

How Car Drivers Took the Streets: Critical Planning Moments of Automobility

Nick Scott

Canada has about 900,000 kilometers of road, enough to circle the globe 22 times (Transport Canada, 2010). Lying sturdily beneath us, roads seem like they were always there, and barring bad weather or subterranean pipe failures, we take them for granted. Once we think about their variety, however, some important differences arise. For example, not all roads are for all people, despite a historical role of roads as public space (Van Nostrand, 1983). Which people and machines can use urban roads cuts to the heart of how and for whom cities are produced and how they impact upon the environment. In this sense, roads are not passive, geometric backgrounds against which the dynamic events of urban history unfold. Rather, roads constitute a technology of mobility (Hommels, 2008; Jensen, this volume; Norton, 2008). As such, they become attached to particular values, practices, institutions, and resource chains in the production of space. If a particular kind of road becomes obdurate, or difficult to change, this has as much to do with people and ongoing power relations as it does with bituminous glue and concrete cement.

In what follows, I explore the production of space for car driving in the North American context. I argue that automobility significantly affects the production of space and that roads figure centrally in this process. Automobility refers to the networks of natural resources, cultural values, political relations, and techno-sciences which, in concert with one another, afford the widespread practice of automobile driving (Dennis & Urry, 2009). The production of space, following Henri Lefebvre (1991), refers to not merely a technical exercise, but an interplay between urban planning, ideas about the “good city” (Amin, 2006), and spatial practice. I begin by considering how car driving can be understood as a civic practice that affects the nature of urban community. In the second section, I examine how automobility affects the production of space through the planning process and the organization of material infrastructure. In the third section, I mobilize my central argument that the car’s influence on the city can be illustrated through three critical “planning moments” of automobility. These moments are characterized by novel associations between the car and urban space, and conflicting visions of the good city.

Car Driving as Civic Practice

The automobile weighs heavily on North American society, profoundly affecting the way people live together. A diverse set of actors, from governments and planners to consumers, have turned the city into a car-dependent place, tying freedom of movement to the systemic practice of car driving (Jones, 2008; Urry, 2004). Recent research on automobility explored how car networks have become “locked in.” This research balanced the private benefits of car driving against the collective threats that mass car travel poses to global ecology, public health, and social justice (Conley & McLaren, 2009; Paterson, 2007). A lesser explored area is whether automobility promotes liberal notions of freedom, such as the autonomy to choose where and how one wants to move through space; an association mass advertising has made since the car’s inception. For example, Rajan questioned whether the “freedom” offered by automobility is actually a “compulsory constraint” (2006, p. 123). Another area of political thought that could be further developed in relation to automobility is citizenship theory (Kymlicka, 2002), including

the argument that certain civic practices are vital for the “good city,” or “the kind of urban order that might enhance the human experience” (Amin, 2006, p. 1009). Exploring everyday car driving as a civic practice that shapes the nature of urban community presents one way of situating the car within the social and political production of space.

Interest in citizenship practices has grown in recent years in the context of long-term voter apathy, growing inequality, and political hostility towards welfare and multiculturalist policies (Kymlicka & Norman, 2000). Citizenship theory, according to Kymlicka (2002), describes an attempt “to integrate the demands for liberal justice with community membership” (p. 284). It argues that in addition to civil, political, and social rights tied to the state (Marshall, 1950), stable liberal democracies require active public engagement, including the everyday practice of civility and solidarity (Galston, 1991). A sense of civility, for instance, relates to “the way we treat non-intimates with whom we come into face-to-face contact” (Kymlicka, 2002, p. 301), a form of contact which has become increasingly mobile (Amin & Thrift, 2002, p. 38). Like civility, solidarity becomes relevant during many routine activities that define ordinary life, such as buying groceries, driving a car to work, and managing social relationships. Not all forms of solidarity are inclusive or democratic. A city in which diverse groups of people can flourish requires solidarity with the stranger and the outsider, or what Dean (1996) called a “reflective solidarity” based on an “awareness of and regard for those multiple interconnections in which differences emerge” (p. 16). Similarly, for Amin (2006) a habit of solidarity among strangers can help bring about the good city by prodding public culture “towards outcomes that benefit the more rather than the few, without compromising the right to difference that contemporary urban life demands” (p. 1012).

In this context, I argue, car driving constitutes a civic practice that creates an automobile citizenry, and figures centrally into how and with whom people participate in urban social life, starting at an early age (Packer, 2008). As Sheller (2004) argued, the car has become “deeply integrated into the affective networks of familial life and domestic spaces” (p. 230), including the journey to school and after-school activities. Frequently borne by mothers, driving children to school is construed with safety and “good mothering” (Murray, 2008, p. 53). Constant chauffeuring enables group participation, but also deprives children of outdoor time to actively and independently explore their surroundings, a systemic problem often overlooked by local educational programs (Parusel & McLaren, 2010). In Canada, when teenagers turn sixteen they can apply for their own driver’s license, two or three years before they can purchase alcohol and participate in electoral democracy. As an obligatory rite of passage wrapped up with other milestones such as sexual activity, a driver’s license constitutes a significant amount of power for young adults. Best (2006) showed that “car privileges,” for example, not only represent freedom from prescribed roles at home and school, but also offer a way to economically support family members, negotiate evolving identities, and participate in wider civil society and public life. Becoming a car driver, therefore, involves the development of skills that go well beyond operating a motor vehicle. It forms part of a civic education in which people learn “how they fit together with others” (Taylor, 2004, p. 23) and how to participate within “civil societies of automobility” (Sheller & Urry, 2000, p. 739).

Automobility enables civic participation but also produces socio-spatial exclusion (Preston & Raje 2007), suggesting an ambivalent relationship with the good city. In North America cities are structured through asymmetrical power relations that privilege the participation of motorists, an imbalance which remains remarkably stable as it cuts across the myriad other identities, cultures, and communities with which people affiliate. This stability

creates a source of tension and conflict in the city. Although the majority of Canadians drive in order to get to work and reach most of their daily destinations (Turcotte, 2008, p. 22), automobility is neither universally accessible nor an equally affordable mode of “compulsory consumption” (Soron, 2009). Furthermore, mass automobility depends on the interactive inequality, spatially embedded, between car drivers and others—when and where others are without cars. Cyclists and pedestrians, in particular, lacking air cushions and steely exoskeletons to dampen a collision, raise the stakes of civility and solidarity on urban roads (confirmed by the casualties of traffic faithfully chronicled on public radio) (Furness, 2010; Short & Pinet-Peralta, 2010; see also Conley, this volume). Motorists periodically become “monsters in metal cocoons” (Lupton, 1999). However, much of the incivility associated with car driving occurs indirectly, owing to a systemic disconnect between the personal experience and benefits of car driving and the toll it takes on others through greenhouse gas emissions, noise, ecological fragmentation, and the noxious particulates that exit tailpipes (Brugge, Durant, & Rioux, 2007). As Vanderbilt (2009) lamented, “we do not pay for the unsavory emissions our cars create” (p. 160). Overall, the power relations which privilege the practice of car driving suggest that automobility plays a significant role in assembling cities. In the following section, I consider the planning process by which automobility influences urban space.

Cars and the Production of Space

Automobility may shape urban community, even more so than through any one particular practice or institution, through the production of space. According to Lefebvre (1991), the production of space involves an attempt to implement abstract representations or “conceptualized space, the space of scientists, planners, urbanists, technocratic subdividers and social engineers, as of a certain type of artist with a scientific bent” (p. 38). When conceptualized space is applied to the built environment, it interacts unevenly with established practice, reordering “the routes and networks which link up the spaces set aside for work, ‘private’ life, and leisure” (1991, p. 38). The technical and objective language that planners and engineers often use is therefore belied by the inherently political character of the planning process (Flyvbjerg, 1998). Some conceptualized spaces, as Lefebvre decried, have been used to dominate and even destroy complex urban fabric for sake of an abstract order fixated on narrow visions of growth (Scott, 1998). For example, during an era of superhighway fever in the 1960s and 1970s freeways were punched through established neighborhoods, usually poor and housing minority racial groups (Bullard, Johnson, & Torres, 2004). Freeways, however, were not a product of early 20th century planning. Rather, they reflect the culmination of a dramatic shift, starting in the 1920s, towards functionalist representations of urban space that were preoccupied with accommodating the uncontested circulation of private automobiles (Brown, 2005). This shift, I will argue below, marks a critical “planning moment” of automobility. In spite of political resistance (Jacobs, 1961), the reconstruction and expansion of freeways has become a salient component of transportation planning (Brown, 2006).

Planning involves drawing boundaries around communities, drawing from the larger cultural and commercial context of which it forms a part (Jensen, 2007). As planners, engineers, publics, and a diverse set of profit-seeking actors attempt to create a particular vision of space, they engage in a spatial politics of inclusion and exclusion in which some spatial practices are privileged over others (Routledge, 2010). Mobilities planning, for example, entails a relational process of “pacemaking” wherein speed, slowness, and risk are unevenly distributed (Hubbard &

Lilley, 2004). In the 20th century this distribution came to increasingly favor motorists as planning privileged and found legitimization in the car (Gordon, 2001; Norton, 2008). Car culture, as Dennis and Urry (2009) suggested, “has developed into a dominant culture generating new ideals about what represents the ‘good life’ and what is necessary to be a good mobile citizen” (p. 37). As a result, the ideals of car culture slip seamlessly into planning narratives and overshadow the ideals in other cultures of mobility. According to Eckstein (2003), plans can be judged by how effectively they create “space amenable to multiple stories, how well the arrangement of that space produces provocative interaction among the stories, and thus how well and how broadly the stories are heard” (p. 22). Similarly, lived spaces might be judged by the extent that they facilitate civil encounters with difference, where people move outside of “familiar enclaves” and meet strangers (Young, 1990, p. 397). As the car driver developed into a focal actor of planning narratives, the spatial perspectives of pedestrians, cyclists, and transit users became excluded from city growth (Conley & McLaren, 2009; Norton, 2008). Increasingly, the roadways and powerful metal prosthetics to which drivers delegate the work of automobility come between urban encounters with difference (Thrift, 2004).

Material infrastructures assembled through the planning process also play a significant role in the integration of car drivers into the city. Like the hybrid car driver, the “auto-space” in which the car driver is grounded (Beckmann, 2001, p. 603) can be viewed as an urban assemblage in which human and non-human actors align through a process of “translation” (Fariás & Bender, 2010). In actor-network theory, translation means the creation of linkages between heterogeneous entities and emphasizes the agency of material objects as “mediators” in sociotechnical networks (Latour, 2007, p. 108; Law, 1999). For example, mediators include the sewers, hydrocarbons, lights, medians, sidewalks, and snow plows that help facilitate seamless car trips. When auto-space works smoothly, the motorist “will find no difficulty in distinguishing what is displaced from the immutable framework in which it is displaced” (Latour, 1997, p. 174).

Seamless auto-space engenders two problems, however, for automobile civil societies. First, it compounds the separation car drivers already experience from their surroundings while inside “sonic envelopes” (Bull, 2004). As Urry (2006) argued, while “dwelling at speed, car drivers lose the ability to perceive local detail, to talk to strangers, to learn of local ways of life, to stop and sense each different place” (p. 23). Second, a seamless passage for motorists depends on a sprawling infrastructure that severs the spatial linkages that make alternative mobilities possible, entrenching the marginalization of walking and cycling (Sheller & Urry, 2000). As this infrastructure is locked into place by sunk costs, fixed assets, and a vast “maintenance constituency” (Staudenmaier, 1985, pp. 195–196), it becomes difficult to reassemble. Closely interrelated with many other elements of the city, from residential construction and work routines to waste water systems, roads networks produce a high level of what Hommels (2008) called “relational obduracy” (p. 27). Adapting one element of a complex network requires changing many others.

The manner in which car driving affects the production of space can be illustrated, I argue, by three critical “planning moments” of automobility. Automobility and planning do not constantly engage in a dynamic way, when far-reaching, political contingencies become visible and vulnerable to change. Periodically, however, they may establish a novel relationship, or in some cases, undergo a fundamental relational shift. The core idea that I want to capture in these three critical planning moments relates to transformations in what Cresswell (2010) called “constellations of mobility.” According to Cresswell, “historically and geographically specific

formations of movements, narratives about mobility and mobile practices” create constellations that characterize particular spaces of mobility (2010, p. 17). Changes in such constellations could also be described as changes in actor-networks, where the introduction of associations with new actors transforms the network (Callon, 1989, p. 93). A second feature follows closely from this idea of transformation. Namely, during a critical planning moment, multiple visions of the good city converge and work together to reshape spatial practice and material infrastructure. These visions grow out of the salient planning movements of the 20th century and reinforce the notion that car driving constitutes a civic practice deeply implicated in the construction of community life (Hall, 2002). To be sure, a multitude of planning moments exist in which the car modified urban space, and not all of the ways in which the car influences the city relate directly to urban planning. However, I maintain that each case which I qualify as critical stands out because of the number and kind of associations established during the moment in question between previously unconnected actors. Equally important are the differences between the three planning moments which emphasize significant divergences in the way cities can facilitate automobility.

Critical Planning Moments of Automobility

The plurality of automobility becomes clear, if instead of a monolithic trajectory of mass car travel, we focus on a few critical junctures across specific jurisdictions in which automobility interacts dynamically with planning. To this end, I turn now to three critical planning moments seen through the lens of Canada’s capital city and southern Ontario, the founding region of Canadian automobility. Ottawa presents a strategic site because all three moments were generated in the past and persist in some form today. As expressions of national power and identity, capital cities, according to planning historian, David Gordon (2002), “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” (p. 30). I refer to the first critical moment as *park roads*. Shaped by planning movements which predate mass car travel, this moment marks an intriguing effort to insinuate early car drivers into their natural surroundings. The second moment, *machine roads*, entails a radically different conception of car space, closely aligned with spatial practices and materials of the sprawling post-war metropolis. The third critical moment is *new urban roads*. Like machine roads, the defining representations of new urban roads are currently supported by urban regimes across the continent which continue to negotiate their application. These moments do not correspond with sharply defined blocks of time. Rather, they constitute overlapping durations in which new representations of roads are translated into spatial networks that transform existing built environments. A moment comes to a close as newer representations emerge and through translation start to add further “sedimentary layers” (Lefebvre, 1991, p. 229). By reading across these three critical planning moments, I contend, in each of which the car and city relate in a novel way, we can grasp the far-reaching impact of automobility on the production of space.

The first moment: Park roads.

In the early 20th century, three distinct planning movements, each a unique reaction to the ills of the Victorian slum city, offered competing visions of urban reform which shaped the introduction of automobility. The first was the Garden City movement. Inspired by the radical

ideas of Ebenezer Howard to build self-sufficient cities in the countryside, 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, pp. 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, pp. 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, water mains, and sewers, through new materials and construction techniques. Principles from each of these planning movements, Garden City, City Beautiful, and City Scientific, contributed to a novel representation of space: the park road.

In the first critical planning moment of automobility, space for the motor car was cut from the same cloth as the park. A park road is a “pleasure road,” defined by the experience of wending through a natural landscape crafted to coincide with the motorist’s visual perspective. 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” (Olmsted, 1997, p. 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” (Todd, 1903, p. 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.

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Figure 1: Queen Elizabeth Driveway, Ottawa’s first parkway, continues to manifest the elements of an urban park road in the 21st century.

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, and he 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, p. 130). It was shelved, however, as the nation focused on the war effort and rebuilding Parliament after a fire destroyed Centre Block. The quiescence of Bennett’s parkway system was prolonged, 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, p. 291; Hall, 2002, p. 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, p. 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, rerouting and zoning by-laws (Gordon, 2008). Cauchon, with 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). Still, even as this science became increasingly dominant in Canada, the park road persisted for three more decades as an object of planning.

The central features of the park road as a quasi-public, outwardly focused space designed for the automobile, extended into two important domains. The first domain was the production of Canada’s inaugural superhighway, dedicated to the Queen 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 the continent to facilitate the movement of motorists (Jones, 2008; Norton, 2008). It featured a linear alignment, wrought iron guard rails, central medians, and the largest concatenation of lighting in the world. Yet, alongside this hard infrastructure, and partly as a disguise, were spruce and pine plantations, avenues of elm and maple, and other plant materials strategically organized to evoke a primeval landscape. The effect, Van Nostrand observed, 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, p. 9). A second domain in which the park road extended was one of the most comprehensively implemented master plans in Canadian history. The Gréber (1950) “Plan for the National Capital” embraced the parkways, boulevards, and expansive greenbelt proposed earlier by Todd, Bennett, and Cauchon. As a result, the national capital region today features 90 kilometers 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, elaborated: “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” (2011a, n.p.).

The second moment: Machine roads.

While 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. The Gréber Plan, together with the reconstruction of the Queen Elizabeth Way (QEW) during the 1960s and 70s, illustrated a second critical planning moment of automobility. During this moment, three approaches to planning transformed the spatial basis of car driving. The first was an adapted set of Techno-Scientific City ideas. 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” allowed to flow uninterrupted along restricted-access

express roads (Brown, 2006). The second planning approach was Radiant City. Inspired by the Swiss architect, Le Corbusier, this approach, paradoxically, sought to obviate congestion in city centers 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 neighborhoods for brutalist architecture. Finally, a third planning movement helped redefine the relationship between car and city, to which Hall (2002) aptly referred as "the City on the Highway." Pioneered by Robert Moses, New York's master builder, this approach refers to the power that large roads developed to shape patterns of urban growth.

A segregated system of traffic, top-down urban renewal, and the rise of car-oriented development all contributed to another critical planning moment, the machine road. Elements of a machine road first appeared in the freeway plans of the 1920s and 1930s, which proposed to adapt certain aspects of parkways such as their limited access (Brown, 2005, p. 9). Although these plans were delayed during the Great Depression, they were mobilized after WWII with Germany's autobahn project as a "point of reference" (Furness, 2010, p. 51). A well-oiled complex 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 its back. Today, Gréber is usually associated with Ottawa's beloved greenbelt, or, more critically, the odious manner in which his team of capital planners condemned a working class, largely French Canadian neighborhood, a "slum," which led to its being bulldozed (Jenkins, 1996). However, the centerpiece of the Gréber Plan, and Ottawa's new system of traffic, was an archetypal machine road. Gréber created a wide right of way by removing the east-west Canadian National Railway freight line, an elevated wall of industrial infrastructure which already had machinic qualities. The new road was designed to "ensure speedy through traffic, reduce present obstacles to north-south traffic movements, rehabilitate adjoining lands and relieve traffic congestion" (Gréber, 1950, p. 177). It took seven years to carve through the heart of Ottawa, and opened in 1965. Like the QEW, the expressway had a regal dedication. Similarly, Ottawa's Queensway subverted the traditional public meaning of Her Majesty's highway as open to all citizens regardless of their conveyance.

The Queensway adopted new technical standards which the QEW had developed since its pre-WWII opening in order to improve safety and efficiency. Unlike the Queensway, the QEW was not foisted above grade on top of an existing heavy rail line. Moreover, as already mentioned, its initial construction included outward-facing, park road pretenses towards its natural landscape. By the late 1940s, though, with the baby boom in motion and annual vehicle registrations quickly rising, the landscape surrounding the QEW was no longer "primeval" forest. 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. Over 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 necessarily undermine the QEW as a public, multi-use corridor. As Van Nostrand (1983) detailed, the single-family homes that first cropped along the first service roads faced the highway. Interchanges started to attract community facilities, such as Dixie Plaza, Canada's first shopping centre, whose posture also acknowledged the highway as

a public space: “the overall effect was of a super-cornerstone located on a super-corner” (p. 14). Safety and efficiency on the super-corner, however, proved elusive. Parallel service roads and grade-separated interchanges, key “mediators” of machine roads (Latour, 2007), were extended along the QEW. Yet corresponding development, in a positive feedback loop, kept inviting cars and their corollaries, traffic and accidents, and then demanding more “improvements.”

During the late 1960s and early 70s, 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 inception. 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 car access. Freeways, however, were not as clean cut. They generated levels of traffic noise and tailpipe pollution that lessened the health of neighbors 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 & Urry, 2000, p. 745). The machine road dominates its surrounding landscape, not by engaging it, but by disconnecting it from the view and concern of motorists. Bombarded by various kinds of pollution, buildings close to the QEW, increasingly commercial and industrial, turned to face the other direction (Van Nostrand, 1983). To be fair to Gréber, he 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 mounds and concrete barriers that later would be required to control the freeway’s noise. Gréber also failed to foresee how explosive population growth, mixed with mass-produced cars and an ever expanding, publicly subsidized road network, would undermine a greenbelt meant to contain suburban sprawl.

Car-oriented development (COD) pivots on the extension of urban roads into forests and farmland to service low-density housing starts inaccessible by rail transit. COD sharply contrasts with the mode of tram-oriented development that coincided with park roads, marking a significant increase in the power of automobility to shape the built environment. Like many other Canadian cities, Ottawa built a thriving tram system which helped create dense, walkable hubs of housing and commerce around stations before the rise of COD. Demolishing streetcars, which the Gréber Plan depicted as ugly, depressing, unworthy of a capital, and, above all, “detrimental to traffic circulation” (1950, p. 127), was part of a multifaceted policy of decentralization. This policy began by removing urban rail infrastructure, including Ottawa’s central train station, to the suburbs. It then proceeded by constructing peripheral office parks, expanding new “satellite” towns, and enrolling roads at the edge of the city into an interconnected urban grid (Gordon, 2001). Effectively, the city burst the compact streetcar suburb, spilling its contents horizontally across vast tracts of single-detached housing. Where earlier “developers would rarely build houses more than four blocks away from a streetcar line” (Hall, 2002, p. 304), under COD houses and retail were being fabricated in cheap, interstitial zones set apart from the freeways to which they were umbilically connected. Speedy development required standardized materials and mass production. Eastern Ontario’s master builder, for example, 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).

The third moment: New urban road.

The machine road (freeway expansion, authoritarian renewal, and car-oriented development) has come under attack in contemporary planning (Doucet, 2007; Frumkin, Frank, & Jackson, 2004). Three alternative approaches have combined to force another critical planning moment of automobility. The first is new urbanism. Inspired by Jane Jacobs, who mobilized local opposition to Moses's plan to part her neighborhood for a freeway, it gained momentum from the mid 1960s. Related to transit-oriented development, new urbanism promotes dense, interconnected street patterns which support multiple, coexisting uses. The second approach, smart growth, criticizes COD, but also responds to anti-growth coalitions by seeking pragmatic ways to manage sprawl and coordinate jobs and housing, such as creating compact, mixed-use districts within car-oriented suburbs (Filion, 2003). Sustainable development, finally, has, since the Brundtland commission, inspired planning for environmental responsibility. These approaches blend together in recent conceptions of the city (Grant, 2009), and depict the new urban road. Like park roads, new urban roads attempt to insinuate themselves within their surroundings to produce a landscape conducive to civic interaction. But they trade romantic panoramas of nature and war monuments for the unpolished, unpredictable mixture of cultures and spaces that define urban coexistence. As Jacobs pointed out, advances in sanitation and public health have made urban density liveable: "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" (Jacobs, 1961, p. 218). By not throwing the baby out with the bathwater the new urban road is a unique planning moment for automobility. It attempts to recover the spatial integration of the park road but also validate forms of mobility other than car driving that make a difference to urban life. New urban roads represent the good city as one in which strangers moving in multiple ways can accidentally encounter one another in a space where it is possible to interact.

Canada's capital city and most populous province, after moving away from top-down urban renewal schemes, have had only limited success with translating ideas associated with new urban roads into practice. 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, including Ontario and British Columbia (Filion, Bunting, & Gertler, 2000; Grant, 2009). For example, the government of Ontario has passed legislation to demarcate greenbelts to help manage urban growth and promote intensification (Ontario Ministry of Infrastructure, 2006), while the City of Ottawa's (2003) master plan 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. These plans picture the expansion of shared roads. A shared roadway moves people in cars from point A to point B, but is slow enough to also produce busy sidewalks, bike lanes, and dense, adjacent spaces of multiple uses that open onto it. In practice, new urban roads lie near the bottom of the traffic chain, often limited to the downtown core, and the new development leapfrogging over greenbelts tells a much different story. As Grant observed, while the ideals of new urbanism 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, p. 15). The Queen's highways to which these cul-de-sacs eventually drain in Ontario's vast commutershed, moreover, continue to grow. The Queensway may soon see more

lanes to service Ottawa's outlying suburbs, whose population will outnumber those inside the greenbelt within the decade (Ontario Ministry of Transportation, 2010). The Queensway's only nod to new urbanism, again following the QEW, is carpool lanes to encourage passengering.

The success of new urban roads depends upon the ability of cities to limit the growth of machine roads and modify the heterogeneous associations on which this growth depends. The dominance of the machine road in the production of space lies in its capacity to persist as an inward-focused, utilitarian corridor monopolized by the "driver-car assemblage" (Dant, 2004). The machine road does not persist, however, as a static and path-dependent space, but as a dynamic, open-ended network where other social and technical actors—planner-engineers, cement rollers, suburban councilors, hydrocarbons, stimulus spending, the Ontario Municipal Board—constantly intervene and make modifications. Notwithstanding its dominance, the machine road has failed to fully efface earlier sedimentary layers such as the park road. As a salient example, the National Capital Commission's (NCC) parkway system offers a living testament to pre-machinic urban design, where car drivers can still access nature (at 60km/h) on exclusive roads with no commercial vehicles, limited signage and lighting, and carefully sculpted views of rivers and canals. Today the park road persists as a nostalgic landscape, and one that caters to (anti)urban rhythms unforeseen by early capital planners, such as extensive commuting to bedroom communities and the Ottawa International Airport. As the NCC admitted, "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, n.p.). Still, park roads and the old streetcar wards in which they reside, in spite of their enrollment into the "machinic complex" of automobility (Sheller & Urry, 2000, p. 738), point to an alternative way of integrating cars into the city. New urban roads, as outwardly connected streets that accommodate the mixing of different traffic participants, may benefit from expanding and transforming this earlier form of auto-space.

Conclusion

In three critical planning moments of automobility, I have argued, a number of novel associations between cars and the city created transformations in "constellations of mobility" (Cresswell, 2010). In the first moment, car driving was imagined as an optimal mode of connecting with nature in the city, albeit a stylized nature crafted for the motorist's gaze. Such outwardly focused pretenses were abandoned during the second moment. The machine road, like the park road, caters exclusively to the car driver, but with an overriding concern for power, circulation and speed. Finally, in a third critical moment, the impermeability of the machine road is contested. Furthermore, the new urban road challenges exclusive road networks in general that privilege the uninterrupted displacement of cars. Instead of rigid segregation it promotes the interconnection of multiple mobilities, including non-motorized forms of automobility such as cycling (Furness, 2010). A crucial question moving forward is whether or not North American cities dominated by cars can capitalize on this third moment and reassemble the city. Like the park road and the machine road, the new urban road is not simply a set of technical or politically neutral precepts, but a way of organizing a civic practice with consequences for urban civility and solidarity. What makes the new urban road distinctive, however, is that it imagines the good city as one that accommodates difference through automobility. Implementing this vision will require the transformation of hard infrastructures

that suggest roads that are monopolized by cars constitute natural or inevitable features of the urban environment.

Encouraging signs of growth in new urban roads are emanating from all over the region which pioneered Canadian automobility. Car sharing, park-and-ride programs, reintensification policies and, significantly, light rail in Ottawa appear to be gaining appeal. An important test facing Canada's capital is whether it can stimulate higher levels of cycling. As in the case of urban Canada at large, cycling rates remain stubbornly low in Ottawa, around two percent of person-trips, with safety concerns about cycling alongside cars posing a major obstacle (City of Ottawa, 2008). But in a notable shift, the National Capital Commission has begun to rethink the extensive 175 kilometer network of multi-use pathways that it maintains in the capital region in order to make it more practical. Ottawa is frequently pictured as a cycling-friendly city largely because of these scenic lanes, although in essence they provide "park roads" for recreational use with relatively few linkages for utility cyclists. But in the fall of 2010, the NCC, along with local officials, travelled to northern European cities on a fact-finding mission to determine how Ottawa can "invite" cyclists into the city (Gehl, 2010). The planners returned intending to "Copenhagenize" Canada's capital and turn cycling into a viable form of automobility.

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