And they think if I take my bike, I get my exercise for the day, so it's good for my health. Which is completely different than why people in Copenhagen actually cycle. They cycle because it is more efficient and more attractive to them than any other mode.

The shift towards making cycling as efficient and as attractive as other modes has only just begun in Ottawa and Canada more generally, and will require sustained commitment from planners, politicians and the public. In this context the Laurier lane seems like a vanguard

moment in the production of space, As Mona suggests, although Ottawa still has a long way to go, plans are in place to capitalize on a nascent conceptual shift and extend new urban roads and neighbourhoods of cyclomobility.

Mona: Yes there has been a shift in mind. However, there have only been baby steps, we can say, in actual implementation. We have lots of people who cycle for recreation, but very few who cycle for commuting. One of the main reasons is that the people who cycle for their commute and cycle in traffic are really committed, while the majority who cycle for recreation like being away from traffic. They like to be segregated, they don't feel or perceive being safe on the road. I am one of them! Basically we don't have that network of segregated facilities, similar to transit, that can take people directly from their neighbourhood to downtown. Yes, if you do have that in your neighbourhood, then the segregated facility will end once you get close to the greenbelt or closer to your destination, and then you have no option. So we have big plans for hundreds of kilometres of cycling facilities we need to implement.

However, even “baby steps,” in the form of a \$1.3 million segregated lane now running down eight blocks on either side of Laurier Avenue West, have elicited intense public reaction. This reaction reflects a politicization of cycling, among people both for and against the project, transpiring in open houses, online forums and in the street (in contrast, a \$200 million urban expansion of Ottawa's Queensway has hardly raised an eyebrow). The controversy stems from the fact that, unlike other bike lanes painted onto Ottawa's streets, Laurier West physically separates cyclists from a two-way flow of motor vehicles, by using concrete curbs, plastic poles, parked cars and planter boxes to define exclusive cycling space from Bronson to Elgin. Cyclists have “through priority” at intersections, and following a Copenhagen solution for risky left turns, a “bike box” model has been adopted, where instead of driving to the far left of the lane while preparing to make a turn, cyclists veer to the right where he or she waits in a designated area for the signal to change. To ensure safe access to the bike boxes, motorists are no longer able to turn right at north-south intersections on a red light. Generally speaking, this kind of configuration

Figure 19: Ottawa's controversial segregated bike lane (in green; for Ottawa's entire cycling route map, see http://www.ottawa.ca/residents/public_consult/bikelane/index_en.html)

can reduce curbside parking, business delivery/drop space and paratransit access. In Ottawa's case, however, prompted by concerted opposition from local business improvement associations (BIAs), the City has actually *increased* on-street parking in the area by adding spaces along

Gloucester and Nepean Streets, and making the 44 spaces remaining on West Laurier free of charge. Meanwhile, access for emergency vehicles, off-street loading zones, the street's many parking garages and hotel valet and taxi stands have all been maintained. Finally, additional Para Transpo drop-off locations have been added, while some curbs were removed to ensure safe access to buildings and intersections for people with mobility issues.²³

The underlying motivation for a segregated lane – to reach out to “the rest of us” who fear for their safety while cycling in automobile traffic – played a minor part in the lead-up narrative to Laurier’s opening. Many mainstream media outlets, especially the CBC, instead chose to focus on opposition to the project, closely following the fierce and entirely predictable attacks from the BIAs (which occurs in Copenhagen, too) and the many valid concerns of other constituencies (see Figure 20). Not all coverage, however, was negatively framed or sensationalistic. The Ottawa Citizen, for example, often featured valid arguments on both sides of the debate, even occasionally touching on the broader environmental and health contexts which increase the caché of cycling lanes considerably. For every stern editorial in the Citizen proposing new ways to dissuade people from cycling (e.g. licensing for cyclists), there were articles with quotes from Colin and Mona on how Ottawa is well behind the curve on this issue (Nease 2011) and articles that address the worries that cyclists themselves have about the project, like the lack of connections past Bronson Avenue Expressway (Duggal 2010). Interestingly, aside from the occasional observation by Kate Jaimet at the Citizen, there has been very little attention paid to gender, despite the fact that cycling among females continues to lag in North America,

²³ Colin’s team is also trying to emphasize previous research which shows that contrary to what the BIAs, restaurant and hotel owners in the area are saying, cycling lanes in North America are good for business as area cyclists are more likely to stop and have more capacity to do so on a regular basis (http://www.ottawa.ca/residents/public_consult/bikelane/faq_en.html).

again with safety as a key concern (Haughney 2011). Similarly, little attention has been paid to race and ethnicity, even though immigrants and minority groups often face added cultural and practical barriers to utility cycling (Peritz 2011). Segregated facilities may help address these barriers, as Mona has suggested. If the heated debate on Laurier is any indication, however, expanding this kind of infrastructure, and even making Laurier into a permanent space, will encounter intense resistance, testing the tolerance of the car driving majority.

Despite the push-back, additional segregated lanes may be the most sensible way to begin building socially inclusive neighborhoods of cyclomobility. As Robin suggests, a revised OCP may be heading towards the expansion of inclusive, Copenhagen-style facilities.

Robin: The thinking for the Ottawa Cycling Plan [OCP] was that cyclists will be well accommodated on shared facilities, that is the philosophy underlying the plan. The OCP, not actually within the plan but within the technical appendices, has a small section on [segregated] facilities, and recommends against them. Segregated facilities are not recommended because of complex difficulties regarding safety issues at intersections. However, segregated facilities were [proposed] by council before the trip to Copenhagen, because people are looking at what's going on in Montréal and what's coming out of New York City. There seems to be more people who don't feel comfortable riding but who want to ride. In Copenhagen we saw that everybody is riding on segregated facilities on all but the most quiet streets. The thinking is that maybe you don't need segregated facilities on every street because there are so many cyclists and everybody driving a car drives a bike, [so] that you can drive down small streets right in the middle of the road on a bicycle and nobody is going to bother you with the car because they ride a bike, they know it is fine, they just have to go slower. But the whole system is based on segregation. The main conflict point, which is the main reason [for resistance] in North America, is dealt with through a relatively simple design at intersections. I think the manager of transportation planning saw that when she went. You don't have to make those left turns, and for the right turns you don't have to worry about cars turning right because cars have to wait for you. That is it. No motorist would go without looking like that [over their shoulder]. They just look.

Laurier bike lanes form disability barrier

CBC News Posted: Jul 9, 2011 5:39 PM ET Last Updated: Jul 9, 2011 5:39 PM ET

The cement curbs that separate bikes and vehicle traffic on Ottawa's Laurier Avenue have drawn critics.

The city of Ottawa says it is willing to alter the new segregated bike lanes on Laurier Avenue to make them more accessible to people with disabilities.

The problem is the cement curbs that line the bike lanes are proving to be a barrier for people with disabilities. With the barriers in place, Para Transpo vehicles aren't able to drop off passengers along Laurier Avenue.

The city now plans to remove a 1.5-metre long slab to allow Para Transpo vehicles to drop off passengers near Metcalfe Street.

Wheelchair user Max Brault said the announcement will offer little help.

"It doesn't sit well with me," he told CBC News. "It doesn't really address the actual problem, which is getting people to be able to enter into the front of the building."

Bike lanes have other critics

This isn't the first complaint about the new bike lanes on Laurier.

Earlier this month, CBC.ca reported that the Ottawa Professional Fire Fighters Association are worried the concrete barriers may impede emergency vehicles.

Last fall, the Laurier Street Business Improvement area also expressed concerns the lanes will lead to traffic problems.

Coun. Mathieu Fleury said the city is willing to make more changes to the bike lanes if necessary.

"The city will adapt," he told CBC News. "I mean if there are some concerns happening, we will adjust. It's a pilot project for us, obviously there are some challenges, we're aware of it."

Catherine Gardner, chair of the city's accessibility committee, said the city is being reactive, instead of proactive.

"It's unfortunate that we are not always consulted because we do have experts on our committee that have sat on provincial standards committees," said Gardner.

"We do have the knowledge there and all we want is to be asked to be involved."

It's that type of consolation that Brault said would pave the way for a successful pilot project.

"It's really simple — I have an idea of what the problem is, able-bodied people don't. Get us involved, we want to help. And I think that's where the real solution is."

The city said it is open to ongoing consultations. The bike lanes are slated to officially open on Sunday.

Figure 20: News article on the Laurier Avenue Bike Lane (CBC)

A spatial system in which cyclists are car drivers and, at the same time, car drivers are cyclists, as Robin observes, can help produce a shared sense of what I call “mobile empathy” among different street-users. In turn, mobile empathy may support a greater sense of safety and civility on the road, perhaps even social solidarity. But to get to that point where most motorists take the presence of cyclists for granted in the city, where “they just look,” to use Robin’s incisive phrase, will require, even more so than LRT, a new system of practical sense or “auto habitus” among planners and the public at large.

Ultimately, cities can only reconfigure hegemonic spaces through experimentation. A significant obstacle to experimenting “hands-on” with new techniques of mobility, however, lies in existing habits, especially if those habits continue to work well in one’s built environment. Etched deeply into muscle memory throughout pre-adulthood, habits have a way of lingering until either extreme costs become associated with their continued use (e.g. the elderly driver who suffers an accident) or opportunities for “unlearning” become extensive and *inviting*. So long as the City makes it extremely easy for motorists to move around urban Ottawa, small projects like Laurier, no matter how appealing to average cyclists, will make little difference in the larger scheme of things. As Robin explains,

Robin: People tend to get into habits, and will stick to them if it is working alright. An example of that is the routes people choose to go to work. The first time they go, they are more cautious, watching the signs and what’s going on. And once they have done it 100 times their minds are in neutral. By the same token, take a teenage motorist who is learning how to drive, if they have a sense about them, and most people do, they’re careful. Until they get this sixth sense. I don’t know about you, but when I learned how to drive a car after about two years of driving, I developed a sixth sense when I just knew when someone was about to pull out in front of me. But before then, I was much more focused. Then I got mentally lazy. I think that a lot of motorists tend to become habituated to having it easy. Because we do a good job. People complain about congestion [but] it doesn’t take very long, even in the very worst conditions. It’s a very rare winter storm when it takes more than an hour longer than what it usually takes.

Robin is realistic about challenging what he calls the “sixth sense” of hundreds of thousands of motorists as the City continues to expand highways and bedroom communities, and is aware that people need to be nudged into trying out new mobilities.

Robin: Habits need to be overcome by trying. Here's another example. Rack & Roll, on the bus. Lots of cyclists are intimidated to try it, because they do not want to hold anybody up, they think while they are taking their bicycle and putting it on the rack it will make everyone else on the bus wait. And then they try it once and find out that that is not actually the case, they like it, and they start doing, they build a new habit. I think there is tons of examples like that.

As Robin's second example here suggests, cycling and transit overlap in practice; experimenting with one may lead to experience with another. Still, OC Transpo's Rack & Roll program, wherein bicycles are temporarily placed in a rack on the front of a bus, offers a fairly minimal overlap.

On the other hand, the overlap between cycling and public transit, and the spatial conditions that underly them, stand to grow exponentially through the expansion of light rail, suggesting the fate of alternative neighbourhoods of mobility are intertwined. LRT platforms and vehicles are much more accommodating to these intermodal connections, especially relative to buses and sidewalk stands that often feel like they are in the middle of the street. More significantly, this overlap in practice is complemented by the shared urban conditions of density, land-use diversity and street interconnectivity in which rail and cycling mutually thrive. Compact forms of rail-oriented development effectively lay the groundwork for neighbourhoods of cyclomobility, wherein short trips can accomplish a plethora of day-to-day activities. In the next chapter, I examine these local conditions of mobility in more detail by taking a broad look at urban intensification and the containment of sprawl. Before leaving the production of new urban

space, however, I will highlight a particular representational, reflective space of cycling, as part of the larger memorial landscape created by the sediments of Sussex Drive, that has recently reshaped the narrative tone around car-cycling interactions in the city. Recall that Sparks Street tells the story of a forgotten urban railway, and Bronson and King Edward Avenues tell different stories of that which replaced streetcar boulevards, the machine road. For its part in my narrative of mobility and urban space, Sussex Drive offers a brief, yet powerful meditation on the human cost of introducing new urban mobilities into a machinic roadway.

The Fourth Vignette: Sussex Memorial Drive

Figure 21: Roadside memorial on Sussex Drive for a cyclist killed in traffic (photo, author)

City Council shall recognize and support Sussex Drive as a distinctive street, known as the Mile of History and as part of Confederation Boulevard. The street shall feature significant heritage buildings and shall function as a shopping street. (City of Ottawa, “Official Plan” 2003, Vol. 2a, Sec. 1.53)

The city’s cycling plan states there will be a future dedicated cycling facility along Sussex Drive, although [according to Robin Bennett] “it’s not at the design point yet.” (Hurley 2010)

Sussex Drive needs little introduction. While the federal government dedicated the Gréber Plan for the National Capital Region as “a lasting and living memorial to the War” (Gréber 1945), Ottawa’s most famous address keeps many of its monuments. Sussex boasts the Prime Minister’s

residence, Major's Hill Park, National Gallery, Governor General's residence at Rideau Hall as well as the American Embassy, albeit perched behind concrete Jersey barriers for extra protection. Part shopping street and part "multi-modal arterial road corridor with a ceremonial route role" (City of Ottawa 2010), Ottawa's preeminent ceremonial route has evolved from a thriving streetcar route into scenic park way or pleasure drive, and again into a kind of hybrid machine/new urban road. The city has plans to extend its network of on-street cycling facilities, for example, along either side of Sussex. The street's proximity to the urban core and mix of employment, cultural, residential and recreational spaces recommends it as an ideal site to implement progressive planning ideas associated with new urbanism and Jane Jacobs (1961). Already the street attracts many of the audacious two percent of Ottawans who regularly challenge the city's car culture by using bicycles to negotiate urban space.

Recently, it became clear that Sussex Drive is part of the front line in an increasingly violent struggle between motorists and cyclists. In late September 2009 after leaving a bike path that suddenly ended, 34-year-old Melanie Harris crossed a sidewalk onto Sussex Drive and was struck and killed by a city bus. Several months later, a 55-year-old cyclist suffered minor injuries after being struck by a car in the same arterial section of the road, adding to a recent string of high profile cycling-car collisions in the region. A "ghost bike" memorial soon marked the site of Melanie's death (as seen in Figure 21), bringing an international movement started in Missouri six years prior to Ottawa (<<http://www.ghostbikes.org/>>). Painted white and adorned with flowers and personal tokens, the ghost bike bears many similarities to roadside death memorials assembled in the late twentieth and early twenty-first century (Belshaw and Purvey 2009). More ghost bikes have emerged at other sites in Ottawa where cyclists have been killed by motorists,

most recently on Queen Street and O'Connor. Together these somber shrines symbolize the little-discussed displacement of violent human death from extraordinary theaters of war to the mundane roads that lead people to work, the store and each other's homes. Cyclists, in spite of small numbers and a grim reminder of their vulnerability on Sussex, exert substantial and growing influence on space and mobility in Canada. The National Capital Commission, or the federal arm of Ottawa's municipal government, has joined the political fight to "Copenhagenize" the city. In policy and in practice Ottawa is recognizing the cyclist as a legitimate participant in traffic.

Chapter Summary

In chapter four, I began on King Edward Avenue and ended on Sussex Drive, and examined the contested process of expanding and reforming everyday mobility through alternatives to the car. Drawing on Henri Lefebvre's triadic theory of the production of space, I explored emerging representations of space, spatial practices and representational spaces around light rail transit and bicycle travel that have challenged the spatial and social assumptions of hegemonic automobility. Light rail presents a contrasting way to automobility of conceiving and perceiving social space as well as the built environment, while bicycle travel poses a salient representational space that contains the potential to defamiliarize automobility as an historical and increasingly outdated, construction. Through the lens of the production of space, I elaborated neighbourhoods of mobility as socially and physically bounded districts of the city that are traversed by different kinds of travel and implicated in a relational politics of mobility. Through this politics, the power

relations that have traditionally privileged the movement of private automobiles have come under close scrutiny and in a small number of places have been successfully challenged. At the same time, the resources expended by the city planning department on expanding new urban mobilities is still relatively small compared to the operational budget for automobility. Still, recent attempts to rejuvenate urban rail transit and produce a space for everyday cycling, I have argued, mark an important step towards building a “new urban road.” Compared to the “park road” and “machine road” considered in chapter three, as ideal types circulating during the rise of mass automobility, the new urban road marks a renegotiation of urban space and everyday mobility, defined by an explicit accommodation of multiple mobilities and integration of the street within its surrounding urban fabric. In the next chapter, I turn towards an examination of planning urban futures around new neighbourhoods of mobility.

Chapter 5 – Aspirational Space and the Intensification of Urban Life

This chapter is concerned with urban spaces that people *aspire* to. In contrast with the last two chapters, which look to the past to follow the rise of automobility, and then to the present to understand contemporary attempts to reconfigure space and mobility through bicycle travel and light rail transit, here my focus turns towards the future. I examine how cities prepare, anticipate and ultimately try to shape their future, drawing on Ottawa once again, as both a contemporary and historical case study of “planning ahead.” This future touches on spaces that people personally aspire to, in terms of the kinds of houses and properties they would like to eventually live in, which for many Canadians means a large backyard, two or three garages, and a nice neighbourhood to raise a family. Kanata, for example, a rapidly growing and relatively wealthy postwar suburb west of Ottawa, fits this description. Additionally, I consider the kinds of spaces that cities and city planners aspire to, especially spaces associated with smart growth and new urbanism, as forward-thinking planning movements that aim to eventually make cities environmentally sustainable and healthy places in which to live.

The street that forms the subject of the fifth vignette, Terry Fox Drive, is not as easy to reach as the streets whose perspectives I have explored thus far – at least if you are walking, cycling or taking transit from somewhere inside Ottawa’s greenbelt. However, as in the case of Sparks Street, Bronson Avenue, King Edward Avenue and Sussex Drive, Terry Fox Drive maintains a deeply disputed relationship with the local neighbourhood, and an equally problematic relationship with the kinds of mobility to which this neighbourhood gives rise.

The Fifth Vignette: Terry Fox Drive and Suburban Futures

Figure 22: South March Highlands, Kanata, Ottawa (photo, author)

Life's better here. Set along beautiful ravines, Kanata Lakes is surrounded by the best that Kanata has to offer - a world class golf course, superb shopping and entertainment, pristine parks and prominent schools. Only minutes from Ottawa's high tech core and Scotiabank Place. (Urbandale and Richcraft 2010)

The province has no power to stop the imminent housing development in Kanata's South March Highlands, even though the area is potential habitat for the threatened Blanding's turtle -- an animal protected under the provincial Endangered Species Act. ... It will involve razing and blasting about 20 hectares of mature forest. (Jaimet 2010)

The outlying suburbs in Ottawa are sprawling again, gobbling up greenfield land with new sewers, roads and highway expansions. In June 2011 the Ontario Municipal Board (OMB), the provincially appointed tribunal that hears applications and appeals on planning disputes,

overruled Ottawa city council's decision to limit the expansion of the urban growth boundary to 230 hectares, rebuffing current mayor Jim Watson who was elected on a promise of "holding the line" on sprawl. The OMB instead ruled in favour of city staff who argued that 850 hectares of new urban land would be required based on existing housing preferences, echoing large suburb developers. The ruling prompted calls in the media that "the city's urban strategy is being gutted by the OMB" (Gray 2011). One of the province's oldest tribunals, the OMB was originally named the Ontario Railway and Municipal Board (ORMB). It was created in 1897 during a period of intense urbanization "to oversee municipalities' accounts and to supervise the then rapidly growing rail transportation system between and within municipalities"²⁴ (Ontario Municipal Board 2010). It is with some irony, then, that the OMB has effectively become a tool for de-urbanization and sprawl that not only undermines rail but costs municipalities dearly. The June decision falls into a larger pattern of recent rulings made by the tribunal. In 2008 it overruled Ottawa city council's rejection of an application from Minto to build 1800 homes in rural Manotick because it ran counter to the City's plans to limit car-oriented development. In 2005 the OMB sided with Del Corporation, Brookfield Homes and Westpark Estates who argued that the western urban growth boundary should be broken because Ottawa lacked enough space for single-detached housing. This forced the City to redesignate 547 hectares of farmland between Kanata and Stittsville for 5,000 new homes just west of Terry Fox Drive.

As "creatures of the province," it seems that Ontario's municipalities have their hands tied when it comes to extending new suburbs into the countryside. Every five years, according to

²⁴ In 1906, the ORMB assumed new responsibilities," that "made it Ontario's first independent, quasi-judicial administrative tribunal. Before then, provincial regulations of municipal matters were dealt with at the legislative level and the courts." The ORMB was renamed the Ontario Municipal Board in 1932 ("History of the OMB", http://www.omb.gov.on.ca/english/OMBInformation/OMB_History.html, retrieved February, 2012)

provincial legislation, cities and towns in Ontario are obliged to update their master plans or constitutions. With few topographical features to naturally limit the march of suburban sprawl, this essentially means deciding how many hectares of farms, woods and wetlands should be colonized for shopping malls, roads and housing starts. On October 1, 2000, for example, the city enacted Regional Official Plan Amendment #9. This meant that Kanata, Ottawa's western suburb, suddenly grew by 725 hectares. Along with South Nepean/Riverside South and Orleans in the east, Kanata represents a failure of the city to contain suburban sprawl. By the late 1960s Ottawa installed a large swath of federally managed green space around the city, to give the capital a rustic motif, but also to spatially define a limit on urban development. Unfortunately, the National Capital Planning Service significantly underestimated population growth during the baby boom, as well as the power of privatized automobile travel, and today two out of every five Ottawans live in car dependent suburbs outside the greenbelt along highway corridors. If a more accurate understanding of population growth had guided the development of the greenbelt, it could have developed into a more effective boundary against the sprawling development we now take for granted in places such as Kanata along Terry Fox Drive.

Terry Fox Drive is not finished yet, but it tells perhaps the most important story of all about mobility in Canada's capital city. Terry Fox Drive follows a narrative of suburban dreams, of commercial enterprise, single-occupied vehicles and single-detached houses. It also tells another story, that of destroying one of Ottawa's most densely bio-diverse places, the South March Highlands, where the Canadian shield crops up into an old forest home to more than 654 species, 17 of which face the risk of extinction. In among relatively wealthy neighbourhoods, the road carries heady expectations of future "prestige business parks" that will lead to an economic

Figure 23: Laying the groundwork for the extension of Terry Fox Drive (photo, author)

comeback for Ottawa's high-tech sector. The expansion of Terry Fox Drive (see Figure 23), along with the widening of a major stretch of Ottawa's freeway, form central features of the Kanata West Concept Plan (FoTenn 2002). The Concept Plan provides a powerful script for those 725 hectares expropriated by the city in 2000, not necessarily in a legal sense, but as a cultural expression of our desire to drive ever-forward into brand new spaces rather than double back, take on complex NIMBYisms and deficits of affordable housing and *intensify* the extant city, or the city in which we already live. This cultural drive pervades our most basic institutions. The City, a provincial creature, will likely land in court before the OMB if it fails to drive ahead and

bulldoze South March Highlands into a low density suburb neatly framed by a 47.7 million dollar extension of Terry Fox Drive. Phase 9 of the Kanata Lakes development may or may not fatally evict the Blanding's Turtle and American Ginseng. If it does, Ottawa, in addition to having new roads and housing stock, will have another new normal by which to judge the effects of automobility.

Planning "Neighbourhoods of Mobility"

Terry Fox Drive represents the foundation of an automobile suburb, and part of a dynamic relationship between urban mobility and city space. In this relationship, both mobility and space actively facilitate, modify, distribute and transform human action. On the one hand, urban space helps dictate patterns of mobility, especially through levels of population density, land-use diversity and street interconnectivity. Homogeneous, dispersed, and rife with dead-ends and cul-de-sacs, western Kanata, for example, nearly necessitates car ownership. This form of urban space may not mandate automobile use in a legal or coercive sense, and walking and cycling are certainly not forbidden on Terry Fox Drive (although it may be more dangerous than other roads). But it may as well be: four out of five western Kanatans use automobiles to commute while 1.5% and 3.2% cycle and walk, respectively. On the other hand, spatial conditions do not *determine* mobility patterns, meaning that the effects of space in places like Kanata are not set in stone. Mobilities themselves have the generative capacity to change space, in a social and material sense. This change can take the form of planning blight (as was the case with King Edward Avenue) or increasing car-dependence, but it can also take the form of transit-oriented

development (TOD). Albeit less dramatically than urban rail, cycling infrastructure changes surrounding space too, for example by bringing more clients and patrons into local shops than automobiles. In chapters three and four I explored this open-ended, mutually constitutive relationship between urban space and mobility, first as a process of network translation and second as a dynamic production of space. In both cases, the mutual construction of mobilities and city space was expressed in the always-present political alliances that shape planning and urban governance in specific contexts. In this final chapter of analysis, I take a synthetic approach that combines actor-network theory's concern with heterogeneity with Lefebvre's attention to power and the production of space. I use this synthetic approach to elaborate "neighbourhoods of mobility" as a conceptual framework for smart growth, and to move the analysis from the production of rail and cycling to the process of urban containment and intensification that ultimately must underpin the growth of these alternative mobilities. I argue that planning neighbourhoods of mobility, through these twin processes of containment/intensification, relies heavily on evidence and smart planning tools such as the Canadian census. In the next section below, I argue that such planning tools have steadily been eroded through neoliberal urbanism.

Neighbourhood is an ambiguous concept of urban space that basically means more than a street and less than a city. It may on this ground have a similar meaning as "district" or "local community," but I avoid these terms; district often carries with it a specific functional distinction (e.g. the entertainment district, the financial district); and local community carries problematic neoliberal connotations (discussed below). In the past, following the Chicago School, urban neighbourhood has been characterized as that which is decayed and destroyed by an excess of

mobility (Sheller and Urry 2000: 740). However, as a planning idea, neighbourhood can counterpose mobility in a constructive manner that avoids idyllic or deviant conceptions of community while emphasizing the plurality of urban space (Mumford 1954). Because of this very plurality (Kallus and Law-Yone 1997), neighbourhood constitutes a “basic building block” of cities. It expresses “a continuous attempt to mediate the span between the single house and the totality of the urban complex,” and in doing so plays an important role in the concrete and also the “conceptual articulation of the city” (Kallus and Law-Yone 2000: 816).

The core idea of neighbourhood in this planning/architectural sense is that, no matter what mode you look at, the city as a whole does not evenly map onto daily travel. Each mode has its own particular “neighbourhood” where the nature of urban space, including urban form and design and the rhythms of local inhabitants, supports its use. Population data (i.e. the Canadian census) offer an effective basis for mapping and describing these neighbourhoods. Figures 24 through 27 map this data, which I produced online with open source software by IBM Canada,

Figure 24: Percentage of people who walk to work (IBM/ONS)

using 2006 census data provided by the Ottawa Neighbourhood Study (ONS).¹ The smallest neighbourhood (in a geographical sense) belongs to walking, as seen in Figure 24. It shows that some core neighbourhoods, namely Centretown (44%), the Byward Market (52%), Sandyhill (35%) and Lowertown (36%), have high levels of pedestrian activity (compared to the city average of 7%), but this drops off sharply once you move further outside the central business district (CBD), suggesting a relatively crisp border for this neighbourhood of mobility. In contrast, starting with moderate levels near the CBD, cycling peaks in the surrounding streetcar

¹ The Ottawa Neighbourhood Study (ONS) is based at the Institute of Population Health at the University of Ottawa (retrieved at <http://137.122.133.36/neighbourhoodstudy.ca/main.php>).

Figure 25: Percentage of people who cycle to work (IBM/ONS 2011)

suburbs such as Old Ottawa South (12%) before petering off towards the greenbelt with levels still above the city rate of two percent (see Figure 25). A significant amount of overlap exists between neighbourhoods of walking and cycling, although the latter is much more extensive.

Bus transit (Figure 26) illustrates a similar pattern of overlap and extension, starting within the urban core and spreading outside the greenbelt into small pockets in Orleans, Barrhaven and parts of Kanata. Core neighbourhoods and inner suburbs show much higher rates than the city average of 19%. Finally, the largest neighbourhood of mobility belongs overwhelmingly to automobility. Figure 27 (which excludes the eight percent of Ottawans who

Figure 26: Percentage of people who take bus transit to work (IBM/ONS 2011)

“passenger” to work in an automobile), shows that private motor vehicle-driving, with an average citywide rate of 63%, dominates nearly all of Ottawa’s landscape but the CBD. The private car even dominates streetcar suburbs such as Old Ottawa South (51%), Civic Hospital (57%), New Edinburgh (49%), Rockcliffe (59%), and Westboro (52%) where compact urban space supports cycling and transit, but arterial highways and generous parking still support extensive car commuting. Using this kind of spatially derived (or “granular” knowledge) of mobilities to guide urban planning is what I mean by “planning neighbourhoods of mobility.”

Figure 27: Percentage of people who take a car to work as driver (IBM/ONS 2011)

Planning to expand cycling, for example, on the basis of actual urban spatial conditions which support cycling, represents a much different strategy than simply painting and promoting bike lanes all across the city, which, at least formally, is still Ottawa's policy.

These maps suggest that to create a wider plurality of mobility-neighbourhoods, the city must expand the compact and variegated spaces that support walking, cycling, and public transit. Increasing population density is a fundamental part of this process, which planners refer to as "urban intensification." Urban intensification, and its capacity to support alternative mobilities, has become a central part of Ottawa's growth and transportation strategies. As I discussed in the

last chapter, “smart growth” has recently become part of the planning landscape in Canada, evident in cycling projects, LRT and TOD. A significant gap still exists between smart growth policy and practice. The practice of building homogeneous, garage-front suburbs, as I have already noted, remains standard (Grant 2009), and although we are starting to see some new projects in the urban core, we also tend to see developers abusing zoning regulations by equipping outsized condo buildings with multiple floors where residents can park, or “take off their cars.” Nevertheless, practice is slowly changing, or at least expanding to include forms of development that combine multiple land uses and support walking, cycling and public transit. This is evident not only in alternative mobility projects but in planning policies that indirectly support these projects, such as as urban growth containment, which closely complements intensification occurring “inside” the city by restricting sprawl on the “outside.” Both of these policies have become enshrined in provincial regulations in Ontario: *Places to Grow: Growth Plan for the Greater Golden Horseshoe* (Ontario Government 2006) and *Greenbelt Plan* (Ontario Ministry of Municipal Affairs and Housing 2005a).

Through smart growth in general, and urban intensification and growth containment in particular, cities have advanced knowledge or “evidence-based” planning approaches based on population data. This approach to city planning can be characterized as local area (or small area) population analysis (Schmitt 1952). Nearly all objects of city planning, including housing, roads and neighbourhoods, are measured in relation to population. For example, smart growth projects to expand walking, cycling and other active modes of transportation depend directly on the size, density and composition of city neighbourhoods (Vélo Québec 2010). Because population data are basic to anticipating and managing spatial change, the census plays a foundational role in city

planning. As President of the Canadian Institute of Planners, Marni Cappe (2010: n.p.) explains, “planners are heavily reliant on data from the Census.” These data inform “decisions every day that affect where and how people live, the facilities they use, and how they travel between homes, workplaces and shops”. For instance “journey to work” data on workplace location, commuting distance and mode of transportation has been collected on the census “long form” since it was established in 1971²⁶. It allows planners to track links between land use and travel over time, and implement smart growth policies such as “reducing travel time to work by co-locating businesses and homes” (Cappe 2010: n.p.). Ultimately, evidence-based planning based on population data amounts to long term planning, which allows cities to anticipate change and take action before environmental, health and social problems associated with automobility become worse. Ontario’s landmark development plans, *Places to Grow* and *Greenbelt Plan*, are exemplars of long term, or what I call “aspirational” planning, that aims to expand new neighbourhoods of mobility based on walking, cycling and transit.

Both *Places to Grow* (2006: 13-14) and the *Greenbelt Plan* (Hemson 2005), and even earlier manifestations of growth containment in Ontario, are fundamentally dependent on census data. Consider, for example, Ontario’s greenbelt, potentially the world’s largest at 1.8 million acres of “working countryside” around the Greater Golden Horseshoe (Ontario’s Ministry of Municipal Affairs and Housing 2005b, n.p.). The greenbelt is a living space that mitigates deforestation and water contamination, albeit with the proviso that in the future new land may be “set aside to accommodate the urban development a growing population may require” (Ontario’s Ministry of Municipal Affairs and Housing 2005: n.p.). To guide this process, the *Greenbelt Plan*

²⁶ In 1971, when Statistics Canada replaced the Dominion Bureau of Statistics and passed the current Statistics Act, the census was split into a “short form” with basic demographic questions and a “long form” (previously the traditional census) that collected more detailed socioeconomic information from a smaller sample of households.

uses detailed population projections of housing preferences, employment growth and age structure to “identif[y] where urbanization should not occur in order to provide permanent protection to the agricultural land base and the ecological features and functions occurring on this landscape” (Ontario Ministry of Municipal Affairs and Housing 2005a: 3). These kind of projections have improved significantly since the 1970s, partly because of computer technology. While population forecasts typically focus on age structure and gender, advances in methodology have facilitated specialized “derived projections” and “small area forecasts” that cover variables related to mobility and urban space (George 2001: 113). Although it has become prominent in recent smart growth policy, it is important to note that the principle of designing and managing a greenbelt based on population forecasts has a long pedigree. For example, as discussed in chapter three, the greenbelt was proposed as a crucial check on suburban sprawl and the profligate consumption of natural resources by the international Garden Cities movement, which grew to prominence in the late nineteenth century (Howard 1898). By the 1950s, when Jacques Gréber was promoting the *Plan for the National Capital*, “the greenbelt was invoked as a universal solution to urban growth” (Amati 2008: 9). Later on in this chapter, building on my earlier discussion, I examine the relationship between Ottawa’s greenbelt with population data. First, I consider larger socio-political challenges to planning new neighbourhoods of mobility, using the recent Harper government decision to downsize the Canadian census as a lens onto a broader pattern of neoliberal urbanism.

Neoliberal Urbanism and the Erosion of Smart Planning Tools

The controversial move to abolish the census long form in 2010 by the Federal Conservative Cabinet ²⁷ marks a significant change in the population data on which planners rely to pursue smart growth. The move will have a broad impact on cities and their general capacity to manage urban growth and development. Many items on the ill-fated long form, and now on the voluntary National Household Survey (the limitations of which will be discussed below), are vital for smart growth planning, such as the “journey to work” data described above. Importantly, many other inputs and constraints impact long term planning other than census data, not least of which include parochial city politics, the fact that cities lack any constitutional powers, the enormous influence of the development industry, and a car driving public that tend to “vote with their keys.”²⁸ However, good population data is particularly important for evidence-based growth policies, or what Munir Sheik, former Chief Statistician for Statistics Canada, calls “intelligent government” (2011). Census data supports intelligent planning because of the insight it affords, not into any one variable, but into a complex and ever-changing web of relations between multiple variables. The ability to study census variables jointly to study multifaceted problems “increases their value geometrically” (Sheikh 2011: 325), depicting a relationality that bears directly on efforts to reduce urban car dependence and target cycling and transit infrastructure. By allowing planners to approach everyday travel as a complex “journey” wrapped up with other

²⁷ As the backlash unfolded through debate in the media, letter-writing campaigns, and Parliamentary hearings, it became clear that the decision will affect the ability of many national and local organizations to pursue their diverse objectives. Petitions showing the sheer range of groups in both number and kind (<http://datalibre.ca/census-watch/>) formed a powerful, yet ultimately ineffectual symbol of protest against what was felt to be a rash, ideology-driven decision.

²⁸ This was recently illustrated in Toronto who elected mayor Rob Ford, who promises to end the “war on the car.”

social and economic factors, census data, and in particular long form data, provide a knowledge base for reducing systemic car dependence. By knowing about changes in one aspect of automobility, changes in another aspect of the system can be analyzed and acted upon.

Abolishing the long form census appears to follow a larger pattern of changes in the wider socio-political landscape that have impacted the capacity of cities to manage urban growth and development. Since the census split into short and long forms forty years ago, the institutional and political setting of planning in Canada has changed dramatically. On one hand, this setting has become more participatory and democratic, reflecting an unwillingness on the part of people to sit back and passively accept the decisions of politicians and technocrats to upend entire neighbourhoods for new highways and “urban renewal” schemes (United Nations 2009). Moreover, the scope of planning has widened through smart growth to include the effects of urban growth on public health, society and the environment. For example, Statistics Canada has expanded consultations with stakeholders and data users before each census, adding new census questions that address smart growth issues such as commuting time (Sheikh 2011: 322). On the other hand, even as planning has become more open and focused on sustainability, the power of governments in general to manage urban development has diminished. The retreat of Keynesian, state-led approaches to growth in favour of market-based solutions that promote business and economic competitiveness has redistributed power towards the private sector. According to the United Nations (2009: 7), “the new central actors are real estate investors and developers, whose activities are often linked to economic boosterism,” and as a result “planning has found itself to be unpopular and marginalized.”

Canceling the long form appears to support a larger neoliberal trend to “roll back” public institutions on which long-term planning depends. In the late 1980s and 1990s policymakers increasingly appealed to notions of community, civic responsibility and social capital as a source of urban growth and renewal (Giddens 2000). The communal “third sector,” couched between the authoritarian state and free market, helped redefine urban blight and poverty “as a problem of local origin in need of entrepreneurial resolution” (Amin 2005: 613). Thus, while the local community became a way of representing social space, it also provided a solution for urban problems by making this space amenable to intervention, or what Rose (2001: 176) calls “government through community.” Characteristic of this third way rationality is the tasking of voluntary agencies with delivering social services once provided by public welfare institutions (Ilcan and Basok 2004). Problematically, holding the local community responsible for its own growth and development rests on the assumption that local governance is merely (or mainly) a local affair. Today’s municipalities, as Hackworth (2007: 78) argues, do not resemble “Keynesian managerialists” who put up regulatory barriers to external capital. Rather, they exemplify “market facilitators” who broker private-public partnerships and relax land-use controls in order to keep up with intense competition for private investment. As a result, large developers with no formal accountability to any particular locale exacerbate lopsided growth in and between local communities. At the same time, neoliberal urbanization discourages public investment in infrastructure that might coordinate this growth, like mass transit systems and greenbelts, that garner little immediate or obvious return on capital (Hackworth, 2007).

Although neoliberal urbanism promises to empower the local community, rolling back institutions like the census serves to undermine local level planning by reducing the capacity to

describe and analyze neighbourhood-level relationships between mobility, class, ethnicity and political ideology. While some metropolitan neighbourhoods enjoy stability, others are in flux as real estate markets drive inner city gentrification, outer suburb expansion and inner suburb decay (Hackworth 2007). For example, while Toronto's wealthiest neighbourhoods, clustered centrally around subway lines, have seen income levels rise slightly since 1970, middle-income neighbourhoods have shriveled and low-income areas, displaced to the edges of the urban core, have ballooned (Hulchanski et al. 2011). Overlaying neighbourhood poverty is the spatial concentration of immigrants and visible minority groups in so-called "ethnic enclaves." A yawning income gap between renters and homeowners, for example, especially hurts immigrant groups for whom home-ownership rates have recently declined, a problem that does not appear to be associated with disproportionate clustering in Canada's "gateway cities" (Haan 2009). Although racial diversity helps account for patterns of neighbourhood poverty, inequality within minority groups may be just as important, warranting calls for a "nuanced interpretation of segregation, ghettoization and neighbourhood dynamics" (Walks and Bourne 2006: 174). Finally, political ideology provides yet another source of neighbourhood-level complexity. Social and fiscal conservatives tend to concentrate in postwar suburbs, while left-leaning residents gravitate towards central neighbourhoods – a distinction that relates more closely to urban form than municipal jurisdiction (Walks 2007).

Without access to sufficient sample sizes at the local, or census tract, level for long form information on socioeconomic status and transportation, city planners will have less capacity, not only to track salient neighbourhood differences, but also to effectively distribute programs and infrastructure. With response rates above 97%, the long form, as Paul Hébert, editor-in-chief of

the Canadian Medical Association Journal, argues, has enabled municipalities to identify which groups of residents and neighbourhoods require basic amenities and services such as public transit, park space, immigrant settlement programs, childcare and low-income housing, and to target these services efficiently (Parliament 2010). Voluntary surveys with lower response rates, and therefore lower sample sizes, offer less capacity to identify these groups and neighbourhoods on a local level, which helps explain why cities are such vocal opponents of the move to a voluntary National Household Survey. As Hans Cunningham, president of the Federation of Canadian Municipalities, emphasizes, this drop in sample size becomes particularly significant “at a municipal and neighbourhood level: a smaller national sample size means fewer samples within local areas, which reduces the quality and availability of data from these smaller areas” (2010: n.p.). Equally important, the groups who typically rely most on municipal public services “are the very ones who would be least likely to fill out a voluntary survey” (Cunningham 2010: n.p.). As Don Drummond argued during Parliamentary hearings on the census, previous research suggests that people who respond to voluntary surveys are highly unrepresentative of the total population.

You would get an over-weighting of—let's face it—white, middle-class Canadians and a dramatic under-weighting of some other groups, particularly the poor and the very wealthy, particularly some recent immigrants, and certainly first nations. (Parliament 2010: 78-91)

Unbiased data provide a critical tool for identifying underserved groups and neighbourhoods and distributing city services efficiently. Ernie Boyko (Parliament 2010: 96), a data librarian at Carleton University, put this point succinctly to Parliament: “If you have biased information,

you're going to misallocate resources." Long form cancellation therefore appears to be in direct contradiction of the federal government's insistence on effective public sector spending.

In addition to planners, social scientists who indirectly contribute to urban planning will have less capacity to analyze neighbourhood differences. Sociological research on "neighbourhood effects" (Sampson et al. 2002) has benefited from increased public access to census and voluntary survey data through the Data Liberation Initiative and the spread of techniques like multilevel modeling (Raudenbush and Bryk 2002). This research shows that neighbourhood conditions, such as poverty, inequality, crime and diversity, help determine a variety of individual outcomes from health and childhood development to civic engagement and social solidarity (Hou and Myles 2005; Duncan 2010; Putnam 2005). One stream of neighbourhood effects research with particular relevance for planning neighbourhoods of mobility growth focuses on everyday travel behaviour. Mercado and Newbold, for example, using 2001 Census and 2005 General Social Survey data, suggest that the social determinants of transit-use in Canada vary significantly across different urban contexts (2009). While age, income and physical limitations negatively affect the likelihood of using public transit, transit systems differ in their ability to attract a relatively young, non-affluent ridership. This finding is significant for transit-oriented development and public health in Canada, especially as a growing elderly population already unlikely to use transit appears to be undeterred by physical health problems from getting behind the wheel (Mercado and Newbold 2009). This research complements planning research showing that car ownership and vehicle-kilometers-travelled increase in low density, homogeneous neighbourhoods (Sinha 2003), whereas walking and

transit rely on land-use diversity, intersection density and the number of central locations within walking distance (Ewing and Cervero 2010).

On its surface, focusing on neighbourhoods and neighbourhood-level effects in city planning may seem to displace further responsibility onto the “local community” and reinforce the very neoliberal strategies that undercut public policy. However, local area population analysis based on census data arguably challenges “third-way” urbanism by tracing interconnections between outcomes for individuals and the set of wider socio-spatial contexts in which they are nested. Arguably there is something about the scale of neighbourhood that renders these interconnections intuitive. As American sociologist Robert A. Woods observed nearly a century ago, the neighbourhood “is small enough to be a comprehensible and manageable community unit,” yet at the same time, “is large enough to include in essence all the problems of the city, the state, and the nation; and in a constantly increasing number of instances ... all the fundamental international issues” (1916: 578-579). This does not erase the fact that neighbourhood is partly an invention of the social sciences and city governments that measure it as a unit of analysis. Yet neighbourhood-based planning may have more capacity than amorphous notions of local community to explicitly link long term urban development to public health and environmental sustainability.

Planning Urban Futures in Ottawa

To examine the process of planning neighbourhoods of mobility in practice, I return to the capital region as a strategic case of urban intensification and containment. Smart growth is typically

viewed as a new, post-modern addition to capital planning, but as is the case with many cities, plans to curb suburban sprawl predate modernism in Ottawa. As mentioned above, Garden City reformers, galvanized by a growing rift between town and country, promoted a system of self-sustaining cities embedded in permanent greenbelts (Howard 1898). This utopian ideal quickly spread outside England and Europe to Japan, Australia and the United States. In practice, Garden Cities more often resembled “garden suburbs” from which people commuted to the city for work (Hall 2002). Nevertheless, greenbelts became a powerful device to mitigate haphazard “ribbon” development along highways and encourage intensification, particularly for capital cities with the spatial resources to implement grand schemes in the name of national identity. For example, the greenbelt at the heart of the 1944 Greater London Plan became a model for the capital cities of Sweden, Finland, South Korea, and Canada (Gordon and Scott 2008: 132). In Canada’s case, a greenbelt plan was adopted in 1950, adapting a system of parks first outlined by Frederick Todd in 1903. It formed a core part of the Plan for the National Capital Region prepared by Jacques Gréber after he was recruited to the National Capital Planning Service by Prime Minister MacKenzie King.

The Master Plan shows the maximum delimitation of the future urban extension within an area amply sufficient for a total population of 500,000 inhabitants. ... What is important is that, outside the limits so defined, there be maintained a rural belt, subjected to control to the end that the periphery of the urban area be protected against all undesirable or linear subdivisions or developments. (Gréber 1950: 191)

Ottawa’s “rural belt,” a buffer of land about four or five kilometres wide, was built to keep the suburbs from spilling into the countryside (see Figure 28). It accommodated agricultural, recreational, and government uses, but unanticipated residential growth was directed to “self-contained satellite communities” beyond the belt (Gréber 1950: 47). The plan’s lynch pin which

Figure 28: A pathway in Ottawa's Greenbelt, east of the city along the Ottawa River (photo, author)

determined the location of the greenbelt and other inputs like housing needs and road capacity was a projection of population growth based on census data. Neatly illustrated on a graph entitled, "Ottawa Hull and Environs Forecast of Population Trends" (Gréber 1950: 51), half a million people were projected to inhabit greater Ottawa by 2000, 2020 at the latest. This projection proved to be a gross underestimation that would help undermine the capital's first major effort to contain car oriented development.

Owing to demographic, statistical, and governmental factors, the failure of Ottawa's greenbelt to contain suburban sprawl was nearly immediate. The postwar baby boom, coinciding

with the rise of Canada's modern welfare state, meant that greater Ottawa reached 500,000 inhabitants not by 2000 or 2020, but in 1966. This was the same year that land acquisition for the belt was completed (for \$40 million in 1966 dollars), and two years after private developers began circulating proposals to "leap-frog" the belt (Gordon and Scott 2008: 137). Part of a "dismal" record of postwar projections, albeit under challenging demographic conditions (George 2001: 113), the Gréber Plan's underestimation of population growth contributed to greenbelt's failure to limit suburban sprawl. For Gordon, as I mentioned in chapter three, it was the plan's "Achilles heel" (2001: 55). On the other hand, other factors contributed to the greenbelt's stillbirth, not only private developers and car-hungry consumers, but other factors in the Gréber Plan. Its other Achilles heels, I would add, were its abolition of Ottawa's streetcar system, universal expansion of new roads and highways for automobiles, and "rational" decentralization of the workforce to peripheral, car-dependent office parks. As Ian Cross, senior manager of growth forecasting for the City of Ottawa, explains, also important was the kind of growth that was taking place in both the inner suburbs and satellite "urban centers."

Ian: So at the same time that they were – you see the irony of it – at the same time they were assembling this belt to control growth, you had this tremendous growth going on, and also coupled with that a lot of it was at incredibly low densities, like some of the lots, particularly in the 60s, there were parts of west end Ottawa with 75 foot wide lots, 120 feet deep. I mean it's mind-boggling, you can fit three houses in lots of that size by modern suburban standards. And then shortly after that, like mid-60s, there was actually development happening in all three of the urban centers. Kanata, Orleans and Barrhaven had all started, they weren't big, but the seeds were there. The failure of the plan was almost simultaneous with its implementation, it's highly ironic.

In other words the low density, car-oriented growth leap-frogging the greenbelt bore little resemblance to the compact, streetcar-oriented development that hitherto had defined Ottawa's

suburbs. Once the “seeds” for these new car suburbs were sown, Ottawa’s great decentralization began.

The postwar suburbs in Ottawa became neighbourhoods of automobility, a new kind of city whose underlying structure supported the growth of car-dependence. In older cities, particularly in Europe and Asia, walkable neighbourhoods had centuries to mature and develop into complex cities in their own right, which often had the effect of scaling densely populated streets to the size of buildings. Ottawa lacks this pre-automobile urban development. As noted in chapter three, it was still an isolated lumber town when the first car rolled in. As a result the difference between the old city and the new city are more clear cut, evident in the unevenness of population density spread across the city’s inner suburbs, cramped high into towers perching over arterial highways and big box shopping centres. Manager of Inner Urban Services and intensification expert, Alain Miguelez, describes this difference while reflecting on the relationship between mobility and land-use.

Alain: Ottawa is a relatively young city. If you go to older cities like Quebec that have been around for 450 years, you can see many more layers and generations of this type of, how transportation will shape the city. Here you will very much see the horse-and-buggy city, which is really the pedestrian city. And then you will see the streetcar city, and then you will see car country. And it’s pretty clear, the pedestrian city is the older core. You can see that the prime consideration is convenience, access on foot. I would say that right up to the beginnings of Vanier, and then right up to the edge of Hintonburg and into the beginnings of the Glebe, that is pretty much the pedestrian city. And the streetcar city is the next layer, like you have the Glebe, Old Ottawa South, Old Ottawa East, Westboro, Beechwood Avenue, that’s where you start to get to having to walk longer distances, but they’re not inconveniently long, they’re not annoyingly long. Just a little longer. You’re not into a concrete to concrete relationship between a building and a sidewalk. You’ve got a sidewalk, then you’ve got a little bit of space and then you’ve got your building, like there’s more space between. And then car country is really about strip malls, bungalows, a lot of grass and landscaping. Really nobody cares about distance because you’re going to drive anyway. That was the prime directive.

“Car country” is an apt description. Postwar suburbs today are knitted into Ottawa’s sprawling urban fabric but from a 1950s perspective, when they represented the future, they were fringe outposts, self-selected garrisons of rural commuters seeking an affordable way to escape the ills of urban life, real and imagined. The car facilitated urban decentralization en masse because it allowed people to stop caring about distance. But the suburban imaginary behind urban flight was as important as the automotive technology that ensured the social, economic, and physical supersession of the new city. As Alain explains, people were driving towards an *aspirational space* defined by an unspoiled environment and freedom from the cramped, cacophonous city.

Alain: There was a whole reaction to the unhealthiness of congested industrial cities that may or may not have been the reality in places like Ottawa. We were a pretty industrialized city but not every neighbourhood was a slum or not every neighbourhood was unhealthy. The radical solution was well you know take everything out of people’s faces, let people sleep and live in peace, give them cars for where they need to go and basically the city is not a good thing so we’re going to give them a little bit of the country to make them tolerate it. And we’re living with the cultural offshoots of that even these days, the aspirations that people have for space. If you read the Gréber Plan for 1950, it’s funny to read it because this guy was not holding back on his commentary of, you know, I come from France it is criminal to think that you will bunch people up into little places and make them live like sardines when you’ve got all this space to sprawl out. So for God sake, sprawl! Go ahead and sprawl, use the space. Don’t live bunched up like this, you guys are insane, that’s what he was saying. He was coming from right after the Great Depression in France, after two World Wars, you know where if you took a mortar hit to a building 15 families were wiped out. That was a clear and present experience for him. That’s what was behind the mentality, there was also the victory mentality, we won the war and this is our reward. Enough of the slums, enough of the poverty, give us our plot of land. There are very powerful reasons *aside* from transportation. Transportation was one of them. The minute you mechanize transportation and privatize it to individuals the whole world opens up.

There are powerful twin ironies associated with this suburban imaginary, or what Alain evocatively calls “the aspirations that people have for space.” For one, the farther Ottawans moved their garrisons into the countryside, the deeper they become locked like sardines into their automobiles that became indispensable in the yawning, concrete expanse between “urban” and

“rural.” The second irony is that because there is only one fringe, the further it moved away from the urban core through sprawl, the less accessible the countryside generally became, especially for people that lacked access to automobiles.

Today the geopolitical context of sprawl and urban containment is much different than it was in the 1950s and 60s. Half a century after the application of Gréber’s suburban blueprint, Ottawa has twice the population, yet has 50% less people living per square mile, owing fundamentally to the rise of car-oriented development (Doucet 2007: 49). Therefore, the challenge is no longer to prevent the suburbs from spilling into the countryside; rather, it is to regenerate the urban core and prevent runaway sprawl along Highways 417, 416, 7, and 174. Currently 40% of Ottawans live outside the greenbelt, putting it in tension with smart growth as jobs remain concentrated inside. While the belt may protect biodiversity and migration routes, it also expands an “environmental footprint due to the additional travel, and associated emissions, that is induced as residents move about the urban area to schools, work, hospitals and entertainment” (Cross 2008: 6). Ottawa’s commutershed, furthermore, extends far beyond its exburbs (and 2,758 km² planning jurisdiction). As the largest of 31 municipalities that make up the “Ottawa-Gatineau Area” and the region’s economic engine, Ottawa attracts more than 85,000 workers from external municipalities along expanded provincial highways, and is projected to attract 45,000 more by 2031 (Migueluez 2008). Planners need census data to track these outlying “bedroom communities” as well as another emerging hurdle for smart growth: decentralization of workers and the rise of non-traditional commutes. According to the last three censuses, although Ottawa’s core census tracts still draw in the most workers, the capital has seen a substantial rise in “reverse commuting” relative to other major cities in Canada. A small, but

growing proportion of Ottawans drive inside-out to peripheral areas where employment growth has become concentrated (Statistics Canada 2008: 22; Heisz and LaRochelle-Côte 2006: 16).

In response to these centrifugal pressures Ottawa plans to intensify urban development. The city's "growth management strategy," Ottawa 20/20 (2003), revised recently in accordance with Ontario's *Places to Grow* smart growth policy (2006), targets postwar and older neighbourhoods alike. It aims to expand compact forms of growth with mixed land uses by increasing employment and residential densities at key "nodes" along rapid transit "corridors." From 1981 to 2001, Ottawa was moving in the opposite direction towards low density, single-detached housing. In part, this reflected a sharp decline in poverty rates among the elderly, who used their economic stability to remain in single-unit housing. "It's a great phrase," says Cross, "more wealth, better health. And, if you've got health and wealth you can afford to stay in your single detached house." Recently, however, the city has changed course, trying to limit growth in far-flung, car-based suburbs, and an aging population with more economic choice has developed a preference for multi-unit housing.

Ian: Starting in, after 2001, and this became obvious in the 2006 census, like we have quite fine-grained data by five year age of household head, in every five year group, the rate of occupancy of single detached dropped, except for two groups, and those were people in their forties, 40-45 and 45-49. They went up slightly, but every other single group dropped, and there was a shift to townhouses and, particularly among people in their fifties, there was a shift to apartments.

This move towards higher residential density has not come without controversy. Developers subvert ambiguous zoning rules that lag behind growth plans, for example, by piling more stories onto residential towers than existing height restrictions allow, earning the ire of community members in the process. Compared to little activity downtown in the 1990s, condo and apartment

construction is booming, feeding off changing consumer choices, city policy, and development opportunities (to the chagrin of big suburb builders). At the same time, Ottawa's population is changing in ways that will heighten the need to carefully distribute new density.

Improvement in growth forecasting has played a supporting yet vital role in this nascent shift towards targeted intensification. A thirty-five year stream of accumulated short and long form census data has furnished forecasters with an intergenerational basis for growth projections, making the kind of gross misestimation in the Gréber Plan less likely. At the same time, changes in technique may mean that population data will be less likely to lock city plans into a trajectory already defined by low density, car-dependent housing. As Ian describes:

Ian: Some of the historical work we've done, like say the update that we did in the mid-90s, what we did back then was that we just took the most recent—they're called housing propensities—we just took the most recent propensities, and applied them forward. What we did this time is we put a great deal of work into looking at historical trends, which we typically hadn't done in the past, and then a lot of thought into how those patterns might continue to change over time, so in other words we projected changes forward. So we anticipate an ongoing significant shift away from lower density housing to higher density housing.

Change in housing propensities becomes more detailed in the "derived projections" that form the foundation of Ottawa's master plan. Derived projections rely on the long-form portion of the census to track growth and mobility by important characteristics of the population, such as sex, age, and urban-rural residence (George 2001). For example, Ottawa's population is projected to grow about 30% between 2006 and 2031, but almost 50% of this growth will come from the 65 and older group, whose share of the population will increase from 12 to 20 percent. In contrast, during the same period the portion of people aged 14 and younger will increase only by 5.4% (Cross 2008). This is significant from a smart growth perspective: older age is negatively

associated with sustainable transportation, nationally and in the capital region. In 2006, for example, 44.1% of workers in Ottawa aged 15-24 walked, cycled, or used transit, compared to 31.4% for 24-34 year-olds and 24% for 35 and older (Statistics Canada 2008: 33). Tailoring public transit to the spatial needs of older people with limited access to automobility will become increasingly important to the success of bus and light rail systems in Ottawa.

Understanding neighbourhood-level stratification of an increasingly diverse population has also played a key role in laying down a new foundation for smart growth in Ottawa. Immigration is transforming the social composition and municipal needs of Ottawa's neighbourhoods, and by 2031 will account for nearly all population growth in the city (City of Ottawa 2010). Long form data elaborates how growing ethnocultural diversity is interacting with urban development. For example, immigrants in Greater Ottawa (22.3%) tend to have less income than people born in Canada, rent apartments, and live inside the greenbelt (City of Ottawa 2010). Being a visible minority, which tends to overlap with immigrant status, is similarly associated with low income as well as living in a poor neighbourhood, suggesting that the process of planning neighbourhoods of mobility must consider the spatial distribution of socioeconomic resources. As in larger, "gateway" Canadian cities, this distribution is complex, and shows that some groups are more marginalized than others. As the Social Planning Council of Ottawa (SPCO) observes, recent immigrants and Ottawa's Somali community are relatively disadvantaged (SPCO 2008), to which neighbourhood design and access to mobility contribute (SPCO 2006). The multidisciplinary Ottawa Neighbourhood Study (ONS) also lends insight into this socio-spatial stratification, developing a rich portrait by linking census data with real-estate maps, fieldwork and other sources (www.neighbourhoodstudy.ca). The study shows substantial

differences of socioeconomic resources, school readiness, employment, and access to facilities like grocery stores, medical services, and recreational space. Among other factors, the ONS , like the SPCO, points to the significance of everyday mobility. In particular, very poor neighbourhoods characterized by relatively high proportions of immigrants and visible minorities, such as Bayshore, Ledbury, Heron Gate, Ridgemont and Elmwood, constitute bus-dependent inner suburbs located within the greenbelt. In contrast, while gentrification continues to displace lower income households out of locations in the city centre, many affluent neighbourhoods, such as Carp, Hardwood Plains, Bridlewood, Emerald Meadows and Britannia Village, comprise car-dependent suburbs outside the greenbelt. This neighbourhood-level stratification poses important obstacles for smart growth, by associating public transit with lower social status, linking bedroom suburbs with high social status, and excluding the poor from the compact, walkable neighbourhoods that champion good urban design.

Stratified, diversifying, and rapidly aging, it is an open question if Ottawa can come together as a city and reconsolidate urban space around walking, cycling and train travel. To be sure, positive signs in this direction are emerging, such as recent residential propensity data showing an arc away from single-detached housing. Also encouraging are planners (and developers) who see the city as a good thing, contra Gréber and his North American contemporaries, with a quality of life that can be enjoyed without an automobile. Dennis, for example, whose work on Ottawa's new LRT system is directly tied to stimulating higher population densities and mixed-used development, suggests the old, already intensified city brings with it a certain "character."

Dennis: I'm a firm believer that downtown Ottawa is a unique city because there isn't that kind of blue collar manufacturing base. The city dies at 5:00 pm, and I really believe in a healthy downtown core, so to do that you have to bring people in or you don't stand a chance. So developing employment nodes in Kanata or Orleans or the South End is important to a certain extent, but there's a trade off, and I'd much rather see employment stay downtown and increase marginally, and maybe expand the core area over time, or provide more density and development or redevelopment of some sites, than to lose it to the suburbs, simply because if our core is not vibrant I don't think the city has that character a city should have.

However, as planners like Dennis and Alain work behind the scenes to “bring people in,” other forces are working to keep the city sprawling out. The capacity of city planners, councilors and community groups to make a persuasive case for smart growth depends on the availability of what I have called smart planning tools. The move by the Federal Conservative Cabinet to abolish the compulsory long-form has undercut one of these tools. The census long form allows planners to place a city of neighbourhoods into a stream of relevant population data, stretching not only across the provinces but across the decades; design and assess long-term planning goals; and generate a basis of evidence with which to help adjudicate short-term planning disputes. This knowledge basis has become increasingly important in a participatory planning culture saturated with NIMBYism (“not-in-my-backyard”), lawsuits and appeals to the Ontario Municipal Board. In this planning culture, urban intensification frequently becomes a messy, politically punishing endeavor. As Nancy notes, including more voices at the table through institutional reform and greater public consultation has helped bring smart growth and sociological perspectives to planning, but at the same time decision-making in general has become much more complex.

Nancy: With more social and environmental responsibility and engagement comes a more complicated decision-making process. Mike Harcourt was speaking at our management forum last week and noted how long it was taking us to implement a plan for our light rail system. He said “How come it’s taken this long with all the debate and all the discussion?” And we do take a long time to make decisions. That is a product of this point in time. There is not a decision that is made that doesn’t take a lot of debate because today people expect that as individuals they can object and get involved in the decision making. It’s an onerous process. So to that point, it is much more difficult now than when we did the Transitway. Often what hinders us is the expectation from the public on the level of engagement necessary and the unwillingness to accept that there may be some impacts that aren’t great. There is always someone with a vested interest who is adamant that something should not go forward. So while the process of engagement does improve the final product, it takes time to balance all of the perspectives that surface.

The right combination of deliberative mechanisms and feedback procedures at City Hall that could at once streamline planning and produce robust, socially inclusive consultation lies beyond the scope of this thesis. I will suggest, however, that the fact that onerous and rancorous debate tends to surround intensification and mobility projects such as LRT (and a measly eight-block cycling lane!) is significant, and can be read in a couple of ways. It could be seen, on one hand, as a sign of Ottawa’s lack of attention to crippling public health problems, environmental degradation and runaway climate change. On the other hand, it could be taken as a sign that the City is starting to touch the right nerve. After all, the reduction of urban car-dependence in Canada depends on deep-seated sociotechnical change. This change may compel people to encounter difference, engender new vulnerabilities, and redefine the way people relate to the wider urban collective.

Urban intensification is complicated by the fact that, with a city in a state of flux, many people may rather restore an idealized past than question and transform long-held beliefs. In a provocative planning article, Howard Baum argues that as a result of this restorative impulse we may in an important sense need to “forget” to plan altogether:

Directed toward the future, planning concerns imaginary events, that, however much one might desire them, have never taken place, have uncertain precedent, and might never occur. Given the unpredictability of human events, people find it reassuring to imagine that the future repeats the remembered past. ... Changing depends on the possibility of playing with memories, mentally picking them up, turning them over, putting them down, picking them up again and looking at them from a different aspect, grouping them together in new combinations, and so forth until one knows them differently. (Baum 1999: 3, 9)

Baum links the process of change not to the rejection of nostalgia and memory, but to a creative engagement and experimentation with the perceived past. This is I think what Svetlana Boym is expressing as well in her distinction between “reflective” and “restorative” modes of nostalgia (2001). Reflective meditation on past events may be an appropriate way of moving forward and intensifying urban life. For the boomer generation, which contains most of the wealth and power in Canadian society, thriving tramway systems, the modernist superhighway, the environmental movement, unconventional oil and gas (e.g. tar sands bitumen and shale gas) and seemingly boundless suburban sprawl all happened in living memory. Looking at these remembered events from a new perspective, rearranging them and coming to know them differently might help defamiliarize automobility and alter the aspirations that people have for space. Instead of car-dependent urban living dressed up as exurban independence and being away from it all in the country, a new aspirational space could follow the lead of Portland, Oregon, where a hard urban growth boundary has become part of the cultural imaginary of the city (Abbott and Margheim 2008).

Ottawa (as the deputy city manager noted in chapter four) has thus far refrained from social marketing, or actively appealing to an ethical and environmental consciousness with respect to transit-oriented growth and urban intensification. Yet, the City may be designing alternative mobilities in ways that may nudge the aspirations that people have for space towards

a vision of the city that transcends car-oriented development, a vision that includes space for alternative mobilities such as cycling that lack the same kind of power over land uses. Colin, for example, touched on this kind of planning when I asked him how a car-based city with a two percent cycling rate could ever embrace the bicycle as a legitimate means of mobility.

Colin: you look at it at a very high level. You hammer home the health aspects of cycling; the community aspects of bringing people together, rather than being anonymous in our car, in a more lively street sense where people see each other eye-to-eye and acknowledge each other, or more so than in their tinted window cars that are pretty much anonymous; from a safety perspective, particularly the number of injuries and fatalities that we've had in the city over the last couple of years for cycling. As we get more people cycling, visibility and awareness is heightened, and that alone increases the safety of cyclists on the road. You just have to frame it in the overall context of the official plan, the overall growth management of the city, and how we have very strong policies to move towards more active transportation, and really from the very top, that is our vision. That should really guide the infrastructure of the city, rather than [traffic] operations dictating the vision of the city.

As this comment by Colin suggests, the process of planning a new kind of city depends on the ability to understand mundane, everyday mobilities “at a high enough level,” as connected to many, interconnected aspects of our lives and the quality of the places in which we live together. This sentiment nicely captures what I have called the process of planning neighbourhoods of mobility, a process based on tracing the complex social, spatial and economic relations that make up cities and anticipating, far into the future, different ways in which these relations could change. Ultimately, a sustainable urban future may depend on careful reflection on the past and present, and our ability to learn from earlier mistakes so that we do not continue to repeat them.

The Sixth and Final Vignette: Life on Laurier Continues

Laurier Avenue is under a spotlight. As the site of Ontario's first segregated bike lane, it has become a political flashpoint for competing understandings of the meaning and purpose of urban space. However, as Alain made clear to me during our discussion on urban intensification, Laurier is much bigger than that. It is also a thriving, complex urban environment, in which people live and work together and do many other things that contribute to a sense of place. This fact can be easily forgotten in the sometimes abstract theoretical discussions of mobility and neighbourhood which I have presented throughout this thesis. Yet it is this "directly lived space," which Lefebvre describes so poignantly, that precisely needs to become plain and visible if people are to become passionate and critical about the politics of mobility in their everyday lives. Recognizing this, in what follows, the final vignette shows Alain's perspective of the street instead of mine, as seen from photos that he took on his smart phone while on his way to work at City Hall (at Laurier Avenue & Elgin Street). I asked Alain to photograph frustrating and pleasurable aspects of his daily commute (a walking commute), the balance of which for Alain, happily, tilted towards the latter. His route happens to follow the same stretch of Laurier shown in a grainy, black and white photo in the Gréber Plan (1950: 251), when the old crosstown boulevard still had the streetcar tracks that helped make it such a lively place. The annotations below Figures 29-36 (in shaded text) are his own.

Alain's photo-journal: Figures 29-36

Figure 29: Walking west on Laurier Avenue at Waller Street, where Waller overlaps with the Transitway (photo, Alain Miguez)

Figure 30: Heading west on Laurier, approaching Université (photo, Alain Miguelez)

These two images (Figures 29 and 30) illustrate some of the annoyances for pedestrians that I mentioned when we did the interview. Basically, it seems that all too often, drivers of delivery or maintenance vehicles will have the reflex to get out of the way of other drivers and thereby shaft pedestrians. I'm an able-bodied guy and I can walk around these vehicles, but try doing this with a stroller, etc. There should be stricter enforcement of this type of violation.

Figure 31: Passing in front of Timothy's Coffee, at Laurier Avenue and Nelson Street (photo, Alain Miguelez)

Laurier 4: This is the opposite, one of the joys of my walk to work: the informal spillover of café seating with these moveable chairs. It can also create a bottleneck when the patio is full, but unlike parked vehicles, when it's human beings the whole picture changes and there is a certain comfort in finding yourself on a busy sidewalk surrounded by people going about their business or just relaxing, which doesn't compare with having to sidestep a parked vehicle that doesn't belong on a sidewalk.

Figure 32: Looking across Laurier Avenue from Timothy's Coffee (photo, Alain Miguelez)

Laurier 5: The small commercial hub around Laurier-Nelson grew organically out of what used to be houses that were extended forward to create storefronts. You barely notice this until you step away and have a close look. People still live in the houses behind the stores.

Figure 33: Laurier Avenue at Copernicus Street (photo, Alain Miguelez)

Laurier 6: One of my locals, the Royal Oak. I've been going there for at least 15 years.

Figure 34: Laurier Avenue, close to Cumberland Street (photo, Alain Miguelez)

Laurier 7: Another sidewalk patio along Laurier. When the patio is operational it's always packed so I make a point of walking past it.

Figure 35: Looking north-west on Laurier, approaching Université (photo, Alain Miguelez)

Figure 36: University of Ottawa, Arts Building (photo, Alain Miguelez)

Figures 28 & 29: I like the views of some of the stunning architecture that Ottawa U. has in this corridor. Big views (Figure 28) like the new Desmarais building, which I like to observe from a distance and against a variety of daylights and morning or evening lights. At night their atrium has lights with changing colours, which is a great little treat of a feature if you walk past after dark. [Figure 29] shows a small detail that I also like, the bench-like enclosure of their planting area against the sidewalk.

Chapter Summary

In chapter five, I began in the middle of the South March Highlands, part of an ecological corridor west of Ottawa that is currently being severed by the construction of Terry Fox Drive, and ended downtown on Laurier Avenue, as seen through the lens of an expert on urban intensification while on his walk to work. My concern in this chapter lay in aspirational spaces defined by long term planning horizons. Again using the National Capital Region as an historical and contemporary case study of transitioning neighbourhoods of mobility, I examined the process of projecting knowledge about mobilities and urban space forward into the future, with the goal of resolving problems associated with car dependence before they become worse. Aided by visual representations of different mobility–neighbourhoods (made possible by the census and the Ottawa Neighbourhood Study), I defined this aspirational process as “planning neighbourhoods of mobility.” This entailed elaborating the concept of neighbourhoods of mobility explored in previous chapters as an evidence-based planning framework, based on population data, that employs growth forecasting and local area population analysis for the twin objectives of urban intensification and urban containment. The Federal Conservatives’ decision to undermine the Canadian census, I argued, illustrates an important obstacle to planning new neighbourhoods of mobility, especially as this planning intersects with socioeconomically marginalized and transient groups (e.g. immigrants, the poor) that are ill-represented in the new (voluntary) National Household Survey. This decision, I argued further, provides insight into a larger pattern of neoliberal urbanism that has the potential to undermine smart growth. As an illustrative example of these arguments, I detailed how poor population projections helped

undermine urban containment in mid-twentieth century Ottawa, and examined relevant neighbourhood-level challenges today in the capital for which population data provides an important planning tool. Finally, I suggested that long term city planning for a better future must ultimately incorporate critical reflection on present and past tensions between urban space and mobility.

Chapter 6 – After the Car (Abides)

Figure 37: An old delivery truck sits idle on the grass, dipping beneath the rays of light at sunset (photo, author)

In 2012, four years after the Great Recession hobbled North America's powerful automobile industry, and I began my PhD research on urban mobility, the car continues to be reborn at a frenetic pace. Slick television ads narrated by Hollywood action heroes inundate consumers with watchwords pronouncing progress and transformation: faster, smarter, fitter, stronger. Recent ads for Ram, Dodge, Jeep and Chrysler even highlight the industry's (government-funded) recovery from its financial meltdown as a confirmation of strength and renewal. In a widely discussed

example aired during half-time at the 2012 Super Bowl, dubbed *It's half-time in America*, Clint Eastwood emerges from the shadows of the stands, and with melancholic and then courage-inspiring music slowly crescendoing in the background, delivers a soliloquy on the heroic “comeback” by the losing team. In this well-orchestrated homily, Eastwood first links the comeback metaphor to Motor City, Detroit, who [raspy voice] “*almost lost everything*,” and then to America as a whole: “*Detroit's showing us that it can be done. And what's true about them, is true about all of us. This country can't be knocked out with one punch. We get right back up*, [cue hard voice] *and when we do the world is going to hear the roar of our engines*.” What I find intriguing about this advertisement is not that it was viewed by well over three times the number of people who populate Canada, or that it uses Detroit, an actual urban context devastated by its devotion to automobility, as a poster-child for bringing the car back as a basis for growth and renewal. Rather, what is interesting to me about Clint Eastwood's sermon on Super Bowl Sunday is how neatly it captures, within today's iconography, the motifs that have dominated the business of selling cars since their inception: progress, power and freedom.

As I noted in the introduction to my thesis, the notion of born-again automobility, promulgated not only by industry but also by the governments that subsidize automobility in so many direct and indirect ways, represents a decisive challenge for a critical politics of mobility. This politics, after all, seeks to situate mundane mobilities in the spatial contexts in which they are produced, the urban fabrics without which routine, everyday movement would be impossible, if not unthinkable. In my concluding discussion, I revisit this challenge in order to justify the need for the relational, historically-grounded approach to understanding urban mobilities that I have presented in the preceding analysis. After reflecting on my approach, or what I have called

“neighbourhoods of mobility,” I pose the question of why using it matters, the *so what* question. My answer to the *so what* question is a fairly simple one: neighbourhoods of mobility, as a conceptual framework, supports a political project with the potential to bring about a healthier, more sustainable urban life, a life in the city that now includes a majority of human beings and continues to attract millions more every year (UN 2009).

Everyday Mobilities Have Particular Urban Contexts

The central problem with born-again automobility and technical fixes, or the promise of rebirth through a radical break with the past, is that it removes the car from its socio-spatial context, and consequently removes the debate about improving the car, and mundane mobilities more generally, from a larger debate about the city that addresses the city’s make-up and interconnected functions, and its capacity to persist without compromising the natural systems on which all people depend. The fundamental basis of automobility, as a sociological concept, is a focus on this context, a view that looks beyond the automobile to the heterogeneous network of other actors that sustain it, including hydrocarbons, suburban sprawl and the illusions that people create to avoid facing the fact that there may something critically wrong about the ever-growing population of automobiles. Looking at the car as an expansive, distributed network of actors is important, because it reveals how the social and environmental costs of automobility are externalized and removed from daily, economic decision-making. It shows, moreover, how these costs are unequally borne by different social groups, and frequently work to curtail the freedoms and welfare of those who are already marginalized, including the poor, elderly, and people with

disabilities. A main concern of my thesis, therefore, is to re-situate the car in its historical and socio-spatial context. This has entailed showing that the new, greener, faster, fitter car boosted by ever more pervasive advertising is actually part of a longstanding, and highly problematic, configuration of urban space and society for which there exist compelling reasons to reform.

The mobilities paradigm, as I demonstrate, in many ways offers an ideal research field to help tease out the connections between transportation and urban space. It presents a broader, more appealing way of understanding travel than conventional concepts of transport, rooted in engineering and economics, in which travel is disconnected from its social context and conceived as a rational decision meant to maximize some utility. However, mobility studies also contains the potential to de-emphasize the rigidities, continuities and fixities that also shape urban life, including those associated with dominant forms of mobility and flow. I understand automobility in the North American context as a case that exemplifies the need for a relational and historically contextualized approach that considers these fixities and, following Cresswell, “mitigates against an overwhelming sense of newness in mobilities research” (2010: 17). To bring out this relationality, I searched for a concept that expresses fixity and stillness in a dynamic way that resonates with the study of urban travel and spatial mobility. At first, I gravitated towards physical metaphors. Inspired by the work of Himmels on “sociotechnical obduracy” (2008) and Hughes’ notion of “technological momentum” (1983), I thought I had found an apt metaphor for sociotechnical change in inertia, in part because in physics inertia represents a surprisingly complex and contested concept. However, it became clear to me that the notion of “sociotechnical inertia” was too obtuse. I was seeking to identify the ambivalence of mobilities,

and it seems that people often see inertia as something negative, a hindrance, and removed from the practices and rhythms that constitute urban mobility as a compelling, everyday phenomenon.

It was while considering the limitations of inertia that I arrived at “neighbourhood” as a conceptual counterweight to 1) the sense of breathtaking reform and rebirth of the car peddled by the automotive industry and 2) notions of mobility and flow in sociology that contain the potential to underemphasize fixity, continuity and obduracy. Neighbourhood has an intuitive, hands-on appeal. Because people tend to be quite familiar with several *different* neighbourhoods, the concept of neighbourhood, and in particular urban neighbourhood, defies geographical dualisms such as inside/outside, near/far, global/local, etc. Namely, it is easy to imagine to simultaneously exist inside and outside the neighbourhood, in a local and global space, close to other people yet distant. The neighbourhood signifies sociality and place in a broad yet integrated way. While the neighbourhood can also be highly ephemeral, fleeting and superficial, I see this as a source of conceptual strength, because it makes it difficult to reify the neighbourhood, as the Chicago School of urban ecology did, as something essentially positive or negative. Granted, the amorphousness of the neighbourhood is partly why it serves problematic ideological functions, such as neoliberal images of neighbourhood as a natural scale or place for civic entrepreneurialism and self-enterprise. However, as an articulation of the distributed, contested kind of space theorized by Henri Lefebvre and actor-network theory, the neighbourhood offers a unique window, not only on the car but on other mobilities, and this window works in two ways, with mobilities offering a critical perspective of the neighbourhood. The tension between mobility and neighbourhood becomes particularly clear in the city, where different kinds of mobility, like different groups of people, tend to cluster unevenly in urban timespace.

Placing mobility in tension with a concept like neighbourhood is made all the more important by the dual tendency, present in some mobilities research, to simultaneously 1) presume the end of automobility as we know it, yet 2) imagine mobility futures in which the car, or some reorganized version of it, still plays a dominant role. For example, Dennis and Urry, in their discussion of “post-car mobilities,” argue that “the car as a complete system may be surpassed,” and that in the future “after the car” people will retire carbon-intensive aspects of automobility, locally recycle its obsolete remains, and create more intelligent car travel through an organic “digital nexus system” (2009a, 2009b). While I accept most of what Dennis and Urry are putting forth in *After the Car* (2009), I would prefer to frame the problem of sociotechnical change as it relates to automobility somewhat differently, in a way that decentres the car. I am skeptical about pronouncements of a *post*-car world and the end of automobility, insofar as this world “after the car” only comes about once the internal combustion, “steel-and-oil” car becomes environmentally sustainable, intelligent or even cognitive.²⁹ Post-car mobilities, it seems to me, constitute an extension or enhancement of current sociotechnical networks of automobility. As an alternative to this approach, I suggest that it may also be useful to imagine mobility futures in which the car, even a highly intelligent car, plays only a marginal role in everyday urban travel.

²⁹ Cognitive cars, of the sort in which the Canadian government is investing through Automotive Partnership Canada (see http://www.apc-pac.ca/index_eng.asp), ideally can make their own decisions in traffic, and may complicate conventional understandings of human agency, at least in the context of traffic.

Getting the City *Off* the Car

An alternative way of thinking outside the confines of automobility is suggested by the unevenness or creative tension between neighbourhoods and mobilities. This tension, based on both logical and empirical aspects of neighbourhoods and mobilities, helps spur defamiliarization, or what is also called a process of estrangement (Boym 2005). Defamiliarization is a narrative device used to transform solid, static and taken-for-granted realities into strange-looking entities propped up by a series of social and political contingencies. One strength of a narrative approach to triangulation, or the combining of data gleaned by different methods, is the analytical possibilities for this literary tool as a way of using multiple vantage points to make a familiar object, such as a car, seem strange, and open to critical engagement and reinterpretation. Defamiliarization, that is, can help spur a sociological counter-narrative that constructs the car, and other forms of travel, in a new light. My understanding of representational space, Lefebvre's third moment in the production of space, relates directly to this notion of temporarily undermining the regular beliefs and familiar assumptions that successfully guide people through complex day-to-day activities. "Undermining" may seem like a strong word here, but representational spaces of mobility need neither be spectacular nor a spectacle. In fact, they can be quite innocuous. The point is that they usually take you by surprise, and pull you "outside the usual continuity of this life" (Simmel 1999: 222). A simple example is when people get lost or forget their bearings in a very familiar space, if only for a moment, before the total familiarity of this space suddenly returns.

These fleeting moments of disorientation represent a small instance of defamiliarization in a city setting, which if applied more generally, through collective story-telling and careful attention to the temporal quality of space, can challenge the hegemonic mobile imagination. A challenge to hegemonic mobilities does not entail merely moving past the car through steady improvement and refinement of the car itself, or the car system, as is implied in the notion of post-car mobilities and more generally by modernization narratives. Furthermore, this challenge should not position the car as the basis for imagining urban futures, such that alternative urban worlds are only defined negatively (and reductively) by the car's absence. Rather, defamiliarizing hegemonic automobility requires a relational perspective that emphasizes both continuity and change while imagining time moving in a multiplicity of directions at once. I argue we need this perspective, not necessarily as a replacement but as a complement to post-car mobilities, to encourage a more adventurous way of thinking about multiple, alternative worlds – worlds that may already exist but remain obscure and subjugated – that recognizes the *outer* limits of the car. The core concept of my thesis, neighbourhoods of mobility, can support this thinking because it forms a “conflictual unity,” or “ceaseless struggle that oscillates between compromise and perturbation” (Lefebvre & Regulier 1999: 7). Because neighbourhoods and mobilities overlap but do not determine one another, they can be used together to grasp at a “radical outside” beyond automobility, or what I call *off-car mobilities*. “Off” does not imply negation. Instead of marching forward into a non-car world, an off-car direction suggests a diagonal move into present spaces of mobility that currently exist in the shadows of automobility.

The notion of off-car mobility builds directly on what Svetlana Boym calls “off-modern architecture,” with architecture understood as a material expression of culture, politics and society.

The architecture of adventure is the architecture of thresholds, liminal spaces, porosity, doors, bridges, and windows. ... [It] has the shape of a Möbius strip, and an inside-out structure of imagination that comes from inside but allows human beings to embrace the cosmos beyond their immediate experience. ... Neither transcendence nor transgression, it is a potentiality, an encounter with the incalculable that forces us to change life’s calculus. ... Adventure is a kind of profane illumination, not a rapture; it pushes human possibilities but does not transgress them. (Boym 2008: 6-7)

While exploring examples of “off-modern architecture,” perhaps unsurprisingly given their liminal potential, Boym looks to both ruins and construction sites. This path, I suggest, can also be applied to off-car mobilities, with ruins (streetcar systems, abandoned Union Stations) and construction sites (light rail transit, cycling systems) together containing the potential to force people and cities to change their current calculus. It is not necessarily that trains and bicycles are inherently adventurous, but that, in the North American context of hegemonic automobility, these alternative mobilities pose a radically different yet practical way of imagining and experiencing urban life. If the potentialities of off-car mobilities are to be realized, however, then defamiliarizing the car must translate a narrative space into a political project of collective action and dissent. In terms of the principal axes and contributions of my thesis, narrative defamiliarization can be seen as the link between *neighbourhoods of mobility* and a *critical politics of mobility* that seeks to expand cycling, walking and public rail transit in practice.

Mobilizing a Critical Politics of Mobility

Making the car seem strange *en masse*, on a population level, faces an interconnected set of hurdles related to society, politics, economics and culture, not to mention the infrastructural legacy of the twentieth century. In my thesis, I have focused on the foundations for a critical mobility politics, namely historical or temporal context and a relational, distributed perspective of mobilities. To conclude this line of analysis, I will not reiterate the finer points (these are captured by the chapter summaries), but instead venture a little further into how a critical politics of mobility might actually take shape in Canada and other car-dependent nations more broadly. Mobility is not necessarily lacking in politicization; rather, the problem is the skewed nature of this politicization (usually negative) towards trains, bicycles and urban in-fill or intensification, and the virtual absence of public attention paid to automobility as a systemic social and environmental crisis. To understand how car crashes, for example, as the leading source of violent death among people under thirty, escapes sustained public attention, even at a time when the Canadian federal government is concerned with defeating crime and punishing all manner of wrong-doing, we need to look at the car as a *political machine*. The car is like a well endowed and highly connected incumbent, an insider enjoying a carefully crafted alliance with other power brokers, key constituencies and corporate lobbyists, including oil and gas, manufacturing and development industries. Moreover, this incumbent operates within a political establishment beholden to a constitutional division of powers that excludes the city and privileges rural and suburban ridings at the expense of urban constituencies, or those consistencies that are most likely to challenge the car's dominance.

To undermine the car as a political machine, like unseating unseating any incumbent, a critical mobility politics must alter the terms of engagement. Practically speaking, I believe a mobility politics can outmaneuver the political forces that continue to promote automobility in four ways. First, cities must combine a program of building safe and convenient infrastructure – which, as my thesis suggests, ultimately must form the basis of urban reform – with a nuanced promotion strategy. This strategy should move beyond traditional messaging, based on healthy lifestyle choices and environmentalism, with one more attuned to the social art of persuasion. For example, as more people cycle in a city, cycling becomes safer in general and more socially acceptable and desirable. Whereas, when only a few people cycle, it tends to be spandex-clad “road warriors” whose appearance serves to reinforce cycling as an unusual, “hard-core” activity. Accentuating the normalcy and fashionability of cycling offers a proven method of social persuasion, as demonstrated by cases in Denmark, Germany and other northern European countries. Instead of hanging new mobilities entirely on a frame of ethics and personal responsibility, therefore, in terms of social marketing, Canadian cities should follow their European counterparts and consider techniques such as “cycle chic,” which portrays fashionable people on bicycles doing regular things (see <http://www.copenhagencyclechic.com/>).

A second component of a mobility politics, building on high quality infrastructure and nuanced promotion, entails the political mobilization of apathetic or politically excluded groups, especially young people. Younger cohorts tend to be the most disengaged from traditional politics yet have the most to gain from a new urbanism, and they also tend to be relatively supportive of taking action on climate change and other environmental problems. Using social media and networking tools and alternative political spaces, as current mayors Naheed Nenshi of

Calgary and Gregor Robertson of Vancouver have recently shown, can be an effective way to engage young people in politics and raise the profile of urban issues such as transportation. A third way of challenging the political authority of the car involves empowering cities in general. Four out of five Canadians live in cities, yet cities have no constitutional authority and often lack the means to finance and maintain sophisticated public transportation networks. Federal and provincial institutions have less of a stake and political interest in building and maintaining urban streetcars and light rail transit systems, the foundation of alternative mobilities. Therefore, political and financially empowering cities, in concert with long term regional planning policies advanced by provincial governments, such as Ontario's *Places to Grow* (2006), offers an important component of challenging automobility.

My fourth and final prescription for a critical politics of mobility is to reignite widespread social and cultural interest in the *city train* as a mode of public transit. The train has had a formative impact on the city, and occupies an important place in Canadian urban history and collective memory. Reigniting interest in the city train could therefore employ nostalgia. Appealing to the past, when life was supposedly simpler and more cohesive, less mediated by global technology and more attuned to nature and the common good, is a recurring political motif with a dangerous, exclusionary streak. Exclusionary nostalgics try to restore an idealized version of the past or a lost homeland, without mind to groups who were marginalized in this supposedly original or authentic place. However, this kind of "restorative nostalgia," as Boym notes, can be contrasted with "reflective nostalgia" (2001). Instead of rebuilding mythical homelands, reflective nostalgia acknowledges "the irrevocability of the past and human finitude," and suggests "new flexibility, not the reestablishment of stasis." It focuses on "the

meditation on history and passage of time” and “cherishes shattered fragments of memory and temporalizes space” (Boym 2001: 49). In short, reflective nostalgia suggests that meditating on the past in a critical way can be a powerful way of transforming the present and future. In terms of urban mobility, meditating on past relations between trains and cities could help build support for contemporary rail projects as the *pièce de résistance* of planning for sustainable mobilities. This mediation could take place through planning, for example by incorporating historical streetcar imagery into the design of new rail stations, and through informal exposure to forgotten or invisible spaces on “Jane’s walks” (<http://www.janeswalk.net/>) and similar community events.

In sum, I argue a critical mobility politics could thrive by constructing safe and efficient infrastructure for walking, cycling and public transit, promoting these mobilities through social persuasion, engaging young people in urban politics, empowering Canadian cities, and reigniting a collective passion for the city train. This mobility politics builds directly on insights from my thesis, which suggests that urban objects such as bicycles, roads and cars do not gain significance in and of themselves, but through their dynamic associations with the social and material spaces that surround them. Thus, a reflective nostalgics of the city train would not emphasize any intrinsic or original quality of the streetcar, but the more general wisdom of putting the life of the street before that of the car. Vibrant city streets, where people not only like to visit but like to stay a while, are not a panacea for all the ills that face Canadian society. However, they help build physically active and environmentally sustainable neighbourhoods in which people come into contact with ethnocultural difference and new ideas that drive economic innovation. Luckily, Canadian cities have many vibrant city streets, and many urban planners and communities

working to build more. My thesis contributes to this project by bringing into focus the dynamic relationship between mobilities and urban space.

Appendix 1: A Brief Timeline of Mobility and City Planning in Ottawa

(major plans in italics)

Before 1900

- 1851 - Bytown population: 7,760
- 1854 - Bytown becomes the City of Ottawa
- 1857 - Ottawa selected as the capital of the United Province of Canada
- 1858 - Construction of the Parliament buildings begins
- 1867 - Confederation of the Dominion of Canada
- 1871 - Ottawa population: 21,545
- 1871 - Sparks Street, an established hub of commercial and retail activity, becomes accessible to large swaths of the city with the construction of a horse-drawn streetcar system
- 1885 - Ottawa becomes the first city in Canada with electric street-lighting
- 1891 - The city's private streetcar system is electrified
- 1893 - Wilfred Laurier, the new Leader of the Opposition, vows to make Ottawa "Washington of the North," which becomes a popular slogan for the city's improvement
- 1895 - Sparks Street the first street in Ottawa to be paved with asphalt
- 1899 - The Ottawa Improvement Commission is created

1900s

- 1900 - Half of Hull and 14% of Ottawa burn to the ground, destroying the lumber mills of Le Breton Flats, and with it the city's industrial roots; a modern mid-rise architecture emerges throughout downtown; parliamentary functions spill onto surrounding streets
- 1901 - The first private combustion-fired automobile negotiates the city
- 1903 - *Todd Report*

1910s

- 1914 - Ottawa's streetcar service nearly reaches all of the city's built-up area
- 1915 - *Bennett Plan*

1920s

- 1920 - Cars quickly proliferate; the city counts one automobile for every twenty-nine residents
- 1921 - The federal civil service grows to 10,035 persons, up from 895 only twenty years earlier; streetcar ridership peaks at almost one trip, per day, for every resident of the city
- 1922 - *Cauchon Plan*
- 1927 - Prime Minister MacKenzie King becomes personally involved with Ottawa's improvement, and replaces Ottawa Improvement Commission with Federal District

Commission, forerunner of the National Capital Commission; a series of newspaper editorials attack streetcars as being overly noisy

1929 - Construction begins on the Queen Elizabeth Way (QEW) southwest of Toronto, the first “superhighway” built in North America

1930s

1930 - Ottawa counts one automobile for every eight residents

1935 - Ottawa’s population uses the private car more frequently than public transit for urban trips

1937 - Local aldermen, businesses and property owners successfully defeat a proposal to extend streetcar service in Ottawa on Bronson Avenue north of Powell; urban planner Jacques Gréber of Paris is retained to resolve the infrastructural mess at Confederation Plaza; the first cloverleaf intersection in Canada is built along the QEW in Mississauga

1938 - The president of Ottawa’s private streetcar monopoly vows that the tramway system will never be expanded again and all new transit services would consist of buses, extending a long series of investment-wary decisions by the Ottawa Electric Railway (OER) that crippled tram service while preserving shareholder dividends; Gréber advises the federal government to eliminate streetcars from Ottawa in two to three decades

1939 - Gréber successfully lobbies the OER to tear up tracks on Elgin Street; the QEW opens from Toronto to St. Catharines

1940s

1945 - On Oct. 25 Gréber, on behalf of the National Capital Planning Committee, addresses Parliament about his vision for an expanded, and greatly decentralized, capital district

1947 - The QEW is completed to Fort Erie/Buffalo

1948 - OER shareholders are delighted to sell the financially troubled streetcar company to the City for 6.3 million

1950s

1950 - Gréber’s *Plan for the National Capital Region* provides a comprehensive blueprint for an area covering 27,225 acres after Nepean and Orleans annexed; smoking is finally banned on Ottawa streetcars, the last major urban transit system in Canada to permit the practice

1951 - Ottawa’s electric railway company belatedly acquires a public relations department

1952 - The Department of Highways of Ontario initiate an ambitious program to replace at-grade intersections with grade-separated infrastructure and limit direct access to highways; 500,000 motorists traveling on the QEW ignore a stoplight at an intersection in Oakville

1953 - Ottawa counts one automobile for every 4.2 residents

1955 - A new *Traffic and Transportation Plan* prepared by an American consultant for the City of Ottawa proposes an expansive network of American-style freeways

- 1956 - Largely to the traffic congestion created by automobiles, tram service in Ottawa is slower than it had been in 1901; Canada's first outlet mall, "Dixie Plaza," opens in Mississauga alongside the QEW
- 1957 - Carling Avenue grows from a two lane suburban road into a major four lane divided arterial
- 1958 - The newly elected federal Conservatives create the National Capital Commission, granting it the power to expropriate property for the implementation of Gréber's Plan; Acquisition for the greenbelt is completed; Gréber suggests that the City turn Sparks Street into a pedestrian mall
- 1959 - Streetcars are retired in Ottawa and replaced with buses, as per Gréber's longstanding recommendation

1960s

- 1965 - Macdonald-Cartier Bridge is built across the Ottawa River, and King Edward Avenue's great elms are removed to make way for a large lane arterial road; the *Ottawa-Hull Area Transportation Study* adds support for a program of freeway construction
- 1966 - Ottawa population reaches 500,000; the Queensway opens, triggering a western residential boom; the National Capital Commission closes Union Station across from Chateau Laurier, making way for a new passenger rail station by the Alta Vista Queensway exit; the postwar baby boom means that Ottawa's population is four decades ahead of the schedule laid out by the Gréber Plan, ratcheting up pressure for increased development outside the greenbelt
- 1967 - The City informs Lowertown residents of the eventual demolition of their neighbourhood for a freeway and begins to slowly acquire property; the role of Sparks Street as a pedestrian mall becomes permanent
- 1968 - Regional government is created, Ottawa becomes "Ottawa-Carleton"
- 1969 - A new Street Widening Policy established by the city and regional governments upgrades traffic lanes from 10 to 12 feet, with an additional foot for each curb

1970s

- 1971 - The Department of Highways of Ontario starts widening the QEW near Toronto from six into eight and ten lanes
- 1973 - The City studies the possible effects of canceling plans for a new freeway through Lowertown; a draft regional plan directs significant growth to Ottawa's satellite communities, effectively paving the way for two new provincial freeways to be punched through the greenbelt
- 1974 - A group of Concerned Centretown Businessmen argue that Metcalfe Street should be transformed as King Edward was, from a boulevard into an arterial highway to improve access for motorists on the Queensway to Parliament Hill
- 1976 - The Bank of Canada building is constructed on Sparks Street
- 1977 - The C.D. Howe Building is constructed on Sparks Street

1979 - The City of Ottawa releases a plan for the Central Area that admits the failure of its earlier policy of freeway planning, suggesting the need to stimulate more consistent street life

1980s

1986 - The King Edward Avenue Task force is created following Mayor Jim Durrell's vision to restore the boulevard as Ottawa's Champs-Élysées

1990s

1990 - The Task Force successfully quashes an Ontario Municipal Board (OMB) appeal by New Edinburgh to remove a Vanier Parkway extension as an option for a new east-end bridge from the official plan; the City initiates study of how to improve traffic flow on Bronson Avenue from Dunbar Bridge to Sunnyside Avenue

1996 - *Master Plan for the Greenbelt*, formal abandonment of the greenbelt as a tool to contain urban sprawl, repositioning the green space as an "ecological planning component"

1998 - NCC incurs major budget cuts, moves mandate away from traditional urban and regional planning towards the cultural interpretation of the nation's capital

1999 - OMB decision maintains Kettle Island corridor as a possible bridge location while removes Vanier Parkway option

2000s

2001 - Regional and local governments in Ottawa amalgamate (Ontario side); smart growth principles are adopted into provincial planning policy; the City initiates an eight kilometre "O-train" pilot project

2002 - The City approves a King Edward Renewal Plan but excludes lane reductions, bike lanes, traffic-calming and other challenges to the status quo

2003 - The *City of Ottawa's Official Plan* adopts smart growth principles, including specified targets for urban intensification

2006 - The population of the Ottawa-Gatineau census metropolitan area is 1,130,761; an elderly pedestrian is fatally struck and dragged eighteen metres by a transport truck at the King Edward Avenue and Rideau Street intersection

2007 - Work begins on a light rail subway beneath Centretown; Ottawa city council approve a long-term Bicycle Plan; a planned crosswalk at Cathcart Street and King Edward is canceled, provoking protest and renewed resolve by the King Edward Avenue Task Force to fight city hall to take transport trucks out of the downtown core

2007 - The Task Force persuades the City to conduct a lane reduction study

2008 - A provincially mandated five-year review of Ottawa's official plan leads to an updated *Transportation Master Plan* that places increased emphasis on expanding light rail, walking and cycling as alternatives to the car

- 2009 - Ottawa experiments with a bike-sharing service; the City's lane reduction study for King Edward recommends to go head with "road diet" on the basis that it would not unduly reduce the level of service for motorists
- 2009 - Ontario approves the use of long-combination "truck trains" on the Queensway and other provincial highways
- 2010 - The federal Conservative Cabinet abolishes the mandatory long-form portion of the Canadian census, depriving urban planners and smart growth advocates of a critical tool
- 2011 - Ottawa initiates a segregated bicycle lane project on Laurier Avenue West; the City decides to put off implementing a road diet on King Edward until a new interprovincial bridge is sited, designed and implemented...

Appendix 2 - Interview Sample³⁰

1. Dennis Gratton, Rail Manager in the Rail Implementation Office, City of Ottawa. Has been an urban planner with the City for nine years, and a seven year stint before that. Fifty years old. Primarily uses the bus or cycles to get to work, and occasionally drives a car.
2. Alain Miguelez, Program Manger for the Development Review Team at the City of Ottawa responsible for the downtown core. Has been a planner with the City of Ottawa for eight years. Forty-two years old. Walks to work.
3. Alex Cullen, City Councillor for Bay Ward. Chair of the City's Transit Committee and a member of the City's Transportation Committee. Served previously as M.P.P. for Ottawa West (1997-99) and member of Ottawa-Carleton's Regional Council (1991-97). Fifty-seven years old. Drives to work.
4. Eric Darwin, President of the Dalhousie Community Association. Perpetual fly on the wall at transit, transportation and planning-related committee meetings at City Hall. Retired, former employee of Transportation Canada. Author of the popular urban affairs blog West Side Action. Cycles around town.
5. Robbin Bennett, Cycling Coordinator for the City of Ottawa. Served as Ottawa's "one-man cycling department" for the 2000s, after the position of cycling coordinator was first created during amalgamation in 2001. Fifty-four years old. Cycles to work.
6. Joel Mulligan, Director, Client Solutions and Innovation at RideShark (ride-matching service). Former Cycling Projects Coordinator at City of Ottawa. Thirty-eight years old. Cycles to work.
7. Michel Vallée, Chair of the King Edward Avenue Task Force. Visiting Associate Professor in Carleton University's Sociology and Anthropology Department. Sixty-three years old. Formerly an avid bus-rider and walker. Currently drives to work.
8. Chris Bradshaw, Co-founder of Vrtu-car, a car-sharing service in Ottawa, and co-owner until 2006, and co-founder of Ottawalk, one of the first pedestrian advocacy groups in North America. Currently a member of the Ottawa Seniors Transportation Committee. Sixty-six years old. Lives "car-lite."
9. Colin Simpson, Senior Project Manager in the Transportation Planning, City of Ottawa. Currently manager of the Laurier segregated bike lane project. Has been with the City for eight years. Forty-one years old. Cycles and uses public transit to get to work.

³⁰ Includes interviewees that were not quoted in the analysis yet provided valuable case study material and corroboration, presented in the order in which the interviews were conducted. All information applies to fall 2010. "City of Ottawa" is used generically to refer to the current amalgamated government formed in 2001 as well as the previous regional municipality.

10. Ian Cross, Program Manager, Forecasting and Research Section, City of Ottawa. Has worked as a planner with the City of Ottawa for twenty-three years, and is Ottawa's chief growth forecaster. In late fifties. Uses the Ottawa Transitway (rapid bus transit) to get to work.

11. Mona Abouhenidy, Program Manager, Transportation Strategic Planning, City of Ottawa. Has been with City as a planner for three years. Trained as a civil engineer and transportation planner, including a PhD, in Egypt. Forty-nine years old. Takes the bus to work.

12. Steve Boyle, Senior Project Manager, Transportation Strategic Planning, City of Ottawa. Expert on zoning and Ottawa's Master Plan. Has been with the City of Ottawa (and previously the neighbouring municipality of Cumberland) for twenty-one years. Fifty years old. Takes the bus to work.

13. Nancy Schepers, Deputy City Manager, City of Ottawa. Former Director National Guide to Sustainable Municipal Infrastructure at Federation of Canadian Municipalities and Director General of Environmental Affairs at Transport Canada. Primarily drives, but also takes the bus and cycles to work from outside the city.

14. Chris Cochrane, Ottawa Police Officer, Instructor and Member of the Bicycle Patrol. Has been part of the Cycling Patrol since 2007. Drives to work from outside the city.

Appendix 3 – Sample Interview Guide³¹

i. Bio details: Age, Single/Married, Occupation, Education/Training, Time at City...

1. Can you describe your own daily travel?

Time spent commuting, mode, distance traveled from home, commuter companions...

Describe aspects of your commute which you find *frustrating* and *pleasurable*

2. Can you describe your neighbourhood?

Social features, physical features, time living there, change over time, traffic?

3. How have your work/study and own travel experiences affected your understanding of transportation and planning issues in Ottawa?

Have any pivotal moments or memories affected your perspective?

4. How does transportation in Ottawa interact with land-use/spatial development?

What stands out about Ottawa's transportation system, car culture?

Describe distinctive parts of Ottawa which have been shaped by streetcar, auto, etc.

Describe a particular street where you see competing planning paradigms.

How do you think political and economic power shape current models of urban growth? What are some of the key problems you associate with Ottawa's car culture?

5. How can Ottawa move towards more sustainable travel and urban growth?

In general, how can we better coordinate transportation and land development?

Can 'European style' transit come to Ottawa (contra John Baird, Steve Desroches..)?

Describe key institutional, physical & political challenges in extending light rail in Ottawa
(e.g. amalgamation, financial, federal/provincial interference, loose UGB).

How we break the habit of driving when city space constantly reinforces 'bad' habits?

How do the challenges facing rail relate to those facing other modes, cycling, etc.?

Can/should we integrate rail, cycling, walking with automobiles?

Can Ottawa stimulate development through its current LRT plan, i.e. TDM -> TOD?

Can Ottawa exploit/remember its street rail past to produce street rail in the future?

How can we brand/frame rail for a public a half century removed from street rail
(e.g. financial, congestion, environmental, safety, social, etc.)?

How can rail improve the quality of life and the quality of public space?

Describe the future of rail in Ottawa - only LRT, or also streetcars?

What models or other stories of mobility and growth could Ottawa import and adapt?

What political opportunities and collective resources exist for rail in Ottawa?

How have jurisdictional tensions shaped LRT plans?

How does Ottawa's 'double life' as a capital complicate planning for sustainable transit?

³¹ I tailored each guide to the particular interviewee's expertise and experience. However, every guide used the same basic five-point structure illustrated here. Questions four and five generally took up the bulk of the interviews. I used this particular guide for my first interview with Dennis Gratton on Sept. 22/2010.

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