Planning for the Future of Urban Mobility:
Interviews with Planning Professionals in Five Major Canadian Cities

by

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Abstract

Given that our urban centres have been dominated by the private car for a hundred years, this thesis asked what is next for Canadian cities. Previous research on the future of urban mobility, and specifically city planning and autonomous vehicles, has been from an American or Australian context. Working from a uniquely Canadian perspective, this thesis fills a gap in the research by analyzing data from twenty-six semi-structured interviews with Canadian planning professionals from Vancouver, Edmonton, Calgary, Winnipeg and Toronto. Chapter 1 examines Automobility and Social Practice Theory, which are used as theoretical frameworks for the project, contains a literature review on autonomous vehicles and city planning, and describes the research methods. The core of this thesis consists of two empirical papers based on data from interviews. Chapter 2 questions how Canadian planners are preparing for new technologies including autonomous vehicles, increased privatization, and sustainability in the mobility sector. Chapter 3 describes the differences in municipal planning cultures across five major Canadian cities. Findings suggest that planning professionals are not focused on the newest technologies and are instead advocating for space efficient, sustainable transportation. However, the planning cultures of the municipalities they work in continue to keep the private automobile as the top priority. Chapter 4 contains recommendations that will help cities navigate an uncertain future and encourages planners to become more politically involved in the city-building process. This thesis proposes new urban planning processes for the future that will require in-depth knowledge of why past planning decisions were made.

Preface

This thesis is an original work by Julian TW Faid. The research project, of which this thesis is a part, received research ethics approval from the University of Alberta Research Ethics Board, Project Name “Technologies & Transitions: Urban Transportation Planning in Major Canadian Cities and the Contribution of Autonomous Vehicles”, No. Pro00082729, Aug 28, 2018

Dedication

For my parents, Alison and Peter.

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Chapter 1

Introduction

Preface

This research project began by asking how planning professionals in Canada were preparing for the arrival of autonomous vehicles. However, it took a few detours along the way. As my research evolved, I began thinking more broadly about the future of urban mobility in Canada and how new technology and privatization have influenced it. Like they did for the planners I interviewed, autonomous vehicles became secondary. Ultimately, I wrote two papers, one about planning for the future of Canadian urban mobility at a time of rapid technological change and the other about the municipal planning cultures in five different Canadian cities that will shape that future. Before turning to these papers, the remainder of this chapter discusses my theoretical framework as well as the research methods I used to explore these topics.

Background, Theory, and Method

If driving to your destination takes twenty five minutes, and taking public transit to the same destination takes two or more hours, which of these options are you likely to choose? Despite its structure, this is not one of those math problems that requires a deep understanding of complex algebra. Rather, this question is a reality for most people in Canada – and, if you are anything like the average Canadian you already have your seatbelt done up and have a song on the stereo. This decision is simple because our cities are designed with the car as the first priority. If you walk, bike, or take public transit it can be easy to feel like a second-class citizen. This feeling is why a button to cross a busy intersection is often called a ‘beg button’, as

pressing one leaves a pedestrian begging the light to change so they can finally cross the road safely and avoid the elements. All the while, climate-controlled vehicles zip through to their final destinations. Being on public transit offers the same feeling of inferiority, when a bus with up to sixty people on it is given the same priority at every traffic light along its route as a car with only a single occupant.

Unfortunately, this mobility hierarchy has been unchanged for more than a hundred years in Canada. Currently, many major cities devote more than half of their downtown space to roads and parking (Litman, 2020). City dwellers have become accustomed to driving and our municipalities continue to incentivise car travel by subsidizing the true cost of private car travel, allowing more parking to be built than necessary, and making any other mode of transportation pale in comparison in terms of speed, comfort, and reliability (Shill, 2020). Understandably, many cities are now facing soaring gridlock as they are unable to accommodate any more cars into their urban cores. Yet, these cities are also seeing more people move into their downtowns every year – a mass migration to urban centres which is likely to continue (United Nations, 2015). Municipalities are now coming to a fork in the congested road. How can they continue to have people moving easily through their city in a timely and safe way, while welcoming the new realities of more people, more cars, and less space?

I will explore two elements of the future of urban mobility in this thesis. First, in chapter 2, I will ask if, and how, planners across Canada are preparing for new technologies , including autonomous vehicles (AVs), and increased privatization in the mobility sector. Second, in chapter 3, I will look at the differences in municipal planning cultures among five major

Canadian cities. In the remainder of this chapter I discuss the theoretical frameworks that influenced my thinking, as well as the methods I used to explore these topics.

As my research began, I was interested in the ways our cities would reduce congestion, shift to sustainable modes of transportation, and make cities better for everyone. By this time, there was ample writing about how autonomous vehicles were going to change cities forever. For example, some said that autonomous cars would increase the amount of space available for pedestrians and cyclists by virtue of needing less space for parking (Budds, 2017). Others stated boldly that this new technology would solve congestion by using the connectivity of autonomous vehicles to alleviate traffic pinch points (Brown, 2018). We were also told about the increased safety these autonomous vehicles would bring to our streets (Marshall, 2017). With all of these positives apparently only a few short years away, i assumed that municipal city planners across Canada must have been working diligently to prepare for this exciting new technology. However, I found out very quickly that, while the hype of this technology was in full effect on the pages of major publications, that excitement had yet to translate to a planners day to day practices.

Over the course of researching, I began to better understand the many issues that planners in major Canadian cities were up against. It also became clear how little the autonomous car was factoring into the many planning decisions that are made within a municipality. I had concerns that planners and politicians would be aiming to reinvent the wheel, while forgetting about the low-tech options that have proven themselves time and time again. Further, I felt that this technological shift in transportation would give the private sector even more stake into how our cities function. Technologies like AVs, and even ride-hailing apps, introduce a tension that pits public versus private sector interests. In the same way many of our

Canadian cities are ‘locked-in’ to an automobile-dominant present, what our planners do today will directly impact what their successors can do in the future.

Research on these topics will be outlined in Chapter 2 of this thesis where I describe Canadian planners’ responses to my questions about their planning work relative to new technologies and increased privatization. Over the course of my interviews for this research I noticed subtle differences in how planners were approaching these future mobility issues. For example, some planners were comfortable taking bold steps towards the creation of cities that would not continue to rely on the private automobile, while others were more likely to adopt a wait-and-see approach. These variations interested me and pushed me to better understand the underlying planning cultures within each of the cities I researched. An exploration of these cultures will take place in Chapter 3 where my interview data will provide context for how a municipality's planning culture has developed over time. A greater understanding of both a planner's preparations for the future and the cultures they work in could have huge benefits for our climate, our health, and our happiness. The following section of this chapter will help outline my theoretical thinking on these topics, while highlighting the work of previous researchers who have influenced my thinking.

Theoretical Frameworks

Social Practice Theory

Canadians have become very comfortable with the idea of driving. The vast majority of Canadians commute to work by car and spend a one-way average of 24 minutes on the road (Statistics Canada, 2010a). A long commute by car has been shown to have detrimental effects on a person's health, safety, and personal finances (see Christian, 2012; Pohanka & Fitzgerald, 2004; Pinola, 2011). One study even drew a correlation between long commute times and

higher divorce rates (Sandow, 2013). These long car trips are also a major contributor to greenhouse gas emissions when much of the trip can involve idling in busy traffic (Statistics Canada, 2010b). If these long commutes are causing us such harm, why do we keep taking them day after day? This behaviour has been fuelled by the contexts in which we live. Social Practice Theory provides us with a way of looking at driving behaviour from a perspective that sits somewhere between the individual taking the trips and the system that makes those trips the most feasible choice for most.

Driving can be seen as a social 'practice,' which Rechwitz describes as "a routinized type of behaviour which consists of several elements, interconnected to one other: forms of bodily activities, forms of mental activities, 'things' and their use, a background knowledge in the form of understanding, know-how, states of emotion and motivational knowledge" (2002, p. 249). The theory of these social practices has been an interesting area of study for some time. The goal is to provide a different lens from which to look at how and why people perform certain practices and to uncover the full contexts in which these practices are performed. Therefore, thinking about how we commute as a piece of a wider context, the very existence of which requires many other interconnected elements to exist, can be helpful in gaining a more well-rounded understanding of why people commute in the first place. As Hargreaves puts it, "social practice theory de-centres individuals from analyses, and turns attention instead towards the social and collective organization of practices—broad cultural entities that shape individuals' perceptions, interpretations and actions within the world" (2011, p.79). Put simply, the practice itself rather than the individuals who perform it, or the social structures that surround them, becomes the focus (Hargreaves, 2011)

Social practice theorists have recognized that we exist within a larger social group and that the underlying context of this group changes the general decision-making of its individual members (Stern, 2000). Some theorists have included social norms and networks as part of this context. Most importantly for my research, however, even surrounding physical infrastructures have been seen as yet another factor to take into consideration when looking at an individual's decision-making processes (See Barr, 2003; Martin et al., 2006; Olli et al., 2001). Social practice theory provides a map to new understandings of previously researched practices, while also helping to uncover just how ingrained our daily patterns and habits can be. Through this lens, those of us in car-dominated cities can begin to understand how much of the infrastructure built for drivers has altered our decision making on an individual level. We drive because it is the easiest choice, and for some, the only choice.

Social Practice Theory and Pro-Environmental Behaviour

Researchers have applied social practice theory to the understanding of many different areas of behaviour. However, one of the most relevant areas for my research is the area of pro-environmental behaviours (see Røpke, 2009; Warde, 2005; Shove & Walker, 2010). Researchers are able to look at aspects of our resource consumption, often framed as individual choices, from new angles (Watson, 2012). An individual's choice of mobility is of particular interest, and social practice theory is concerned with approaching mobility from an understanding of the "complex patterning of people's varied and changing social activities" (Sheller and Urry, 2006, p. 213). This pattern of consumption relative to mobility choice is also identified as a characteristic of the "New Mobilities Paradigm" (Watson, 2012). Driving, as a practice, requires a wide range of other practices to take place—including road building, fuel providing and, most importantly for my research, transport planning. Watson argues that

"changes in socio-technical systems only happen if the practices which embed those systems in the routines and rhythms of life change; and if those practices change, then so will the socio-technical system" (2012, p. 489). In this way, social practice theory can be helpful by highlighting processes at a systemic level, while at the same time keeping focus on how those systems are created, replicated, and continued through the performance of our everyday practices (Watson, 2012).

In order for such a systemic transition to occur, it will be important to understand the current construction of the system. I contend that a system of automobility is still the dominant cultural ethos within the community of urban planners, civic politicians, and municipal leaders. If we are to improve the sustainability of our cities, this system will need to drastically change.

Automobility

The term *automobility* is a shorthand for the car's dominant position as society's main form of transportation, economic cornerstone, city shaper, and cultural icon. Sheller and Urry describe automobility as "a *machinic complex*[1] of manufactured objects, individual consumption, environmental resource use and dominant culture that generates a specific character of domination over almost all contemporary societies" (2003, p.115). Further research has been undertaken on the numerous issues that stem from automobility, such as suburban growth (see Batty et al., 2003; Kenyon, 2004), the steady decline of public transit systems (see Deka, 2002; Jacobs, 2004; Hynes, 2017), impacts on the environment (see Kay, 1998), and social exclusion

[1] Sheller and Urry (2003) borrow from the work of Deleuze and Guattari (1987) here to show the multiple connections, or *assemblages*, that are created through the system of automobility. The work of Deleuze and Guattari is often thought of as a set of tools - concepts that can be plugged into other concepts and made to work - an apt analogy for the modern automobile.

and transport-related discrimination (see Hendersen, 2006; Sanchez, 2007; Preston & Rajé, 2007; Lucas, 2012).

Urry and Sheller argue that this system of automobility consists of six components that together create and reproduce the car's dominance over our cities (2000, p.738). These components are:

1. Cars are the symbolic manufactured object of 20th-century capitalism.
2. An automobile is often the second most expensive item of personal consumption after a house, which provides status to its owner/user.
3. The car is part of an intricate web of technical and social linkages with other industries. (e.g. car parts, oil refining, road maintenance, hotels, car sales, suburban housing developers, advertising)
4. Cars are the prevailing form of "quasi-private" mobility that subordinates other forms of mobility while forcing people to negotiate where they live and work, send their children to school, and spend leisure time.
5. The automobile is the cultural symbol that preserves what constitutes the "good life."
6. Cars are the single most important cause of environmental resource use.

It is through the lens of this systems approach to the automobile that it is possible to understand the true ramifications it has for the cities in which we live.

> *"*Automobility divides workplaces from homes, so producing lengthy commutes into and across the city. It splits homes and business districts, undermining local retail outlets to which one might have walked or cycled, thereby eroding town centres, non-car pathways, and public spaces. It also separates homes and various kinds of leisure sites, which are often only available by motorized transport.*"* (Urry, 2006, p.19).

This type of urban planning and design has been the norm for the past century in much of the western world. As Cervero et al. (2017) highlight in their book *Beyond Mobility*, most cities have invested heavily in both complex roadways, and underground rail systems. These investments have been primarily about moving as many people as possible to their destination as quickly and safely as possible. On its surface, this makes perfect sense. However, they continue, "the cumulative consequences of this nearly singular focus on expeditious movement have revealed themselves with passage of time, measured in smoggy air basins, sprawling suburbs, and—despite hundreds of billions of dollars in investments—a failure to stem traffic congestion." (Cervero et al., 2017, p.1).

Planning and Autonomous Vehicles

The dominant choice for most twentieth-century urban planners[2] then, was to design their cities to accommodate and benefit from the movement of automobiles above all else. These new technologies drastically changed the shape of the built environment. Once limited by how far one could travel on foot or by horse, automobiles and rail transport allowed cities to expand further and grow faster. No longer bound by the inflexibility of public transportation, the public fled to newly developed suburban neighbourhoods (Urry, 2004). This new mobility gave cities unparalleled accessibility and drove new levels of development and economic activity. However, as we now know, this new technology brought many negative consequences. Years of urban sprawl and designing for cars have left many cities struggling to deal with sustainability and health issues caused in large part by traffic congestion, air pollution, traffic fatalities, Co2 emissions, and unhealthy commuting patterns (Harris, 2018).

[2] One notable exception to this was Sir Colin Buchanan, an influential Town Planner who wrote the Buchanan Report in 1963, which is now known as *Traffic in Towns* (1963). The report was a warning about the potential damages caused by cars and ways to mitigate this damage when designing urban environments.

These lessons from the past should leave planners better equipped to anticipate future challenges of new technologies like autonomous vehicles (AVs). However, planners will need to decide what role this technology might play in our society in order to understand the potential impacts of AVs on our cities (Litman, 2019). While fully autonomous vehicles are already being tested in limited settings, various levels of automation already exist on most new cars sold today. Features such as adaptive cruise control, automatic lane keeping, and automatic braking have become ubiquitous on the floors of car dealerships and automotive shows. As automotive manufacturers and technology companies continue to push towards full autonomy, researchers have started to contemplate both the potential positive and negative effects of this technology on the city. Improved traffic safety is one area with great potential (Glaser et al. 2010; Kalra & Groves, 2017) while many believe that AVs will bring the end of private vehicle ownership allowing many shared vehicles and thus cutting down on GHG emissions (Firnkorn & Müller, 2015; The Economist, 2018). A reclamation project of parking and road space could come to fruition if all goes according to plan (Burns, 2013; Zhang et al., 2015), leaving more space for parks and pedestrians. AVs may also be useful in solving what transit planners call “the first and last mile” problem (Shen et al., 2017), which is the term used for the difficult to service areas for public transit between a transit user’s home and public transit (first mile), and public transit and their final destination (last mile).

One of the more divisive unresolved issues raised by the introduction of AVs is the impact they may have on traffic congestion. On the one hand, some hope that because autonomous vehicles will communicate with one another, they will travel in closer proximity. This will, in turn, reduce congestion by increasing vehicle throughput and smoothing traffic flows

(Stern et al., 2018). On the other hand, some researchers have argued that because AVs will allow for an ease of use that public transit may not be able to match, more people will opt for AVs for their entire journey which will increase congestion overall (Fagnant & Kockelman, 2015). Further, congestion could increase as AVs circle the block rather than pay for parking while waiting for their next trip (Chase, 2014). A realistic interpretation of driverless technology was conducted substituting chauffeurs to act as pseudo-driverless cars for people who would otherwise drive a private vehicle (Harb et al. 2018). Over the course of the research these cars were sent to pick up packages, sent home instead of paying for parking, and instructed to circle the block to avoid a parking ticket. The result was a massive increase in vehicle miles traveled (VMT) of 83% over the course of the study.

The concern about increased congestion is far from the only potential problem. Providing further incentive for urban sprawl is another concern brought up in the critical literature (Ewing et al., 2003; Hall, 2012), while concern over AVs shifting investment, and ridership, away from public transit systems is also a possibility (Lam et al., 2016; Levinson et al., 2016). AVs could also very well result in reducing mobility for pedestrians and cyclists, by further prioritizing the movement of the automobile above all else (Meeder et al., 2018). Finally, a reliance by governments on parking fees, speeding fines, vehicle registration, and fuel taxes could leave municipal coffers empty if AVs render those funding mechanisms obsolete (Freemark et al., 2019). At their root, all of these concerns suggest that AVs could bring more of the same—cities becoming further entrenched on the path dependency of the automobile, where the future of all mobility will still centre around the car. It seems that for every argument that hails AVs as a saviour for cities, there is an equal counter-argument about why they will ruin cities for everyone.

So, who decides which version of the future wins out? How our cities look, feel, and function is, in large part, the domain of planning professionals. Hopkins and Schwanen (2018) even point out that even the question of how planners should best prepare for AVs is one that aligns with the narrative led by industry and private interests that AVs are inevitable and planning must adapt to them. Marsden highlights that “there are very real risks of getting drawn into planning for the technology that some commercial interests want to see and not planning for the kinds of societal outcomes planners are tasked with trying to support” (2018, p.773). While it appears that societal and technological interests overlap to some extent, Marsden (2018) feels that starting from a position of clarity about what planners are planning for, and then treating AVs as a potential contributor to that plan is a much better way to achieve the goals of sustainable cities. Stone et al. echo this feeling by urging planners, both in practice and in academia, that they need to fully articulate their understandings of both the pitfalls and possibilities of different AV futures in plain language, and then engage with citizens to shape expectations of governments and the private sector (Stone et al., 2018).

A number of researchers have interviewed planning professionals about how they are preparing for a future with AVs. Legacy et al. (2018) interviewed public sector planners in Australia about the role that planning can play in identifying and shaping the AV future (see also Stone et al., 2018). This research echoed findings from Guerra (2016) and Guerra & Morris (2018) in the United States, who also conducted semi-structured interviews with planners. Each study showed that public-sector planners are in a holding pattern caused by the uncertainty of what AVs might mean for cities. Freemark et al. (2019) also conducted research with planning professionals about AVs using a survey sent to planning officials from 120 U.S. cities. Their

study found that very few local governments have begun planning for AVs, but those cities with larger populations and transportation budgets are more likely to be at least somewhat prepared. These studies found that planners recognized that they can use AVs as a means of strengthening transit systems as an alternative to the private car. However, until more information is available on how they will function, it is difficult to develop policies. Thus, there appears to be a consensus among public sector planners to hold back on policy initiatives that could have any real impact—collectively adopting an attitude of “watch and wait” (Legacy et al., 2019, p.94).

With such uncertainty surrounding AVs it is plain to see why creating relevant policies has proven difficult. For example, despite the hype that may suggest otherwise, we still don’t know when AVs will be ready to operate on our roads. Further, we have little idea about what effect AVs will have on travel and other social behaviours (Reardon, 2018). Even the question of whether AV’s will be environmentally sustainable has proven difficult to answer. For example, in modelling the impacts of AVs, Wadud, MacKenzie, and Leiby (2016) found that AVs may plausibly reduce GHG emissions and energy use by nearly half compared to traditional cars. On the other hand, they also found that AVs could also nearly double them, depending on which effects come to dominate.

While the goal for many planners may be to use technological advances such as AVs in ways that repair the problems of car-dependent cities without creating new unforeseen problems in the process (Stone et al., 2018), planners are only one element in an already complicated governance context, before we even consider AVs. Private corporations have started to move into the urban transportation space in increasing numbers. The development of

AVs alone brings influence from the world's largest global technology companies, established car manufacturers, specialists in artificial intelligence, and smartphone app developers, all hoping to find new ways to profit from the movement of people in cities (Reardon, 2018). This influence has started to shift the planning power dynamics and presents new challenges that begin to "blur the distinction between private and public modes of transportation" (Claudel & Ratti, 2015). Stone et al. highlight how we can no longer think of the state as a single entity with one view or perspective of how AVs can and should operate, saying, "planning is now multiple in its orientation. It stretches across public and private sector bodies, each with different—often competing—motivations, mandates and stakeholders. We need to examine the socio-technical disruptions of the kind presented by AVs across a range of social, political, institutional and land use contexts" (2018, p.125).

While it is clear that how AV's will be integrate into our cities is still a question without an answer, what planners do know for certain is that developers of AV technology have the clear goal of disrupting current patterns of urban mobility. As Legacy et al. (2019) point out, the potential impacts of these changes are worthy of the attention of both the public and private entities currently shaping these networks.

A Culture of Planning

The unique culture of each Canadian city highlights their peculiarities and customs, as well as their history. These cultures unknowingly shape the physical forms of cities. As Schein points out, "the most intriguing aspect of culture as a concept is that it points to the phenomena that are below the surface, that are powerful in their impact but invisible and to a considerable degree unconscious" (2004, p.14). These unwritten rules, however, become written when the

culture of a city determines how it is laid out, planned and organized through building codes and land use policies. These regulations form part of a city's planning culture.

The culture of planning, like the word 'culture' itself, can be difficult to define. Planning cultures have been defined by Sanyal as: "… the collective ethos and dominant attitudes of planners regarding the appropriate role of the state, market forces, and civil society in influencing social outcomes" (2005, p.114). However, Sanyal's definition of planning fails to take into account the numerous elements of a planning culture that exist outside the city planner specifically; the city residents, politicians, and history that get no specific mention in his definition. Even if this definition fails to capture all elements of a planning culture, it helped develop the view that planning was a "culturally contingent form of practice" (Friedmann, 2012, p.96).

One conceptual framework that has emerged is the Culturised Planning Model (Figure 1) developed by Frank Othengrafen. Intended for a European planning context, his model goes beyond describing the activity of only planning professionals and additionally encompasses not only a broad range of professions that work to shape the built environment, but also societal elements of a particular culture. This wider focus takes into consideration the outside forces that are included in many planning activities such as elected officials, the media, residents and community groups as well as underlying perceptions and beliefs. These elements are important as they each can have a unique effect on how city building happens in a particular municipality. Othengrafen highlights the importance of a focus on the variations in local planning cultures which he believes has taken a backseat to the work emphasizing cultural characteristics on a national scale (Othengrafen & Reimer, 2013).

This planning model uses an anthropological understanding of culture, which consists of: '(…) "shared meanings" as they are conceptualised in the basic philosophy of life and values among a group of people, and of the way in which these shared meanings are visualised or manifested in people's social interactions, as well as in the results of those interactions.' (Othengrafen & Reimer, 2013, p. 1272) This understanding of culture includes: '… incorporated and unconscious routines, traditions, ideologies, practices and norms that guide the actions of members belonging to a specific culture.' (Othengrafen, 2012, p. 19) The model is described as an 'open system' which offers a structured inventory of cultural influences on spatial planning. Othengrafen is careful to position this model not as a theory, but as an analytical tool to help sensitize research to the cultural elements of planning. The Culturised Planning Model supports research into a wide range of cultural components including: attitudes, habits, traditions, emotions, meanings, practices, relations between individuals, social-economic status, and social norms.

Gaps in the Research Literature

While the potential effects of AVs on our cities generally, and the planning profession more specifically have received some attention, I believe they are under-researched. Further, no research exists on this topic in a Canadian context. Hence, my initial aim was to contribute to this research field by conducting semi-structured interviews with planning professionals from several large Canadian cities, and linking these preliminary observations to theories that could provide insight for future enquiry. The following section will outline my research method and research questions, as well as how they changed over the course of my research.

Method

I begin with a brief description of the constructivist paradigm which guides this research and my positioning within the study. Next I discuss the chosen methodological framework, constructivist grounded theory (Charmaz, 2006), is discussed. Finally, I present a description of the participant selection and recruitment process, data collection activities, and the data analysis is presented.

Constructivist Paradigm

A researcher's personal paradigm is what defines their research (Denzin & Lincoln, 2005). The paradigms that guide qualitative research stress the persuasiveness and utility of the research over the certainty or *proof* of the research conclusions (Guba & Lincoln, 1994). In the constructivist paradigm, realities are seen as being constructed and co-constructed by people being in contact with others and through their own lived experiences (Lincoln, Lynham, & Guba, 2011). The subjective meaning of the individual is at the heart of the constructivist paradigm. Working from this understanding means seeking to interpret the participants' perspectives on their situations (Creswell, 2013) while recognizing that the learning will be co-created throughout the process (Denzin & Lincoln, 2005).

The constructivist paradigm is most aligned with my beliefs and assumptions. I have spent more than twenty years working in the art of improvised theatre. Improvisation has given me a unique set of skills that dovetail with this research paradigm as I am able to quickly shift when presented with new information, find connections rapidly, and work collaboratively with my research subjects. I also feel that this process of co-creation mirrors closely the process adopted in city building by planning professionals of all types. These planners are often faced

with new information and political motivations that can quickly shift their work from one direction to another. Further, when building a city for many, these planners must take into account the perspectives of all citizens. How this co-constructed future will be built, through the subjective experiences of planning professionals, is what I was seeking to understand in conducting this research. The constructivist paradigm assumes that this understanding is found through the interpretation of these subjective perceptions.

Interviews.

The twenty-six planning professionals were chosen from five cities across Canada—Vancouver, Edmonton, Calgary, Winnipeg, and Toronto[3]. I had originally planned to interview planners in Montréal due to its unique geography, culture, and history. My hope was Montréal would provide a Canadian example of a planning culture that prioritizes multimodal planning. However, after repeated attempts to find suitable interview candidates without success, which included emails to six City of Montréal planners and three faculty at the University of McGill School of Urban Planning, I decided to remove it from my study as I near the end of my planned research phase. The cities represented in the study were selected as a cross section of major Canadian locations and with both a minimum population size of 500,000 in mind, since larger cities were more likely than others to have planning professionals working on the future of urban transportation. In-depth semi-structured interviews were used. Each participant was interviewed for between 45 and 60 minutes. All interviews took place at a mutually agreed upon location, with the majority of interviews taking place in-person within the office of the participant. The majority of interviews were one-on-one, with only two interviews taking place where two planners were present together. After receiving informed consent from

[3] All research activities received approval from the University of Alberta Research Ethics Board.

the participant, the interview started with basic questions about the participant's current area of work and their level of planning experience. The bulk of the interview engaged the participants in a dialogue about their feelings towards various issues around the past, present, and future of planning and urban transportation using open-ended questions. Each question was followed up with further inquiries to more fully understand each answer. The semi-structured interview guide for this research can be found in Appendix A.

In-depth qualitative interviews are useful for researching complex processes in real world contexts. Charmaz (2006) highlights the need to use open-ended questions during in-depth interviews to more thoroughly understand participant experiences and interpretations. From a constructivist approach these interviews were viewed as a collaborative process of meaning-making and not simply a data-yielding process (Holstein and Gubrium, 1995).

Participant Selection and Recruitment.

Participants were selected using both snowball sampling and direct recruitment. Because municipal planners work for a public organization, I was able to identify potential candidates using the city websites and publicly available planning documents. This direct recruitment was my first step in identifying potential candidates. Many planners within Canada are well connected through their professional networks, thus many of my subsequent interview participants were connected to me by previous interviewees. This snowball sampling technique does have its limitations as it is possible that interview subjects shared similar traits and characteristics. It is possible that, by using this sample method, I obtained only a small subgroup of planning professionals.

Each potential participant was sent an email explaining how I found their name and information, and a research information letter was attached that fully explained the research goals. If the participant agreed to be interviewed, a time and place were then confirmed via email. Approximately half the participants I contacted felt they would not be a suitable candidate for this research, as my recruitment letter explicitly mentioned Autonomous Vehicles. Some of these potential candidates passed me on to a colleague who they thought would be interested in taking part. For others, I was able to convince them that AV's were not the only aspect of my research interests and I would still like to interview them. A consent form was sent to the participant the day before the interview using an electronic signature system. This consent form (Appendix B) was also explained in detail before each interview to ensure the participant fully understood the ethical considerations of participation.

The participants for this study consisted of a mixed sample of men and women, who met the following inclusion criteria: (a) worked as a planning professional (transportation, urban, city, etc), (b) worked in a decision-making role (c) had at least three years experience in planning (d) worked as a city employee for the selected municipalities or as part of the regional planning bodies where applicable (Toronto and Vancouver). If a planner did not meet these criteria, they were not interviewed. A breakdown of participants by city and gender is available in Table 1.

Table 1
Breakdown on interview subjects by city and gender.

City	Men	Women	Total
Vancouver	5	2	7
Edmonton	1	3	4
Calgary	3	3	6
Winnipeg	3	0	3
Toronto	5	1	6
TOTAL	**17**	**9**	**26**

Data Transcription and Analysis Process.

I requested informed consent of all interview participants to audio-record their participation in this research. The interviews were all transcribed using a paid transcription service which I then reviewed, along with the audio recording, to ensure accuracy. All transcripts were then uploaded into qualitative data analysis software (Nvivo) to help the coding and analysis process. All codes used for the transcription process are available in the attached code book (Appendix C).

The process of data collection and analysis was undertaken until a sufficient understanding of the research questions was reached, as is consistent with constructivist grounded theory (Charmaz, 2006). The process of analysis started with multiple readings of the interview transcripts while memoing initial thoughts and aiming to triangulate between interviews. Field notes were kept throughout the data collection process to aid in the recall of specific details about the interviews and interviewees. The methodology of the constructivist grounded theory approach to data analysis necessitates that I view this data as co-constructed. As Charmaz mentions, in using a constructivist grounded theory approach the following assumptions are made: “(a) Multiple realities exist, (b) data reflect the researcher's and the research participants’ mutual constructions, and (c) the researcher, however incompletely, enters and is affected by participants’ worlds. This approach explicitly provides an interpretive portrayal of the studied world, not an exact picture of it” (Charmaz, 2011, p. 678).

Initial Coding.

The coding of all data was undertaken using the methods described by Charmaz (2006). Line-by-line coding was first used to group each line into potential themes to begin the process of identifying the most relevant data (Glaser, 1978). This technique aimed to keep me open to

the data under study, and to begin the identifying of details within it. This was followed by using a flexible coding strategy suggested by Charmaz (2006)—"breaking the data up into their component parts or properties, defining the actions on which they rest, looking for tacit assumptions, explicating implicit actions and meanings, crystallizing the significance of the points, comparing data with data, identifying gaps in the data" (p. 50). The aim during this process was not to force data to fit into predefined codes, but instead the codes used were shaped by the data (Charmaz, 2006).

Focused Coding.

All interview data were transcribed and loaded into Nvivo, a qualitative data analysis software, where each interview was coded with a variety of broad themes. During the coding process I also felt the need to engage with my data in a less digital method and thus the data from each code was printed and select portions of the transcripts were physically cut and organized on a large cork board under more specific themes. The grounded theory method involves an active process of working with the data (Charmaz, 2006). This less digital method allowed me to engage with the data in a different way where I was better able to compare and contrast the many parts of the interviews. I returned to Nvivo to recode the most relevant elements of the data and identify the quotes that best captured each theme. This focused coding process saw larger segments of data clarified using these more significant earlier codes (Charmaz, 2006).

Constant Comparison.

One of the key attributes of grounded theory is the constant comparative method (Hood, 2007). This method involves constantly comparing and contrasting data at all levels of analysis. (Holton, 2007) This process is iterative and helps the research by clarifying the elements of emergent categories. Further, it highlights whether existing categories are supported by the

data. Charmaz (2006) believes this leads to a greater conceptual understanding of the questions under study, while also providing a structure to aid in the understanding of the relationship within, and between, the participants' experiences.

Memo Writing.

Central to grounded theory research is the importance of memo writing during data analysis (Charmaz, 2006). While coding data, the researcher is asked to keep informal notes on any thoughts that come to mind while coding. These can include emerging categories, comparisons between data, and relationships between concepts and experiences. These memos act as an audit trail of the researcher's thought process and theory development. Further, they keep the researcher actively engaged in the analysis process, and can highlight their personal assumptions.

Reflexivity.

Reflexivity within this research refers to the process of reflecting critically on how I as the researcher may have influenced the inquiry. Charmaz (2006) feels it is important to present this information to allow readers the ability to assess the possible influences of the research on the study as a whole. My goal is to increase the transparency of the study, and highlight the inherent subjectivity involved in constructivist grounded theory. Thus, my positionality as a researcher, including my gender, ethnicity, and class, are important elements of this transparency. As an able-bodied white male, how I look ensures that the racial, sexual, or physical harassment that is a daily concern for many who need to exist within our cities are not a part of my lived experiences. How I look did help, I believe, build rapport with my interview participants as the majority of them were a similar age and class to me and the majority were the same ethnicity.

Another element to take into account is that I have lived without a personal vehicle for the last four years. I choose to walk, bike, and take public transit for the majority of my travel needs. This may have affected how I did my research and how I interpreted my findings. That said, I still have access to a vehicle through car-share and ride-share services, and by borrowing the personal vehicles of friends and family when need be. I have also spent most of my adult life as a car owner. I feel that I have a good understanding of the realities of both mobility lifestyles which positively contributes to this research.

It is also worth noting my pre-research assumptions about the planning profession and how planning functions within a given municipality. Before conducting my research, I assumed planners would be conversant about official city plans. I was, in essence, very naive about the process of planning and how many layers of bureaucracy and politics are inherent in the planning process. Given this naiveté, my research on planning culture may have missed aspects of the profession or misinterpreted elements of the data. That said, I firmly believe that there is value in providing an outside perspective on planning, and its various processes, that may be missed by those working from within the profession.

Primary Research Questions.

The primary research questions for this study have evolved over the course of my research. What started as a study into the future of autonomous vehicles in our cities, has expanded into a larger discussion on the future of Canadian urban mobility more generally. This shift was due in part to minimal planning work being done in regards to autonomous vehicles in most of the cities I researched. Further, I shifted my focus after a personal realization about the role of cars

in our cities regardless of who, or what, might be driving them in the future. The following questions reflect my updated focus:

(1) What are transportation and planning professionals in some of Canada's major cities doing to prepare for the future of urban mobility?

(2) What technologies, new and old, are driving change within these cities?

(3) How have the planning history, geographical realities, and cultural contexts of cities affected what planning professionals can achieve within each municipality?

(4) How does private industry factor into municipal planning decisions around mobility?

(5) What systemic changes are Canadian transportation and planning professionals contemplating that would encourage a more sustainable environmental future?

The following two chapters aim to answer these questions by highlighting findings from my interview data with planning professionals across Canada. Chapter 2 asks if planning professionals in Canada are planning for autonomous vehicle technology on Canadian streets. Chapter 3 looks more closely at the differences between the cities within my research, including the geographical limitations, cultural implications, and relevant historical planning decisions.

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Chapter 2

A Rearview Mirror to the Future:

City Planners, Autonomous Vehicles, and Sustainable Urban Mobility.

In 1903 the President of Michigan Savings Bank, when warning his client against an investment in Henry Ford's newly formed motor company, was quoted as saying, "The horse is here to stay but the automobile is only a novelty—a fad" (City of Huntington Woods, 2006, p.4). The initial $5,000 investment for one hundred shares came to be worth $12.5 million—the equivalent of more than $350 million today. While it might be easy to pick and choose woefully wrong predictions about technology from the past, uncertain forecasts are a necessity when preparing for the future. We are all reliant on some type of speculation to help guide us forward. On a personal level, if these predictions end up being wrong, we can usually adjust, recalibrate, and move on. However, many professions like urban planners trade in these types of predictions. Urban planners, for example, are asked to plan for a future that requires billions of dollars in infrastructure investment and the trust of millions of people living in urban environments around the world. These planners are always looking twenty to fifty years in the future for how cities will change and what shape our built environments will take. This paper will focus on how city planners in major Canadian cities are preparing for new transportation technologies including autonomous vehicles, increased privatization in transportation, and how sustainability is factoring into their decision making.

Urban Planning in Modern Times

Urban planning, in its modern context, started as a response to the chaos of the industrial age (Levy, 2017). These early planners wanted to provide residents with healthier

environments to live in at a time when increased pollution was causing countless health concerns. They aimed to introduce proper sanitation, alleviate congestion, and help cities recover from poorly constructed buildings. The 1920's brought thinkers like Le Corbusier, one of modernism's most famous architects, with his vision of *The Radiant City* (1967). This linear and modern city design of the future would eventually be used to build what is now commonly seen as inner city housing projects (Plunz & Jackson, 2016). Situationist architects in the 1950s used the experience of the people who lived in cities to flip the top-down structure of planning at the time on its head (Sadler, 1998). This approach gave new emphasis to public engagement and resident input. Like the roads they might have planned for, there have been a number of twists and turns in the planning profession since the early twentieth century. However, the goal of providing healthier environments for people living in cities has remained a constant.

Today, the work that city planners do is multifaceted and interdisciplinary. They provide a foundation for land development, community growth, mobility options and business activity. In this both technical and political process, planners create long term visions and policies that translate the priorities of residents and municipal leaders into tools for the creation of built communities. Cities across Canada have now declared a climate emergency which many hope will guide their city planning towards decisions that will increase sustainable choices. We have expected these planners to provide improved urban design and sustainability in our growing cities. We now look to these planners to lead the charge for cleaner and more livable cities during a time of climate change, peak oil and advances in technology which are making predictions about the future of cities seems harder than ever.

Making more sustainable choices, however, is not the only unknown these planning professionals must deal with. Planners are also having to navigate an increase in new technologies within transportation. In the last few years, private industry has taken up the slack left by often underfunded and neglected public transit providers. Companies offering ride and car share services like Uber, Lyft and Car2go have filled the gaps between owning a private vehicle and the provision of public transit. While these companies pitch their products as being revolutionary, they often fail to solve the real transportation issues that plague most major cities, and in some cases have even made them worse by introducing increased congestion (Fehr & Peers, 2018). That reality has not dissuaded some of the world's biggest companies from pouring billions into transportation technologies that some say will change everything. The brass ring many of these companies are reaching for is a fully autonomous car.

Driverless Cars: Hope for the Future?

It may seem like the driverless car is a new idea that we have never seen before. However, at the New York World's Fair in 1939 the public was first introduced to the idea of a car that drove itself (Patton, 2014). In the *Futurama* exhibit designed by Norman Bel Geddes and funded by General Motors, the public saw autonomous electric cars powered by circuits embedded in the road and controlled by radio waves – a vision that GM hoped would be reality within twenty years. Eighty years later, the hype surrounding the autonomous vehicle (AV) as an inevitable technology that will change transportation forever has yet to die down.

In recent years, major newspapers, magazines, and technology blogs have churned out near-daily articles that continue to promote driverless technology as a saviour for our cities. We are told that AVs will solve congestion (Brown, 2018), save lives (Marshall, 2017) and create more space for pedestrians (Budds, 2017). Multiple examples from reputable news sources

contain articles about the impending arrival of driverless technology. Headlines like "Autonomous vehicles are just around the corner" (Economist, 2018), "Autonomous driving is here, and it's going to change everything" (Hyatt, 2017), and "Self-driving Cars Are No Longer a Thing of the Future" (Harper, 2015) would have us believe we will be able to ditch our cars for a fleet of driverless taxis any day now. Huge companies are all jockeying for position as the leader of the driverless revolution. Google, and their AV development wing Waymo, have logged over five million miles of testing on public roads since 2010 (Ohnsman, 2018). General Motors has boasted about "the world's first mass-producible driverless car" (Reader, 2017, p.1). Auto giant Ford has claimed they will mass-produce a fully autonomous self-driving car without a steering wheel by 2021 (Lee, 2016). Tesla, and their eccentric CEO Elon Musk, have made waves again and again by making bold predictions about the deployment of full autonomy across most of their electric vehicles currently on the road—saying in 2017 that "we are two years away from sleeping in our cars." (Musk, 2017), and predicting that Tesla will have 1 million "robotaxis" on the road by 2020 (Kolodny, 2019). With billions already invested, this is a market that some estimate will see a tenfold increase to over $550 billion by 2026 (Allied Market Research, 2018). Despite the vast number of predictions written on the subject, AVs have yet to make their grand arrival.

More recently, however, the media have taken a drastically different tone. A new narrative has emerged that pumps the brakes on the imminent arrival of AV's. The New York Times recently declared, "Despite High Hopes, Self-Driving Cars Are 'Way in the Future'" (Boudette, 2019), Wired magazine has asked, "Are We There Yet? A Reality Check on Self-Driving Cars" (Davies & Marshall, 2019), and Forbes has said, "Why the Rush? Self-Driving Cars Still Have a Long Way To Go Before Safe Integration" (Lyon, 2019). It seems that, over

time, editors have developed a better eye for marketing campaigns that are trying to impersonate research and development timelines. Even the industry itself is beginning to realize it has been over ambitious. A board member at BMW was quoted as saying, “Everyone in the industry is becoming more and more nervous that they will waste billions of dollars.” (Somerville, 2018). Ford, and CEO Jim Hackett, just three years after claiming driverless cars would arrive by 2021, have admitted that they “overestimated the arrival of autonomous vehicles” (Reader, 2019). Clearly the road to full automation is fraught with speed bumps. However, that has yet to stop AVs appearing on the agenda at municipal council meetings in Canada’s major cities. While the media and industry seems to have cooled to the hype of driverless cars, are Canada's municipal planners caught up in the frenzied excitement of cars without a driver?

The Roadmap Thus Far

Technocentrism, and a general overreliance on technology to solve our cities’ problems, have influenced the prevailing theories of urban planning since the Model-T replaced the horse and buggy (Miciukiewicz & Vigar, 2012). As streets were being filled with horse manure and carcasses, the car was hailed as an environmental saviour. The dominant choice for most planners then was to design their cities to accommodate and benefit from the movement of automobiles above all else. These new technologies drastically changed the shape of the built environment. Once limited by how far one could travel on foot or by horse within a city, automobiles allowed cities to expand further and grow faster. Given they were no longer bound by the inflexibility of public transportation, the public fled to newly developed suburban neighbourhoods (Urry, 2004). This new mobility gave cities unparalleled accessibility and drove new levels of development and economic activity. However, unbeknownst to civic leaders at the time, this new technology would bring many negative consequences along with all its

possibilities. Years of urban sprawl and designing for cars have now left many cities struggling to deal with sustainability and health issues caused in a large part by traffic congestion, air pollution, traffic fatalities, Co2 emissions, and long unhealthy commutes (Harris, 2018).

The introduction of the car would not be the last time that municipalities were caught off guard by new technology in the transportation sphere. The sudden arrival of Uber, Lyft and other app-based ride-hailing services have put provincial and municipal governments in a difficult spot, and have caused a series of unforeseen problems for cities across North America (see Stolte, 2016; Meddah, 2016; & Owram, 2014). Shared micro-mobility options that provide realistic alternatives to multiple automobile journeys (Crowe, 2019), such as on-demand bike and e-scooter rentals, have brought a series of unanticipated problems to city streets such as the blocking of pedestrian sidewalks and encroachment onto roadways dominated by cars. Private companies entering into a previously public realm are a new issue for municipalities and their planners. As Legacy et al. point out, “This is the tension between the private sector’s ambition for creating new platforms for mobility centred around the commodification of the individual journey with transport planning that positions public transport... at the centre of public-purpose planning” (2019, p 86).

These lessons from the past should leave planners better equipped to anticipate future challenges of new technologies such as autonomous vehicles. However, planners will need to decide what role this technology might play in our society in order to understand the potential impacts of AVs on our cities (Litman, 2019). As automotive manufacturers and technology companies continue to push towards full autonomy, researchers have started to contemplate the potential positive and negative effects of this technology on the city. Improved traffic safety

is one area with great potential (Glaser et al. 2010; Kalra & Groves, 2017). Others believe that AVs will bring the end of private vehicle ownership allowing many shared vehicles, thus cutting down on GHG emissions (Firnkorn & Müller, 2015; The Economist, 2018). A reclamation of parking and road space could come to fruition if all goes according to plan (Burns, 2013; Zhang et al., 2015), leaving more space for parks and pedestrians. AVs may also be useful in solving what transit planners call *the first and last mile* problem (Moorthy et al., 2017), the term used for the difficult-to-service areas for public transit between a transit user's home and public transit (first mile), and public transit and their final destination (last mile).

One of the more divisive unresolved issues raised by the introduction of AVs is their impact on traffic congestion. On the one hand, some hope that because autonomous vehicles will communicate with one another, they will travel in closer proximity. This will, in turn, reduce congestion and Co2 emissions by increasing vehicle throughput and smoothing traffic flows (Stern et al., 2018). On the other hand, some researchers have argued that because AVs will allow for an ease of use that public transit may not be able to match, more people will opt for AVs for their entire journey, which will increase congestion overall (Fagnant & Kockelman, 2015). Further, congestion could increase as AVs circle the block rather than pay for parking while waiting for their next trip (Chase, 2014). The most realistic research conducted on a technology that is yet to be in wide use substituted chauffeurs to act as pseudo-driverless cars for people who would otherwise drive themselves. These chauffeured cars were to mimic potential life with a private autonomous vehicle. Over the course of the research these cars were sent to pick up packages, sent home instead of paying for parking, and instructed to circle the block to avoid a parking ticket. The result was a massive increase in vehicle miles traveled (VMT) of 83% over the course of the study (Harb et al. 2018).

The concerns about increased congestion and a lack of sustainability are not the only potential problems. Providing further incentive for urban sprawl is another concern brought up in the critical literature (Ewing et al., 2003; Hall, 2012), while concern over AVs shifting investment, and ridership, away from public transit systems is also a possibility (Lam et al., 2016; Levinson et al., 2016). AVs could also very well result in reducing mobility for pedestrians and cyclists, by further prioritizing the movement of the automobile above all else (Meeder et al., 2017). Finally, a reliance by governments on parking fees, speeding fines, vehicle registration, and fuel taxes could leave municipal coffers empty if AVs render those funding mechanisms obsolete (Freemark et al., 2019). At their root, all of these concerns suggest that AVs could bring more of the same—cities becoming further entrenched on the path dependency of the automobile, where the future of all mobility will continue to centre around the car.

The potential impacts of AVs on cities has been a popular topic of research for the last 20 years. What has received less focus over that time is if planning professionals themselves are working towards integrating AVs into their forecasts, and if so, how are they going about doing it. Thus far, only a few researchers have interviewed planning professionals about preparing for a future with AVs. Two studies (Guerra, 2016; Guerra & Morris, 2018) involved semi-structured interviews with planners and showed that public-sector planners in the United States are in a holding pattern caused by the uncertainty of what AVs might mean for cities. Legacy et al. (2019) interviewed public sector planners in Australia about the role that planning can play in identifying and shaping the AV future, corroborating the findings by Guerra and Morris (2018). Freemark et al. (2019) also conducted research with planning professionals about AVs preparedness using a survey sent to professionals from 120 U.S. cities. Their study

found that very few local governments have begun preparing for AVs, but those cities with larger populations and transportation budgets are more likely to be prepared. These studies found that planners recognized that AVs can be used as a means of strengthening transit systems as an alternative to the private car. However, until more information is available on how AVs will function, relevant policies are difficult to prepare. Hence, most cities are holding back on policy initiatives that could have any real impact—collectively adopting an attitude of “watch and wait” (Legacy et al., 2019).

The question of whether AV’s will be environmentally sustainable also remains unanswered. For example, in modelling the impacts of AVs, Wadud, MacKenzie, and Leiby (2016) found that AVs may plausibly reduce GHG emissions and energy use by nearly half compared to traditional cars, provided users share cars and policies limite zero occupancy vehicles. On the other hand, the research also found that AVs could also nearly double emissions should every one purchase their own AV and be allowed to avoid paying for parking by circling the block, for example. As Legacy et al. (2019) point out, the potential impacts of these changes are worthy of the attention of both the public and private entities currently shaping these networks. Even with a growing research agenda on AVs and their potential effects, there are still many unknowns. One major gap is the lack of research conducted in Canada that shows clearly if planning professionals are working to integrate AVs into planning efforts. Further, if they are not integrating this potential new technology, why is that? Research in Canada would be useful given the challenges its varied climate will introduce. As of yet, researchers have not delved into the question of how, and if, Canadian cities will see any sustainability improvements when AVs are used on northern roads.

Why We Drive

My thoughts on the future of urban transportation have been influenced by two theoretical perspectives – automobility and social practice theory – about the forces that tell us about why the car is so dominant in our everyday lives.

The term *automobility* is a shorthand for the car's dominant position in society as the main form of transportation, economic cornerstone, city shaper, and cultural icon. Sheller and Urry describe automobility as "a *machinic complex*[4] of manufactured objects, individual consumption, environmental resource use and dominant culture that generates a specific character of domination over almost all contemporary societies" (2003, p.115). Further research has been undertaken on the numerous issues that stem from automobility, such as suburban growth (see Batty et al., 2003; Kenyon, 2004), the steady decline of public transit systems (see Deka, 2002; Jacobs, 2004; Hynes, 2017), impacts on the environment (see Kay, 1998), and social exclusion and transport-related discrimination (see Hendersen, 2008; Sanchez, 2007; Preston & Rajé, 2007). It is through the lens of this systems approach to the automobile that it is possible to understand the true ramifications it has on the cities in which we live.

> Automobility divides workplaces from homes, so producing lengthy commutes into and across the city. It splits homes and business districts, undermining local retail outlets to which one might have walked or cycled, thereby eroding town centres, non-car pathways, and public spaces. It also separates homes and various kinds of leisure sites, which are often only available by motorized transport. (Urry, 2006, p.19).

Automobility favours and promotes car use through transportation and land use patterns, tax incentives, and planning policies while providing insufficient alternatives and sustainable

[4] Sheller and Urry (2003) borrow from the work of Deleuze and Guattari (1987) here to show the multiple connections, or *assemblages*, that are created through the system of automobility. The work of Deleuze and Guattari is often thought of as a set of tools - concepts that can be plugged into other concepts and made to work - an apt analogy for the modern automobile.

modes of transport such as public transport options, cycling infrastructure and walkability. This type of urban planning and design has historically been the norm. As Cervero et al. (2017) highlight in their book *Beyond Mobility*, most cities have invested heavily in both complex roadways, and underground rail systems. These investments have been primarily about moving as many people as possible to their destination as quickly and safely as possible. On its surface, this makes perfect sense. However, they continue, "the cumulative consequences of this nearly singular focus on expeditious movement have revealed themselves with passage of time, measured in smoggy air basins, sprawling suburbs, and—despite hundreds of billions of dollars in investments—a failure to stem traffic congestion." (Cervero et al., 2017, p.1). Thus, any attempts to shift mobility options within our cities away from the car are up against two difficult forces. First, this shift must navigate a physical infrastructure built specifically for the car over the last century. Second, this shift will undoubtedly be difficult to promote in cities with a planning and political culture steeped in automobility. Put simply, it is very hard for city decision-makers to imagine a city without the car.

Social Practice Theory provides a way of looking at driving behaviour from a perspective that sits somewhere between the individual taking a trip and the system that makes that trip the best choice. Driving can be seen as a social 'practice,' which Rechwitz describes as "a routinized type of behaviour which consists of several elements, interconnected to one other: forms of bodily activities, forms of mental activities, 'things' and their use, a background knowledge in the form of understanding, know-how, states of emotion and motivational knowledge" (2002, p.249). The theory of these social practices has been an interesting area of study for some time. The goal is to provide a different lens from which to look at how and why people perform certain practices and to uncover the full contexts in which these practices are

performed. Thinking about how we commute as a single piece of an embedded routine, the very existence of which requires the many other interconnected elements to exist, can be helpful in gaining a more well-rounded understanding of why people commute in the first place.

Researchers have applied social practice theory to understand various forms of behaviour, including pro-environmental behaviours (see Røpke, 2009; Warde, 2005; Shove & Walker, 2010). In this application, researchers are able to look at resource consumption, often framed as the result of individual choices, from new angles (Watson, 2012). The pattern of consumption of an individual's urban mobility choice and how they move through their city is of particular interest. This paper presents findings from a study asking planners how they are preparing for new technologies, including autonomous vehicles, in the midst of a time of increased need for more sustainable mobility choices.

Methods

My research consisted of in-depth semi-structured interviews with twenty-six planners in five different Canadian cities – Vancouver, Edmonton, Calgary, Winnipeg, and Toronto[5]. Participants were selected using both snowball sampling and direct recruitment. The participants for this study consisted of a mixed sample of men and women, who met the following criteria: (a) worked as a planning professional (transportation, urban, city, etc.); (b) worked in a decision-making role; (c) had at least three years experience in planning; and (d) worked as a city employee for the selected municipalities or as part of the regional planning bodies where applicable (Toronto and Vancouver). A breakdown of the interviews by city and gender is available in Table 2. The cities represented in the study were selected as a cross

[5] All research activities received approval from the University of Alberta Research Ethics Board.

section of major Canadian locations and with a minimum population size of 500,000 in mind. Further, I felt that due to their size, these larger cities were more likely than others to have planning professionals working on the future of urban transportation. Each participant was interviewed for between 45 and 60 minutes. Two interviews were conducted with two planners present during the same interview, and all but one interview were conducted in person. The bulk of the interview engaged the participants in a dialogue about their feelings towards various issues around the past, present, and future of planning and urban transportation using open-ended questions. Each question was followed up with further inquiries to more fully understand each answer.

Table 2
Breakdown on interview subjects by city and gender.

City	Men	Women	Total
Vancouver	5	2	7
Edmonton	1	3	4
Calgary	3	3	6
Winnipeg	3	0	3
Toronto	5	1	6
TOTAL	**17**	**9**	**26**

All interview data were transcribed and loaded into Nvivo, a qualitative data analysis software, where each interview was coded with a variety of broad themes. The data were printed out where I then cut and organized selected portions of the transcripts and organized them on a large cork board under more specific themes. This less digital method allowed me to engage with the data in a different way where I was better able to compare and contrast the many parts of the interviews. I returned to Nvivo to recode the most relevant elements of the

data and identify the quotes that best captured each theme. All codes used for the transcription process are available in the attached code book (Appendix C).

The primary research questions for this study have evolved over the course of my research. As these questions were first developing, I was excited about the seemingly endless possibilities of autonomous vehicles. I wanted to hear from planners about all the technological revolutions and how this technology was affecting urban planning. However, as I read and thought more about it, I began to see autonomous vehicles as simply a continuation of our cities' obsession with the private automobile wrapped in a shiny new package. What started as a study into the future of autonomous vehicles in our cities has expanded into a larger discussion on the future of Canadian urban mobility. This shift reflects the minimal planning work being done in regards to autonomous vehicles in most of the research cities selected and also the reality about the role of cars in our cities regardless of who, or what, might be driving them in the future. The following research questions reflect my revised focus:

(1) What are transportation and planning professionals in some of Canada's major cities doing to prepare for the future of urban mobility?

(2) What technologies, new and old, are driving change within these cities?

(3) How does private industry factor into municipal planning decisions around urban mobility?

(4) What systemic changes are Canadian transportation and planning professionals contemplating that would encourage a more sustainable environmental future?

Three main themes emerged from my research. First, AV's have not yet factored into city planning decisions in a meaningful way. Second, planners are concerned that AV's and privatization may dominate future planning decisions. Third, most planning decisions are not being made with sustainability as the main focus.

Findings

Riding the Break: Planners and Driverless Cars

If you look solely at the numerous articles written about AVs, most arguing how our cities will be changed for the better, you could assume that planning professionals in major Canadian cities are working enthusiastically to prepare for their imminent arrival. But while the hype from companies with a vested interest in the success of this technology dominated discussions in its early days, that excitement has yet to affect the day-to-day operations of municipal planners. Instead, the interview data reflected the findings by Freemark et al. (2019), revealing that most cities, and their planning teams, are in a holding pattern. One of the major reasons most cities don't have a dedicated team working on AVs is the fact that this technology presents too many unknowns for municipalities. Planners were unsure how AVs would affect their jobs and shape their city plans for the future. This is how a Vancouver planner spoke about the potential of AVs, and how there is still plenty of ambiguity around this new technology:

> *I would say that it is, even in my day-to-day work, it is very challenging to take the idea of automation as an actionable item. Like, what am I supposed to do differently today because of automation? Not totally clear, right? And so it's good that there is [theoretical] thinking about it. And I think there will be [planning] thinking about it, and there will be increasing experience with it.*
>
> - Vancouver Planner 1

Planners felt that a lot more time would be needed for the technology to mature and its effects to become actionable. Many were unsure if driverless cars would ever even come to fruition in a

meaningful way on city streets. While AVs might not be a part of their day-to-day thinking at this point in time, these planners did realize that new technologies in transportation could eventually force them to rethink their long-term plans. Another Vancouver planner expressed the difficulty they were having with autonomous vehicle technology specifically, and how rapid changes in urban transport will fit into more traditional planning processes:

> *I think the debate we constantly have is, how on earth are we reacting to what is a rapidly changing market and how on earth do we make these 40 year plans around these types of things. When we really don't know how autonomy is going to function.*
>
> - Vancouver Planner 4

Substantial uncertainty surrounding future technology was prevalent, which many planners felt would cause them to reexamine traditional planning approaches. These traditional approaches have, in the past, typically laid the groundwork for many years but may not allow for flexibility and reflexive thinking in the case of major societal changes. The potential changes caused by autonomous vehicles and other new transportation technologies are vast. Planning professionals in Canada, however, have been able to insulate themselves somewhat by adopting a ‘wait and see’ approach. This strategy has allowed them to observe how things play out in bigger cities before committing resources to planning for driverless cars. When asked specifically about how best to plan for AV’s in the future, a planner from Calgary mentioned looking towards bigger cities in the United States to gather information about potential outcomes:

> *I think in Canada we'll still be able to look to the States to see what they're doing. Because they're going to be out ahead of us. They just have better weather. You have places like Phoenix that are able to run these vehicles and operate without freak snowstorms.*
>
> - Calgary Planner 1

The strategy of looking to bigger cities also reflects of Freemark et al.'s (2019) findings that show larger cities are leading the way in research about the potential effects of AV on their transportation network. Taking on a strategy like this makes sense for smaller cities since bigger cities have larger budgets and are more likely to be affected sooner by new technologies. Canadian cities are no different as Toronto is providing early research on AV technology which may be relied on by smaller Canadian municipalities. Toronto is home to a dedicated team of six people working on AVs who recently released an *Autonomous Vehicles Tactical Plan* (City of Toronto, 2019). Beginning by developing partnerships with other divisions impacted by AV technology, the group's goal was to provide a path forward so the City of Toronto would be prepared for the arrival of AVs. Interestingly, the planners working on this potential future found inspiration in the past. Using history as their guide, a Toronto planner looked at the last major transportation technology to arrive:

> *One of the most enlightening exercises for us was to look back at the transition between the horse drawn carriage and the automobile. It really dispelled some of our assumptions that we didn't even know we had and taught us how the future might come to play. ... I would say there were a lot of unintended consequences from early policy adoption. ... We want to think about what the consequences of decisions might be so we can avoid creating unintended ones in the future.*
>
> - Toronto Planner 2

These lessons from the past have already given some planners a window into what may take place in the future as most planners were working with certain assumptions (e.g. public transit will not disappear) about these technologies and their effects on cities. While these assumptions may not yet have found their way into future plans, they provide interesting insights into what is likely to be planned for in subsequent years.

Planners from both Vancouver and Calgary alluded to their thinking around potential changes in transit offerings.

> *I don't think transit will disappear, I think transit's role is going to significantly shift and change. I think low-ridership services will disappear and will be replaced through different technology solutions.*
>
> - Vancouver Planner 5

> *I think a lot of people jump to, 'we're not gonna have any transit anymore'. The intensity of people moved will never be replaced by autonomous vehicles. But feeding into transit is a huge opportunity.*
>
> - Calgary Planner 3

While it may be too early for a technology like driverless cars to have a meaningful impact on city planning, these types of statements indicate that these technologies are already causing a shift in a planners' thought processes about the future. During my conversations, it often felt as though planners were concerned that a focus on AVs would derail the plans they already had developed. This concern is well-placed considering the number of new entrants into a previously public-led transit system, such as ride-share, car-shares, e-scooters and bike-share companies. Planners are keeping their focus on the mass transit options and have not bought into the hype of AVs thus far.

Slowing the Role of Technology and Privatization

While AVs have been the most hyped of the potential new transportation technologies, there have been many other technologies led by private companies that have hit the streets in recent years. Rideshare, car share, e-scooter and bike share have all forced cities to react to new ways of people getting around. Many of these options have been helpful for residents of

cities with limited public transit or alternate mobility options. That said, the planners I interviewed felt strongly that their planning decisions should not be driven by the latest technology. A planner who was working directly on the integration of AV technology into the current system, they wanted to ensure that the proper policies were in place well before the technology dictated their planning direction:

> *"What we did was we realized we didn't want the technology to drive policy, we thought policies should drive the technology. Our city council, our community has already built a vision for what they want to run or to become and it's agnostic to technology. So we want to be greener, we want to have a healthier city, we want to have a strong economy, we want to have a more equal and fair city."*
> - Toronto Planner 2

In this planning group, the goal of getting out ahead of new technology was the main impetus for working on AVs early in their development. Planners were concerned, however, about a primary focus on technology. For example, an Edmonton planner highlighted their "people first" approach to planning that should remain as the highest priority, regardless of technological advancement:

> *The solution is to make great cities and to force the tech to serve the people instead of forcing the people to serve the tech… The way technology or huge trends emerge is that we change and it changes together. It's not like we're going to wake up one morning in a year or two and autonomous vehicles will be causing chaos; it will slowly integrate itself.*
> - Edmonton Planner 4

Commitment to an approach that puts people first, regardless of technology, speaks to the fear many planners had about the arrival of AVs and new transportation technology. Planners felt they could be forced to focus on the newest technologies as private entities and political means push them in that direction at the detriment to people-first planning. Planners feel that, given limited municipal resources, a focus on technology might come at the expense of

existing transportation modes that have proven effective but which many cities have yet to use to their full potential. When asked if this technocentric approach was an issue within their municipality, an Edmonton planner voiced her concern about over reliance on technology to solve Edmonton's mobility problems:

> *I think that we have to be careful when we're thinking about approaches and when we're thinking about technologies - that really what we're talking about is how are people getting from place to place. […] This comes back to that hype. There's a lot of, "Okay, this is the thing," and whether it be the autonomous vehicle or whether it be the LRT… It's really about how are we making it easier, more convenient, for people to get from one place to the other? My biggest fear with this is that we're going to actually focus more on the technology and assume that the technology will solve the problem, rather than the approach.*
> - Edmonton Planner 1

The potential for over reliance on new technology has led to internal discussions amongst planners about 'new mobility' versus 'old mobility.' The planners I interviewed felt strongly that more traditional modes of transportation, such as biking, walking, bus and light rail, provided far more possibility for an equitable and efficient mobility future when used to their full potential. They felt that, while the current crop of on-demand technology has offered increased convenience for many trips, it cannot provide the same convenience on a scale that would be useful for the masses. However, the reality of the situation for many planners is that their focus is often determined by municipal council directives and budget decisions. Some in the planning community are concerned that they may be directed to focus on what might work in the future and not what has been proven to work. When asked about the inherent risks of focusing on new technology over proven old technology, a Vancouver planner spoke about the concerns of new technologies in the transportation sphere:

> *I would say that there's a danger [...] that those become almost distractions or cop-outs towards what remain very basic, fundamental transportation planning principles like mass transit […] It has a role to play, and we don't know exactly*

where that will go or what it will look like. There's different futures that people can kind of imagine, and hopefully, we would get ahead of some of those because they're not all pleasant.

- Vancouver Planner 2

Many planners spoke specifically about the fundamentals of transportation that aim to improve the built environment and social connection for everyone, fundamentals that are at risk of being upended as more private entities enter the transportation business. Some planners had major concerns about these private entities if cities were to rely too heavily on their services as part of their overall transportation offerings. Those interviewed had major concerns about providing more opportunities to these private companies by way of federal, provincial, and municipal policies. A Toronto planner was blunt in their assertion about these for-profit companies and how governments need to act soon in order to keep them in check:

I think the private mobility providers talk about caring, but in the end they're for-profit companies. They'll do what they need to do to get other governments on board. It is imperative that these governments become aware, investigating this issue, so that they can start to tell these transportation network companies how to behave.

- Toronto Planner 3

While some planners may have been worried about the influence of private transportation technologies, that has not stopped city leaders from engaging many private companies in partnerships that provide new mobility options for residents. These planners feel they are on the front lines in a battle between public good and private gain. A planner from Edmonton, for example, highlighted that their municipality is sitting back and will allow private industry developing AVs to shape the potential future of urban mobility.

I feel like the city, right now, is wanting to see how the private sector leads this and how as a city we need to prepare for it. That's the position I think that the city is in right now.

- Edmonton Planner 3

Edmonton was not the only municipality welcoming private industry into its urban mobility planning. In the midst of an economic downturn, Calgary has seemingly embraced private industry, seeing it as an economic gain for the region. The city has attempted to use municipal connections with technology industry leaders to diversify their economy and find potential for future collaborative relationships:

> *Calgary tends to take a bit of a different approach about it. "Okay. So what can we partner with industry on to try and move this forward and incentivize it?"*
> - Calgary Planner 2

Regardless of the level of partnership between municipalities and private companies, planners were keenly aware of the need to get out ahead of these technologies. They aimed to do this by developing policies that guide private industry and the use of new technologies onto a path that improves mobility for everyone and to avoid a path that may interfere with that goal. As the planners I interviewed see it, providing mobility options beyond the private automobile is an important future step for city planners.

Sustainability in the Backseat

Another focus of my interview questions was the role of sustainability within a planning professionals' decision-making. This topic was introduced by talking about GHG emissions specifically, and the concept of sustainable transportation more generally. Transportation is the second leading cause of greenhouse gas emissions in Canada surpassed only by the production of oil and gas (Government of Canada, 2019). Planning for more sustainable mobility options within our major cities could have a huge effect on our country's overall emissions. However, even with the vast opportunity transportation planning has to make a measurable

difference, planners in all but one of the five cities did not consider sustainability to be a primary reason for making particular planning decisions. Many planners understood how their decisions could impact the environment, yet it was rarely, if ever, the determining factor. When asked if greenhouse gas emissions and other transportation-related pollution was taken into account when making decisions, a planner from Winnipeg was blunt in their assessment of how much this issue affects their city's planning decisions:

> *It's a back burner issue right now, but it's sort of one of those things where it comes up from time to time [...] We're a winter city. We have to spend money on fuel. We have to stay alive. So things like emissions are sort of not that important to us. And so, I think it's one of those things where just on the list of all the things they're worried about, it's not really top of mind right now. Still it could be at any point. It's just, there's a lot of other things all competing for people's interest.*
>
> - Winnipeg Planner 3

Planners in other cities were slightly more optimistic about their focus on sustainability, saying it was certainly a factor that was taken into account in decision making, but they fell short of seeing it as a primary reason to change planning behaviour. In Toronto, for example, two different planners identified the need to keep sustainability on the forefront of planning decision-making, but admitted that this was not often the case.

> *I wouldn't ever say that the environmental decision, or the environmental impact is driving the decision. But it is incorporated in every decision [...] all of our decision making frameworks are multidimensional, they're not solely based on the number of people moved or environmental reduction. But the reduction in vehicle kilometers traveled, which impacts the GHGs in particular that are released, is a factor in all of our decision making frameworks, so it does show up in decisions for transit, it does show up in decisions for taking down the Gardiner[6]. Does it drive any of those decisions? I wouldn't say it's a driver, but it's there.*
>
> - Toronto Planner 4

[6] The Gardiner Expressway dominates much of the waterfront in downtown Toronto. Multiple efforts have been made to tear it down. Most recently (2019), Toronto City Council voted narrowly in favour of repairing the expressway instead of taking down a portion to open more space on the waterfront. This decision went against the recommendations of the planning department and the Chief Planner at the time.

> *I think the notion of greenhouse gases has been really around putting more people, helping put more people on public transit, as much as possible. But otherwise, we haven't been really guided or governed, strictly, by greenhouse gases.*
>
> - Toronto Planner 1

Tackling emissions caused by transportation is more than an individual effort that a single planner can undertake. Planning professionals require support and direction from civic and provincial leaders. While many cities across North America have voted to declare a 'Climate Emergency', it can often be politically impossible for these municipalities to cancel projects that go against that declaration, such as the widening of freeways or allowing more development on the sprawling edges of cities. When asked about the need for political will to tackle these issues a Toronto planner identified this difficult reality, especially in a province with current leaders who do not see value in fighting climate change:

> *You say, if we're serious about the environment, then the transportation sector has to be serious about reducing emissions. Unfortunately, Ontario may be not that serious about the environment right now. What's being done? I think people care. But will we get the policies and funding to support things we need to do? I don't know.*
>
> - Toronto Planner 3

The only city in which sustainability was a leading factor in planning decisions was Vancouver. Often touted as the gold standard for progressive transportation in North America, Vancouver has high transit ridership and dense urban centres. For example, Vancouver's Translink network had over 437 million boardings in 2018 on its many buses and light rail skytrains (Translink, 2018). In fact according to the City of Vancouver, walking, biking and transit accounts for more than 52% of all recorded trips in the city (City of Vancouver, 2019). The Vancouver urban region also has a culture of more environmental awareness than most places

in Canada which can help gain political traction for decisions that may be unpopular in other places. When asked why this culture might exist, one Vancouver planner I spoke with laid out their theory:

> *I think this region is interested in the environment in a way that other places aren't [...]It seems like everyone's an environmentalist in Vancouver. It's hard to find a non-environmentalist [...] A lot of people get out into nature here because it's quite pretty and so you hike or kayak or get in a boat, something like that, and I think that's part of it. You see it and you just fall in love with it and then you don't want to wreck it [...] But then there's also the presence of the mountains, in their closeness. I also think that although it seems like a small thing, I think it says, 'Nature's bigger than us,'*
> - Vancouver Planner 4

In Vancouver, this culture of sustainability is also one of the reasons that the region's declaration of a 'Climate Emergency' has seen the city truly push for a more sustainable future, with one planner describing it as a 'doubling down' on work to mitigate climate change across the municipality. Other cities are yet to make the same declaration, but planners in them recognize that there are more sustainable choices, even when faced with economic and political challenges. All the planners I spoke with were optimistic for the future of transportation and city building. As one Edmonton planner put it:

> *"We can become greener as we grow [...] growth can be the impetus for the change we want to see."*
> - Edmonton Planner 4

A Rearview Mirror to The Future

These interviews suggest that, despite the ongoing media attention paid to AVs, the majority of the planners in Canada are not working to integrate driverless cars into their planning

decisions. In fact, planners were mostly worried about the implications AV's could have on urban transportation because more private companies were entering the urban mobility marketplace. Furthermore, the planning work of those interviewed has yet to be truly influenced by sustainable choices as a primary goal for decision making.

These findings provide a unique Canadian perspective that corroborates previous research (Guerra, 2016) showing smaller municipalities rely on planners from larger cities to lead the way. Canadian planners find themselves in a similar holding pattern. To those with a vested interest in the driverless car, a lack of momentum in planning for AVs may be an unfortunate discovery. For others, this finding can be seen as a validation that the marketing and public relations of new technologies will not easily derail planning professionals from following established techniques for an equitable mobility system within our cities. Further, planners' concerns about private entities having an increased role in a city's' mobility system demonstrates their commitment to ensuring equity and fairness by keeping the 'public' in public transit. The lack of emphasis on sustainability within planning decisions likely reflects a general population that has yet to fully grasp the necessity of choosing more sustainable modes of mobility and more sustainable life choices overall. Planners are guided by the political goals of their municipal leaders, and have thus had little need to make planning decisions through the lens of sustainability. While the planners I interviewed think about sustainability, others (municipal leaders and the public) e need to be involved in city building to make sustainability a primary reason for decision making.

The theoretical frameworks I worked with are helpful in interpreting these findings since they show the routines of city planning being shaped by a system of automobility. Social

practice theories are focused on how our daily practices become routine, stay habitual, and sometimes change over time (Shove et al., 2012). A practice theory lens on municipal planning can shine light on why behavioural change can be difficult to bring about for both residents of a city and for the planners building for the future. Shove et al. (2012) group the elements of practices into three categories - ‘materials’, ‘competences’ and ‘meanings’. The ‘materials’ of a city for planners are the physical structures already in place (roads, bridges, freeways) as well as the environments in which the city is situated (weather, topography, size) (Larsen, 2017). The ‘competences’ of a city planning department and civic leaders are the skill, knowledge, and techniques they employ in city building. The ‘meanings’ within a municipal planning context are the “symbolic meanings, ideas and aspirations” (Shove et al., 2012, p.14) attached to specific practices within the larger context of a city. Each of these elements of the city planning practice therefore also affect the practices of residents within these cities.

Viewing a city as a system of automobility gives us a glimpse into why these practices exist for planners, residents and civic leaders. The culture of city building has prioritized the planning of cities for the private automobile. While each city has its own relationship with the car, its domination of our North American urban landscape is undeniable. Research on automobility has covered many physical outcomes of this system (e.g., suburban growth, decline of public transit, environmental impacts, transport-related discrimination). However, using this framework for my research shows how the system creates a self-perpetuating cycle by including those working to plan the very cities that create these physical outcomes. As planners work within this system, trying to create more sustainable and equitable cities, they are pushed by elements of automobility to continue planning in the same way as they always have.

They are also guided by city leaders whose routine practices of city building are themselves influenced by the system of automobility.

When these theoretical perspectives are taken together, they invite questions that can help reveal specific elements of a municipal planning culture. For example; What ‘materials’ are already in place to allow people to easily bike, walk, take public transit? Do the planning professionals and civic leaders have the ‘competencies’ to build a city that allows for less car domination? Can the ‘meanings’ in a certain city be changed enough by planners that living an unsustainable lifestyle and choosing unsustainable mobility becomes a thing of the past? In effect, city planners are harbingers of future urban practices. If their cities will allow for it, these planners could usher in more sustainable urban practices by building their cities with a new approach in mind.

Conclusion

While this work builds on existing research about planners and how much they are incorporating AVs into their work, it also highlights just how difficult a job planners have laying the groundwork for the future of cities. City planning is often a misunderstood profession. As residents of a city we might curse city planners when a crosswalk is nowhere to be seen, a bike lane suddenly ends, or a destination is too hard to find. But planners are only one of the numerous elements of how a city is designed, built and maintained. The planners I spoke with understand the processes they are part of and have tried hard to push for spaces and places that work for everyone. However, their best is not always enough. I would argue that most cities prioritize economic gain, unchecked growth, and civic bragging rights over a fair and equitable city for all residents. While the interviewed planners are keeping their eyes on the horizon as

new technology enters the transportation market, city leaders are often told by private companies that these new technologies will make traditional transit offerings obsolete. Planners with their strong understanding of the fundamentals of public transportation may disagree. That does not seem to stop municipalities from ignoring what has worked for other cities and instead focusing on the newest technology. In the midst of this transportation technology upheaval, planners must continue to emphasize to municipal governments that they still have old-fashioned but, nevertheless, effective tools at their disposal. With low capital cost, flexibility, and space efficiency, the humble bus remains one of the best options for cities hoping to move people quickly. Further, under the right conditions, light rail transit and subway lines can transport more people in less time than any road.

A potential tug-of-war over resources between “new” and “old” mobility puts our cities at risk of missing opportunities for better transit using the resources already in place. If cities begin to move away from proven modes of transportation, they are at risk of making the same mistakes made over a hundred years ago during the first mobility revolution. While buses and light rail transit may not be as exciting as cars driven by robots, and do not have the marketing budgets of the world’s biggest high-tech companies, their effectiveness is undeniable when properly supported (Transportation Research Board, 2013). Planners should also continue to push for the bikeability and walkability of urban neighbourhoods. The core tenet of these “old-tech” modes of transportation has remained the same—move as many people as you can, using the least amount of space possible.

Planning is an inherently political process, and that means that these professionals will need to play the game of politics in order to truly build the cities they envision. Those working in

urban planning should continue to engage with the public, businesses and civic leaders while thinking also perhaps about running for their own municipal council. Tacit involvement in the political process should only be the tip of the iceberg for these professionals. Planners will also need to ramp up their efforts to push for sustainable transportation options to help in the fight against climate change. While lip service is paid to a municipality's focus on sustainability, these words ring hollow when the civic leaders are unwilling to make tough decisions in the face of a climate emergency. City councils will continue to widen roads, prioritize driving, and allow urban sprawl if planners and the residents of these cities do nothing to push back.

This paper provides insight into how planners are preparing for new transportation technologies, increased privatization in transportation, and how sustainability is factoring into their decision making from a Canadian perspective. It also highlights the concern these urban planning professionals have about the encroaching efforts of private business to enter the public transportation sphere. Further, it identifies the need for a renewed effort around sustainable transportation choices in order to move this important conversation to the forefront on planning and municipal decision making.

Further research could involve a quantitative survey of planning professionals across Canada that collects a wider sample of responses to similar questions in this study. Case study research on this topic could focus on planning, cultural, and geographical differences between cities and how those elements have influenced the transportation planning of specific cities. Research that interviews politicians about their vision of the future in terms of autonomous vehicles and urban transportation would also provide valuable insight into municipal decision

making. Finally, further research into the effects of privatisation and private companies on city planning outcomes could help cities and their planners better handle these issues in the future.

The past is our best guide for the future, and as planners lay out the next forty to fifty years for our cities, this should not be forgotten. New technology can be exciting. A new phone with a better camera and more storage has become a rite of passage in the same way a new car shows status and prestige. However, the future of all aspects of our cities does not necessarily need to be a shinier version of the past. There are effective ways to improve mobility in our cities such as mass transit, walkability and bikeability initiatives, and denser urban forms. It will be up to planners, municipal leaders, and residents to ensure that the future of urban transportation takes a people-first approach that benefits everyone.

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Chapter 3
Automobility and Social Practice:
What's Driving Municipal Planning Culture in Major Canadian Cities?

We all have very similar issues and problems, but we all solve them in very different ways. ...through different technical ways, but also our political structures and our oversight, and the public's desire is a little bit different in each particular region.
- Vancouver Planner

The process of planning a city is a bit like building a plane in mid-flight. Many pieces need to be brought together to create something coherent while the world below whips by. These acts of improvisation are especially emblematic of how cities used to be created. The organic growth of spontaneous layering of new over old is how city building worked for most of human history (Morris, 2013). In the early 20th century rules and regulations began to dictate the physical forms of cities and determine how they should look (Crane & Weber, 2012). These rules led to the occupation we now call urban planner. This paper will explore some of the history and culture of planning in five major Canadian cities using secondary sources as well as interview data from planning professions from these cities.

Urban planning, in its modern context, started as a response to the chaos of the industrial age (Corburn, 2012). Early planners wanted to provide residents with healthier environments to live in at a time when increased pollution was causing countless health concerns. City builders aimed to introduce proper sanitation, alleviate congestion, and help cities deal with poorly constructed buildings. Since its inception, planning has gone through many paradigm shifts that have influenced the built form of cities. From *The Garden City Movement* of Ebenezer Howard (1946) and the Modernist Ideas in the *Radiant City* of Le

Corbusier (1967) to New Urbanism and a fresh focus on sustainable development, the influences of earlier ages of planning can be seen in many cities around the world.

There exists, however, a major difference between cities that emerged prior to the invention of the private automobile and those that were built after. The automobile had a major influence on many official planning documents in North American cities was the private automobile. As veterans returned home from World War II (1945-1946) and looked to start families, cities began to construct a vast stock of housing. A pressing demand for suburban housing already existed as city centres and older neighbourhoods became stereotyped as locations for high crime and violence. The suburban housing boom was a visible symbol of post-war Canada, and the automobile made a suburban lifestyle possible as long commutes to the city centre became more common. Zoning decisions in some cities strengthened car dependency by aiming to separate commercial properties from residential areas (Buehler, 2014). This type of decision often meant a local grocery store was not within walking distance of a person's home and any food needs had to be satisfied by a drive to the nearest commercial zone.

As the demand for more road capacity and parking grew, car-first city building created a cycle that continued to perpetuate itself. Cities were forced to add large roads to many parts of the once leafy suburbs, turning them into car-dependent areas often devoid of the very green space for which residents left the city core. Even today, more than 80 per cent of the population in large Canadian cities live in suburbs (Gordon et al. 2018). Despite attempts to increase density,the vast majority of people are living on the edges of the city boundaries. “Auto suburbs”, areas where most people need to commute by car, continue to be developed and

account for the vast majority of urban growth in Canada over most of the last decade (Gordon et al. 2018).

Clearly, the automobile era of planning came to dominate the physical forms of larger Canadian cities. However, the physical form of our cities was not the only element that was cemented into place. Car culture has parked itself firmly in most of Canadian life. This is evident by the fact we have nearly double the number of private vehicles than households (Statistics Canada, 2018), and that in some cities a trip by transit can take more than twice as long as the same trip in a car (Statistics Canada, 2010). For many Canadians, cars are not only a necessity but an icon of freedom and status. While much about the urban planning profession has changed, cities are still defined and shaped by their own unique municipal cultures. I contend that for most Canadian cities, that municipal culture is driven by the automobile.

My research interests began with a more general exploration of the opinions and occupational goals of Canadian municipal planning professionals in Vancouver, Edmonton, Calgary, Winnipeg and Toronto. I wanted to know how they were preparing for the future of urban mobility and the potential for new technologies like autonomous vehicles (AVs). My interview questions were created to explore different modes of transportation and how planners were preparing for new technologies. However, due to the semi-structured nature of my interviews, our conversations would inevitably drift into a discussion of the nuances of the city in question. Over the course of my interviews I came to understand that each city had a unique planning culture all to its own. Some of the cultures allowed for bold, progressive transportation ideas, while others would see planners not even bother putting forward progressive ideas due to the potential for political and resident pushback. It is these planning culture differences that I will

explore in this paper. During my conversations I noticed municipal differences in three main areas: (1) culture and politics of the region; (2) geographical characteristics of each city; and (3) planning history within each city or region. Using my interview data, as well as historical and geographical data for each city, this paper highlights these differences and similarities. But first I will outline the analytical frameworks that have shaped my thinking about this topic.

What Drives Planning Culture?

Each city has a feeling that is uniquely its own. Walking through the streets of an unfamiliar city we find our senses being put to work as we encounter new smells, hear new noises, and see new structures with each passing block. Even cities in the same country can feel vastly different from each other, especially in a country as large as Canada. To live and work in these Canadian cities means understanding their unique culture, peculiarities, and customs, as well as their history because together they unknowingly shape the physical forms of cities. As Schein points out, “the most intriguing aspect of culture as a concept is that it points to the phenomena that are below the surface, that are powerful in their impact but invisible and to a considerable degree unconscious” (2010, p.14). Previously unwritten rules, however, also become written when the culture of a city determines how it is to be laid out, planned and organized. As a result, a culture of planning is just as unique as the sights, sounds and smells of the cities themselves.

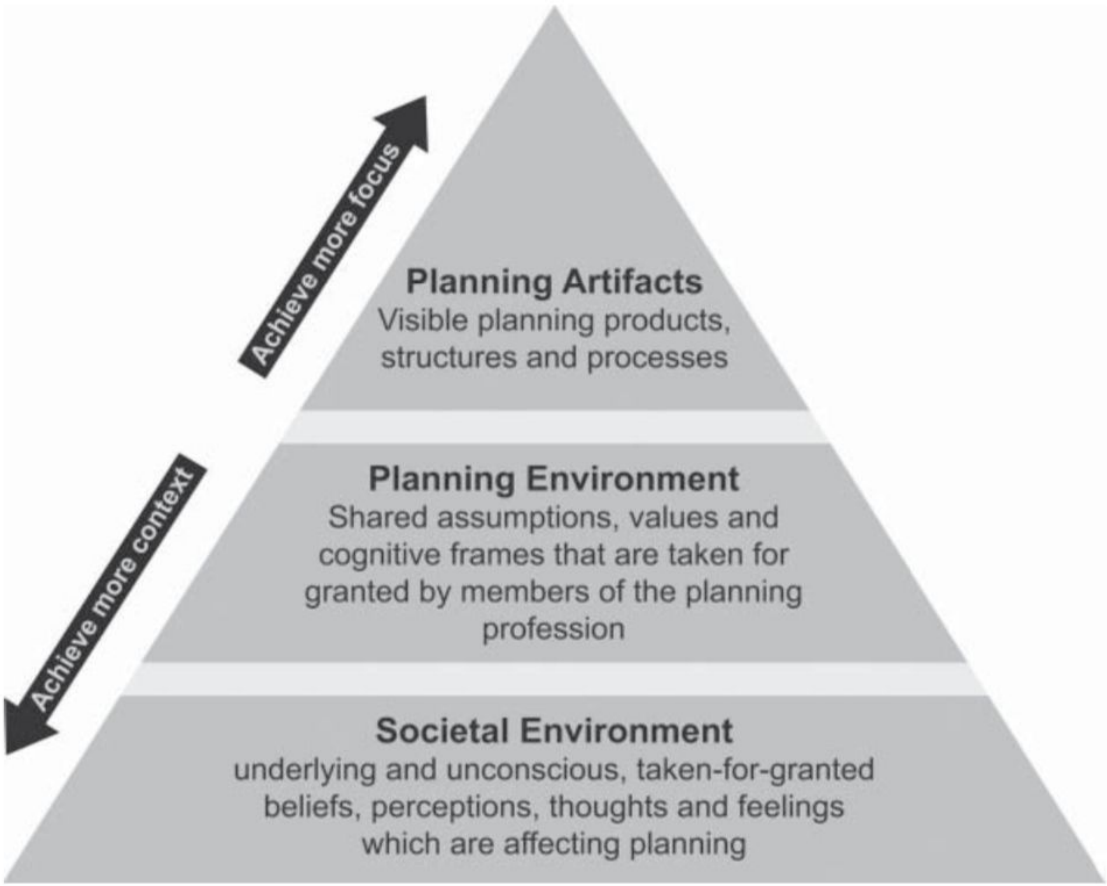
The culture of planning, like the word ‘culture’ itself, can be difficult to define. Planning cultures have been defined by Sanyal as: “… the collective ethos and dominant attitudes of planners regarding the appropriate role of the state, market forces, and civil society in influencing social outcomes” (2005 p.114). However, Sanyal’s definition of planning fails to take

into account the numerous elements of a planning culture that exist outside the city planner specifically; the cultural elements of the city residents, politicians, and history that get no specific mention in his definition. Even if this definition fails to capture all elements of a planning culture, it helped develop the view that planning was a “culturally contingent form of practice“ (Friedmann, 2012. p.96).

While early definitions of planning culture help to clarify the point of departure for my analysis, a broader scale is needed. For that, I look to the Culturized Planning Model (Figure 1) developed by Frank Othengrafen (2010). Built for a European planning context, his model goes beyond describing the activity of planning professionals and additionally encompasses not only a broad range of professions that work to shape the built environment, but also societal elements of a particular culture. A wider focus takes into consideration the outside forces that are included in many planning activities, such as elected officials, the media, residents and community groups as well as underlying perceptions and beliefs. These elements are necessary as they each have a unique effect on how city building happens in a particular municipality. Othengrafen’s model works particularly well for my research as it provides an opportunity to look at planning in these major Canadian cities through a cultural lens. He even highlights the importance of a focus on the variations in local planning cultures which he believes has taken a backseat to the work emphasizing cultural characteristics on a national scale (Othengrafen & Reimer, 2013).

Othengrafen is careful to position his model not as a theory, but as an analytical tool to help sensitize research to the cultural elements of planning. The model is described as an ‘open system’ which offers a structured inventory of cultural influences on spatial planning. Consisting

of "*shared meanings* conceptualised in the basic philosophy of life and values among a group of people, this planning model uses an anthropological understanding of culture and of the way in which these shared meanings are visualised or manifested in people's social interactions, as well as in the results of those interactions" (Othengrafen & Reimer, 2013, p. 1272). The culturised planning model supports research into a wide range of cultural components including: attitudes, habits, traditions, emotions, meanings, practices, relations between individuals, social-economic status, and social norms.



(Figure 1. Culturized Planning Model, from Othengrafen, 2010. p.92)

Living Life Through a Windshield

Given the extent that cars dominate our culture and the way they have shaped our cities over the last hundred years, it is useful to review the literature about how the automobile came to be such a force. My thinking is influenced by a theoretical perspective developed by sociologist of mobility John Urry. His writing on *Automobility* (2004) provides a wide lens from which to look at cars more generally. The term *automobility* is a shorthand for the car's dominant position as society's main form of transportation, economic cornerstone, city shaper, and cultural icon. The numerous problems that stem from automobility have been topics of past research. Issues such as excessive suburban growth (see Batty et al., 2003; Kenyon, 2004), the steady decline of public transit systems (see Deka, 2002; Jacobs, 2004; Hynes, 2017), negative impacts on the environment (see Kay, 1998), and social exclusion and transport-related discrimination (see Hendersen, 2006; Sanchez, 2007; Preston & Rajé, 2007; Lucas, 2012) have all been explored. Through the lens of a systems approach to the automobile, it is possible to better understand its complications for the cities in which we live.

> "Automobility divides workplaces from homes, so producing lengthy commutes into and across the city. It splits homes and business districts, undermining local retail outlets to which one might have walked or cycled, thereby eroding town centres, non-car pathways, and public spaces. It also separates homes and various kinds of leisure sites, which are often only available by motorized transport." (Urry, 2006. p.19).

Through land use patterns, tax incentives, and transportation policies, automobility favours and promotes car use. This, in conjunction with insufficient alternatives to sustainable modes of transport such as public transport options, cycling, and pedestrian friendly infrastructure, car dominance continues. Any attempts to shift mobility options within our cities away from the car are stuck between two prevalent obstacles. First, any shift in mobility hierarchy must navigate a physical infrastructure built specifically for the car over the last century. Second, any shift will

undoubtedly be difficult to promote in cities with a planning and political culture steeped in automobility. Put simply, it is very hard for city decision makers to envision a city not built around the car. I believe that the five cities I visited for my research are embedded in this system of automobility which has been one common factor, despite the unique cultural differences in each municipality.

Methods

Interviews. My research consisted of twenty six in-depth semi-structured interviews with planners in five Canadian cities: Vancouver, Edmonton, Calgary, Winnipeg, and Toronto[7]. Participants were selected using direct recruitment and snowball sampling. The participants consisted of a mixed sample of men and women, who met the following criteria: (a) worked as a planning professional (e.g., transportation, urban, city); (b) worked in a decision-making role; (c) had at least three years experience in planning; and (d) worked as a city employee for the selected municipalities or as part of the regional planning bodies where applicable (Toronto and Vancouver). Any potential interviews outside of this inclusion criteria were not interviewed. A breakdown of interviews by city and gender is available in Table 3. The cities represented in the study were selected as a cross section of major Canadian locations. Each participant was interviewed for about an hour. Two interviews were conducted with two planners present during the same interview, and all but one interview was conducted in person. The bulk of the interview engaged the participants in a dialogue about their thoughts towards various issues around the past, present, and future of planning and urban transportation using semi-structured questions. Each question was followed up with further inquiries to more fully understand each answer. It should be noted that I did not explicitly aim to talk about the culture of planning and historic

[7] All research activities received approval from the University of Alberta Research Ethics Board.

planning decisions in my interviews. However, these topics were consistently brought up unprompted by the interviewees.

Table 3
Breakdown on interview subjects by city and gender.

City	Men	Women	Total
Vancouver	5	2	7
Edmonton	1	3	4
Calgary	3	3	6
Winnipeg	3	0	3
Toronto	5	1	6
TOTAL	**17**	**9**	**26**

Data Analysis. All interview data were transcribed and loaded into Nvivo, a qualitative data analysis software, where each interview was coded with a variety of broad themes. The data were printed out where I then cut and organized selected portions of the transcripts and organized them on a large cork board under more specific themes. This less digital method allowed me to engage with the data in a different way where I was better able to compare and contrast the many parts of the interviews. I returned to Nvivo to recode the most relevant elements of the data and identify the quotes that best captured each theme. All codes used for the transcription process are available in the attached code book (Appendix C).

Primary Research Question. As I set about exploring the future of urban mobility and autonomous vehicle technology in Canada by speaking to planners across the country, I was struck by the cultural differences between each city. My interest was, at first, limited to the introduction of potential new modes of transportation in each municipality. However, that interest

soon evolved and had me questioning how the cultural elements of cities affected *all* aspects of a municipality's planning. On one hand, the planners I spoke with touched on the limitations of their planning activity due to the political, societal, and structural elements already in place. On the other hand, some planners spoke openly about the potential for progressive change to their cities with help from government and private industry. I wanted to more fully understand how different cities in the same country could be drastically different in their planning implementation. What started as a study about the future of autonomous vehicles in our cities, thus expanded into a larger discussion about the local planning cultures. Hence, this paper provides answers to the following research question:

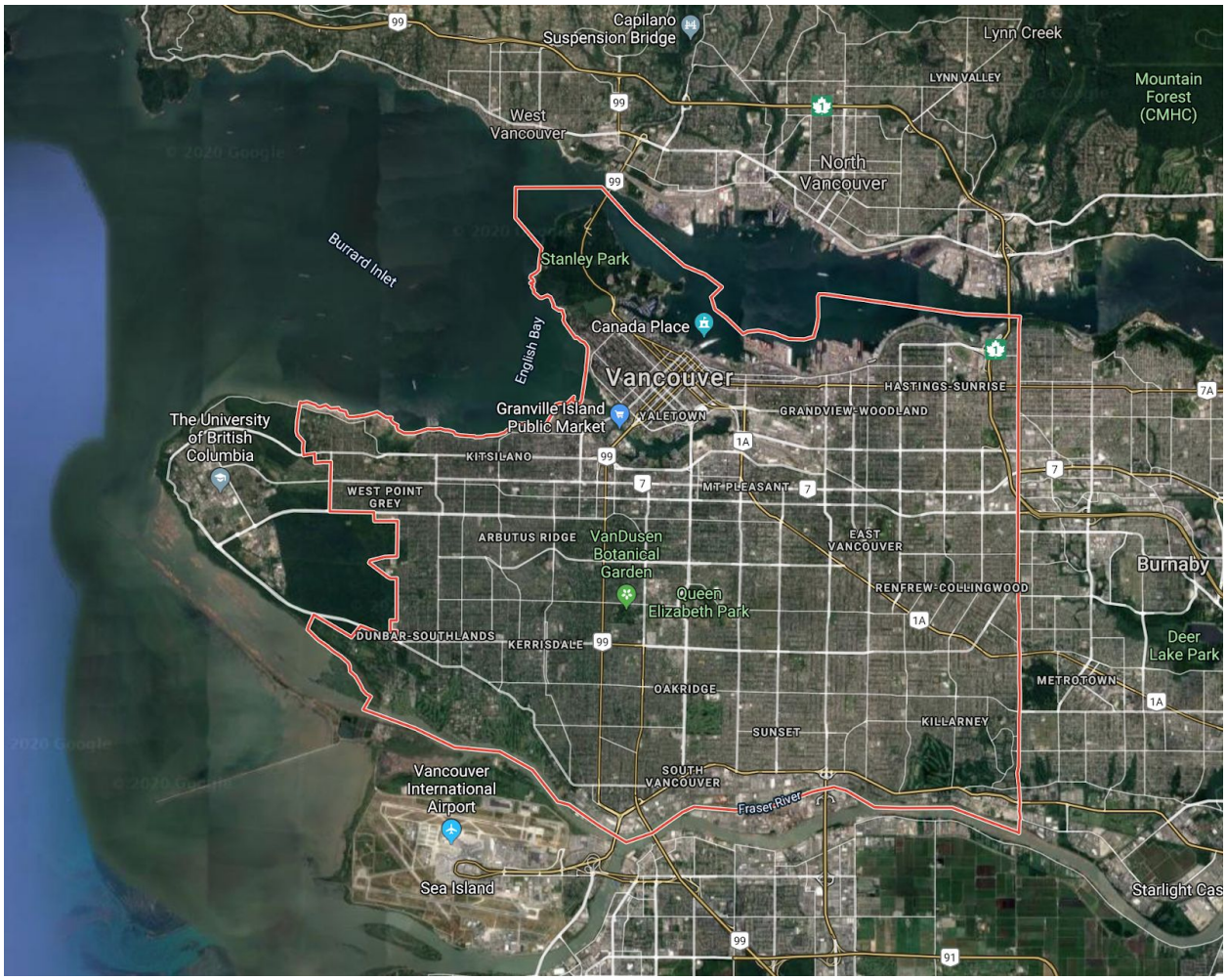
> *How have the planning history, geographical realities, and cultural contexts of five major Canadian cities affected what planning professionals can achieve within each municipality?*

Findings

Land and Historical Acknowledgement

My research into the topic of municipal history and planning cultures is focused on Canada's post-war urban history. This work is in no way meant to obscure the rich history of the indigenous people of the regions I visited. These include the unceded territories of the Musqueam, Squamish and Tsleil-Waututh First Nations of the City of Vancouver, Treaty 6 territory of the City of Edmonton, Treaty 7 territory of the City of Calgary, Treaty 1 territory of the City of Winnipeg, and Treaty 13 of the City of Toronto.

The City of Vancouver



(City of Vancouver, Google Earth 2020)

The city of Vancouver is located in the Lower Mainland region of British Columbia along the west coast of Canada. It is a city of more than 630,000[8] within the larger Greater Vancouver Region which has a total population of 2,500,000. Being a coastal city, Vancouver is surrounded by the Strait of Georgia to its west, as well as the Burrard Inlet to the north and the Fraser River to the south. Its unique coastal geography means Vancouver has the highest population density

[8] All population statistics in this chapter were obtained from the Statistics Canada website using 2016 Census data. Retrieved from https://www.statcan.gc.ca/eng/subjects-start/population_and_demography

of any municipality in Canada at 5,871 people per square km[9]. The city is characterized by a seemingly endless supply of high-rise glass condominiums and mixed-use towers that dominate the Vancouver skyline and epitomize Vancouver's approach to urban planning. In the 1950s, the city's urban planners encouraged high-rise development in the city's West End. These developments were subject to strict guidelines about setback distance and open spaces which were in place to protect sightlines and public green spaces. Now, most of Vancouver consists of dense and walkable neighbourhoods.

While Vancouver's population density is partially a result of necessity, the city also made planning decisions that would eventually be seen as a major factor in the city's choice to be dense, walkable, and transit-friendly. Former Vancouver chief planner Brent Toderian looks back at one particular decision as a major turning point for the city, saying, "I often refer to it as the most important decision Vancouver ever made from a city building perspective. An entirely new path was laid out for Vancouver City making," (Zeidler, 2017. para.3) In the mid-1960s a sleek and "modern" freeway was proposed that would cut through the city's Chinatown, Gastown, and Downtown neighbourhoods. Some planners at the time promoted the freeway because it would have linked the city's economically depressed core to the suburbs and other key interurban freeways like the TransCanada Highway. The proposed route would have altered the mountain views and cut off the waterfront, while also destroying some of the city's poorest neighbourhoods and forcing their tenants to find new places to live. The plan gave rise to a number of protestors from the affected neighbourhoods and from the University of British Columbia and Simon Fraser University. These protests were in part responsible for the federal

[9] All population density calculations were done by the author using Statistics Canada data for both population and land area. Retrieved from https://www12.statcan.gc.ca/census-recensement/2016/dp-pd/hlt-fst/pd-pl/Table.cfm?Lang=Eng&T=301&S=3&O=D

government announcing they would not fund the freeway plan. The change in funding and a strong social movement against the freeway gave pause to many on city council as they weighed their final decision (Mackenzie, 1985). Ultimately, with the help of resistance by residents, community leaders and planners, Vancouver City Council voted down the proposed freeway. The city remains one of the only large metropolises in North America without an urban freeway.

In 1973 the province put in place an agricultural land reserve to protect BC farmland in the Greater Vancouver region (Agricultural Land Commission, 2014). As a result, Vancouver is circled by undeveloped land which acts as a de facto urban growth boundary by preventing urban sprawl and necessitating densification in the city. The decision to preserve farmland over ever-expanding housing and commercial development speaks to a culture of environmentalism that exists in Vancouver more so than any other major city in Canada. This culture was evident in my conversations with Vancouver planners as well. It was clear that being environmentally conscious was an important part of the region's identity and the identity of its residents. When asked, one planner had no issue using broad brush strokes to paint all the people of Vancouver a deep shade of green:

> *I think this region is interested in the environment in a way that other places aren't. It seems like everyone's an environmentalist in Vancouver. It's hard to find a non-environmentalist.*
>
> - Vancouver Planner 4

It was apparent from my conversations that a culture of planning exists in Vancouver that values sustainability. From a North American perspective, Vancouver is often hailed as the gold standard for planners looking to create dense, livable and sustainable cities (Punter, 2003).

While high density in a city like Vancouver often brings on housing affordability issues, it also provides opportunities for specific modes of transportation that would not work in other cities. These forms of transportation are not just better for the environment and better for our physical health, they are also considerably cheaper to implement and use. One planner highlighted this reality when talking about 'space-efficient' transportation, which involves mobility options like walking, biking, and mass transit, that take up little space when compared with cars:

> *It's very, very fortunate, that those are also the most sustainable, and it's also the most healthy, and they're also the cheapest ones to provide. That is really wonderful that that's the outcome. Because that really supports cities. Because cities, when you get dense, you have to be space-efficient in a public space, in the public realm, right? There's no way around it.*
>
> - Vancouver Planner 4

Space efficiency is just one reason that Vancouver planners focus heavily on public transportation, walking and cycling. The city has promoted a planning philosophy that has come to be known as "Vancouverism," which is characterized by a densely populated urban area where residents can live, work and play. The city has been consistently ranked among the most livable cities in the world (The Economist, 2019). The unwritten culture of space efficiency and neighbourhood density has been codified in recent years through updated city plans and policies. The city of Vancouver was one of the first municipalities to announce a climate emergency (Crawford, 2019). Vancouver also aims to be using 100% renewable energy by 2050 (City of Vancouver, 2015). Further, one planner spoke to the aggressive goal-setting of the city for their sustainable transportation targets:

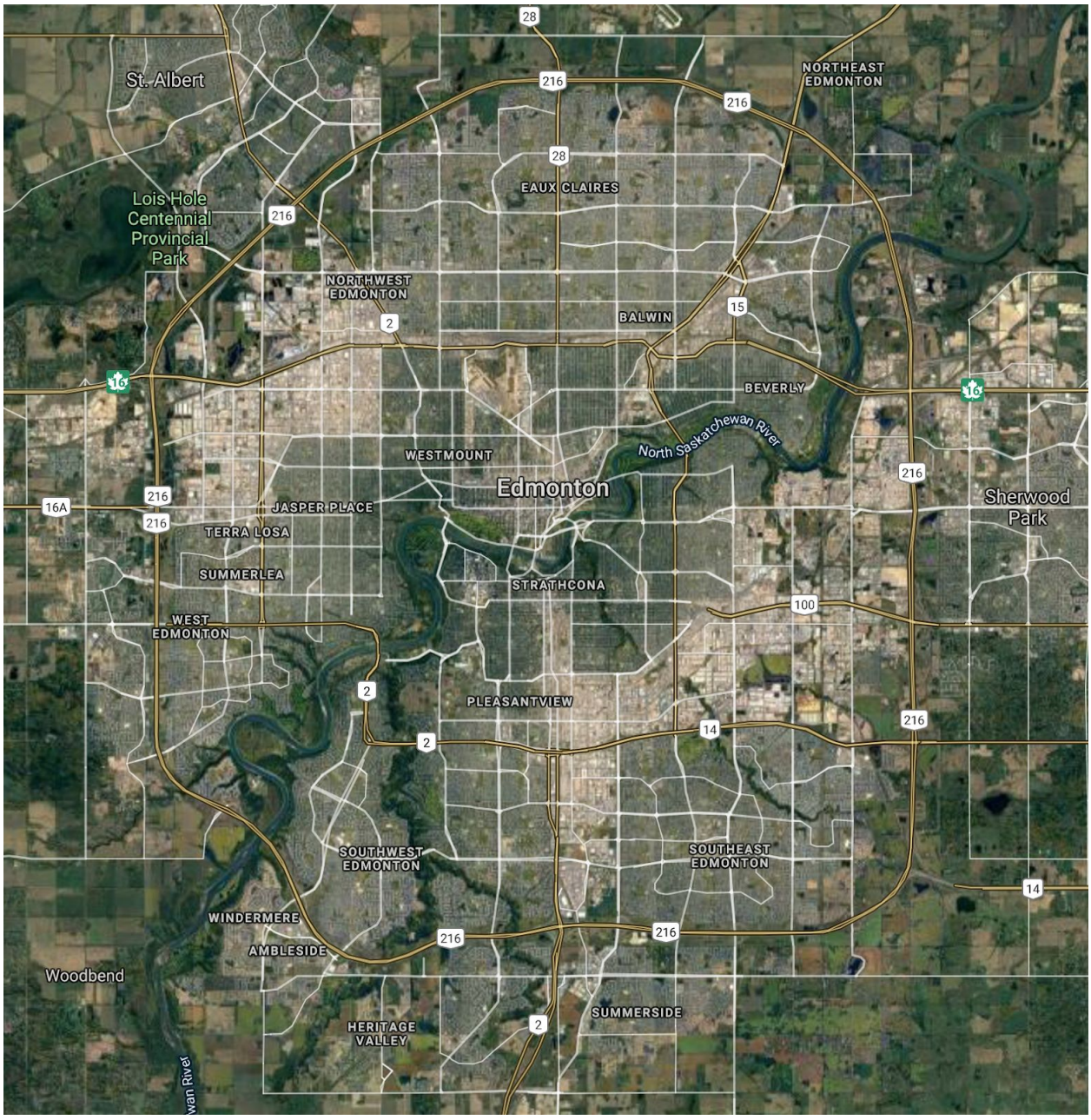
> *In 2012, we updated that plan, and basically, decided that we would have a target of, by 2040, two thirds of the population, or two thirds of trips would be by walking, cycling, and transit.*
>
> - Vancouver Planner 2

Vancouver, and the surrounding urban regions, have among the busiest public transit networks in North America. The culture that made mass transit a reality has now become engrained, and mobility shifts away from public transit would be nearly impossible for the region. As many other cities find themselves trying to mitigate their dependence on the private automobile, one planner indicated that Vancouver is instead dependent on their transit network:

> *For us, we've come to a point now, where we're transit-dependent. This region would not operate without this thing. We can't just stop it tomorrow. It's a monster. In a good way. It is the people mover of our city.*
>
> - Vancouver Planner 4

The culture of Vancouver and its planners is clearly one that values the environment, urban densification and a future that is less reliant on the car. In planning circles around the world Vancouver is seen as a leader in progressive city building (Punter, 2003). However, this is a culture that took time to manifest. If the city of Vancouver had multiple freeways running through its downtown, it could have a vastly different planning culture than it has today. Many factors have coalesced to create a region that is a desirable place to live with an abundance of natural beauty. While Vancouver's affordability problems are a huge issue moving forward, the planning culture that exists will, I hope, steer it towards solutions that work for everyone.

The City of Edmonton



(City of Edmonton, Google Maps 2020)

The capital of the province of Alberta, Edmonton is the northernmost large city in North America. With a population of 935,000, the city sits in the middle of the Edmonton Metropolitan

Region which has a population of 1,325,000. The city rests on the banks of the North Saskatchewan River, and is surrounded on all sides by flat prairie landscape. Its geography has enabled the city to sprawl outward to all corners of the municipal boundary. In fact, much of Edmonton's growth has come from the amalgamation of nearby urban municipalities including recent annexations of land to the south of the city in Leduc County and the City of Beaumont. As a result, Edmonton has among the lowest population densities of all major Canadian cities at 1,434 people per square kilometer.

Edmonton is defined by its river valley which constitutes the longest stretch of connected urban parkland in North America (City of Edmonton, 2013). The city's physical composition is one of low-density areas that make up the over 375 residential and industrial neighbourhoods in the municipality, with the exception of the higher density Oliver, Garneau, Boyle Street and Downtown neighbourhoods (City of Edmonton, 2019). Because of the region's reliance on oil and gas, the history of the city is often tied to the boom and bust cycles of the energy industry. Edmonton has always been susceptible to international and national economic forces and has gone through a number of cycles involving economic peaks and valleys causing both housing shortages and oversupply (Okkola & Brunelle 2018). The city was able to sprawl not only due to a lack of natural barriers but also because like most cities in Canada at the time, laissez-faire municipal governments were the norm (Lowe & Lowe, 2018). It wasn't until 1933 that Edmonton had its first zoning bylaw, and 1950 saw the hiring of the first official municipal planners hired who were recruited from England. The city's planners promptly put in place the principles of designing around the car that dominated planning of that era (Rao & Summers, 2016).

Edmonton's first official municipal plan, developed in 1963, put in place the separation of residential communities from commercial and light industrial areas. The segregation between where people lived and where they worked and shopped made the car all the more necessary in Edmonton. The dominant mode of transportation for most of the city's modern history has been the car, or as one Edmonton planner put it, this planning was "Not only auto-centric, but auto-maniacal." A car-first culture of planning certainly led the way for much of Edmonton's history. A report released in 1963 looked to solidify the status of the car in the city. The Metropolitan Edmonton Transportation Study (METS) called for the destruction of a large part of Edmonton's River Valley in favour of freeways that would vastly expand the city's automobile infrastructure. Fearing the worst, some residents in the city opposed the plan and released a report in the same year called the Metropolitan River Valleys Report which extolled the virtues of protecting the city's ribbon of green. The dissenting voices were joined by citizen groups that dubbed themselves the Save Our Parks Association (SOPA). In 1965 "the organization orchestrated significant and sustained actions on areas that were threatened by the initial stages of the METS plan" (Bower, 2016, p.64). Only part of the first phase of the METS plan was ever built. However, even today Edmonton's downtown is peppered with parking lots functioning only at half their capacity even at their peak (City of Edmonton, 2019), and new communities are continually being developed in all corners of the municipal boundary and beyond.

There is, however, a history of progressive mass transit decisions in Edmonton that stand out as being ahead of their time. In 1978 Edmonton became the first city in North America with a metropolitan population of less than one million to build a modern light-rail transit system. It was also the first city in western Canada to operate a light rail transit network, beating out the

City of Vancouver by seven years. Edmonton has since fallen behind cities like Vancouver after failing to commit continued investment into light rail transit. This lack of commitment highlights the difficulty of planning for a city that deals with the cycles of the boom and bust economy of the energy sector. Edmonton planners spoke of the history of their city in ways that mirror its frequently changing economic realities:

> *I think there was a period of time where Edmonton had kind of given up on planning. I really do. I think that we had really good, solid planning. It kind of dwindled, and we kind of went, "We need people. We need things to come. Whatever you want to do, just bring it here, please." And I think that we've realized that by trying to achieve everything everywhere, we're not getting what we need where we want it.*

Being tied to oil and gas for both its economy, and for its transportation needs, has meant the Edmonton municipal planning culture has gone through many shifts in focus, but it has yet to truly lose its car-centric focus.

Edmonton has recently begun to reinvest in light rail transit infrastructure trying to push back against a municipal culture that glorifies the car. The new City Plan calls for more walkable, bikeable and pedestrian-friendly neighborhoods that aim to make the city a “community of communities” (City of Edmonton, 2020, p.161). This plan is a new approach for Edmonton as it looks forward to becoming a city of two million people—more than twice the city’s current population. The planners I spoke with all felt the need to provide options beyond the private automobile for all residents. Many planners overtly pushed back against the ingrained car culture of the city, with one planner using a European example of municipal culture change:

> *I think we perceive ourselves as a car-centric city, and I don't necessarily think that that's a necessity, and I don't necessarily think it's a truth. I think the way we separate that is we think of these places in a fully-fledged current state. We look at Amsterdam, for example, and it's like, "Yeah, but that's Amsterdam. That's the way the Dutch think." It's like, "Well, in the 1980s they were the same.*
>
> - Edmonton Planner 1

A resistance to the car as the dominant form of transportation was evident among the planners interviewed with reasons ranging from more livable cities with walkable grocery and work options, to equity and fairness arguments about cities that allow for people of all ages and abilities to travel without difficulty. However, many also mentioned a newly renewed focus on sustainability. One Edmonton planner focused specifically on their purpose as a planner being to help residents live better lives:

> *I think what our job as transportation planners and as urban planners is to enable people to make choices that are better for all of the city, better for them, and better for the environment.*
>
> - Edmonton Planner 1

While living in the heart of an oil and gas-centric province, the Edmonton planners I spoke to believe the city is beginning to take more sustainable and environmentally focused approaches to planning. A planner with a long history in the city felt that this move had in many ways permeated the culture of planning in Edmonton:

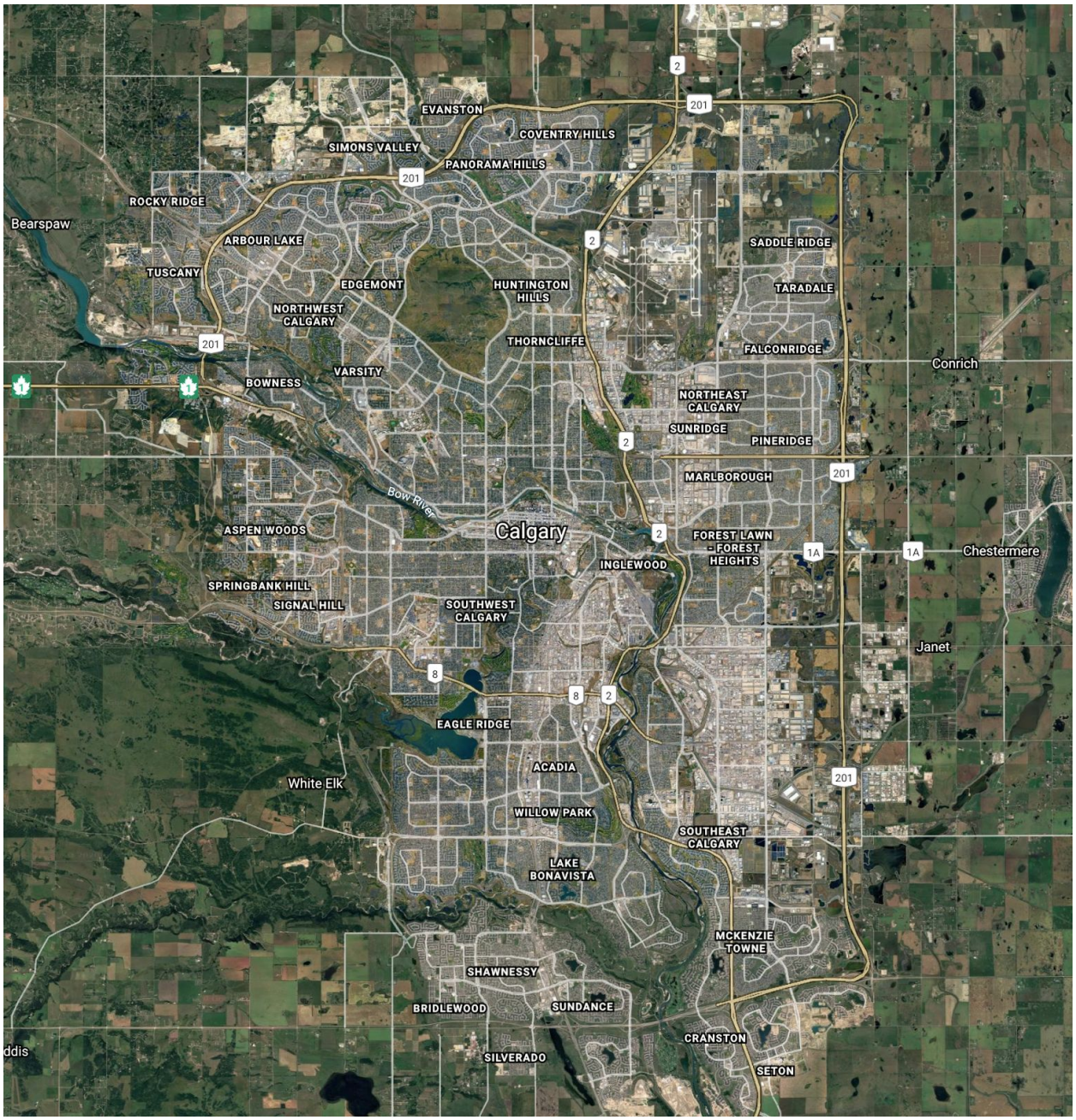
> *I've worked for the city for almost 20 years off and on, and I just feel like the things I've seen change and how even internally, people at the city, like staff and administration has changed their view about how we build our city. It gives me hope that yeah, the next 20 years will be even better because we'll take some things for granted, like we never used to take for granted that including greenhouse gas emissions as part of our planning and indicators and metrics was important, and now it's just a given. You can't even go forward with a project without talking about what are the greenhouse gas implications. I'm hopeful that that will be the case about our urban form, and compactness, and driving, and all that kind of stuff.*
>
> - Edmonton Planner 3

A move to environmentally conscious planning will be important for a city like Edmonton, especially considering it has been Canada's fastest growing major city over the last five years (Statistics Canada, 2020). The planners I spoke to were clearly aware of this growth. They knew that in order to accommodate that type of growth, the status quo of car-centric planning that allows massive urban sprawl and long commutes will no longer function:

> *Truthfully, we can't fit two million people into our current boundaries if we grow the way we have been. If we want to fit two million people into Edmonton, we have to think of a new way to grow. The other alternative is to keep annexing all the neighbours, as Edmonton frankly has always done. Within a context of a more robust, mature, regional context, I don't think we need to do that anymore or that shouldn't be our default position.*
>
> - Edmonton Planner 4

As Edmonton continues its trend of population growth, its municipal planners will, it appears, be pushing for more sustainable transportation options and better land use policies. Changing the planning culture will be difficult, however, given the city's car-centric history.

The City of Calgary



(City of Calgary, Google Earth, 2020)

Calgary has Alberta's largest population at just over 1.3 million and ranks as the third-largest municipality in Canada. The white-collar epicentre of Canada's oil and gas sector,

Calgary is home to numerous head offices of the major companies in the industry. Located in the south of the province where the Bow and Elbow rivers meet, Calgary is surrounded by prairies to the north, south, and east with foothills to the west until the Rocky Mountains emerge 90 km from the city. Much like its neighbour to the north, Calgary exhibits urban sprawl on all sides of its municipal border due in part to its history of annexation and continued greenfield development. The city has a population density of 1,618 people per square kilometer. Early Calgary planning focused on a “uni-city” approach to its development that saw priority placed on its downtown while ignoring diverse residential and commercial development in areas outside its core (Parker, 2005).

As the city grew to include smaller communities, these areas remained well connected due to a network of electric street cars called the Calgary Municipal Railway. The network started running in the summer of 1909 as a way for Calgarians to easily move throughout their city and grew quickly in the 1910s to include five lines. The mayor at the time, Reuben Rupert Jamieson, called the achievement an “epoch in the history of the remarkable progress in the growth of the city of Calgary” (Stark, 2015, para. 2). At its peak, the streetcar network consisted of thirteen lines that connected many communities to the core of the city. The network was a success with consistently increasing ridership, and a system that was more than able to support the needs of a growing city. In the late 1940s, however, the city decided to replace the street cars with buses due to aging infrastructure and the difficulty in operating trains in Calgary’s cold weather climate (Stark, 2015).

While the transition from trains to automobiles is not unique to Calgary, the example does illustrate an interesting relationship with light rail transit that has continued in the city. The

city is home to over 50 km of light rail transit that has the second-highest weekday ridership of any light-rail transit system in North America, carrying over almost 300,000 passengers per weekday (Sanders, 2016). The planners I spoke to noted that high ridership can be attributed in part to the city's high percentage of workers who commute to their downtown workplace each day. They also mentioned that Calgary has controlled the cost of parking in its downtown since the early 1960s which means limited supply and high prices. However, even with a strong network of light rail and an effective parking policy, Calgary still struggles with issues that are symptomatic of a car-dominated culture. Many of the planners I spoke with touched on the sheer size of Calgary, and how difficult that made planning:

> *I think one of the challenges we have from a city planning concept is there's nothing around us, so there's nothing actually stopping us, physically, from going out.*
>
> - Calgary Planner 6

The concern about urban sprawl was a recurring topic with Calgary planning professionals, and speaks to a dominant culture in Calgary that has made neighbourhood expansion far easier than neighbourhood densification. The most recent city plan aims to address this issue by further encouraging development in Calgary's mature neighbourhoods, and focusing on development around established transit stations (City of Calgary, 2018). These plans, however, are up against an established system of development and a culture that values owning a large home in a desirable new development. As one planner observed, building new suburban developments is something that, for better or for worse, the city does well:

> *There's no question that it is easier and faster to continue with the growing new communities at the edge. We've got years of experience. We're really good at it. And when you're at the edge, there's not a lot of ... you're not trying to deal with existing infrastructure. You're not dealing with the concerns of neighbors or other businesses or something like that.*
>
> - Calgary Planner 2

Development on the outskirts of Calgary feels like a throwback to the boom that the city experienced when oil was first discovered in the area in the mid-1920s and 1930s. The initial rush of new residents to the city meant preferential deals to land developers from the municipality in return for building badly needed housing and the fact that new residents would mean an increase in municipal taxes (Reasons, 1984). Calgary has always prided itself on its business-friendly atmosphere and entrepreneurial spirit. A focus on the economy was also prevalent in my interviews as the city's fortunes are often thought to be tied to the energy industry more than any major city in Canada. One planner commented that a focus on the economy has changed how they do their job:

> *I think the economy has probably been the biggest thing, and I think that's actually affected some documents like the Municipal Development Plan and the Calgary Transportation Plan.*
>
> - Calgary Planner 1

Many Calgary planners were preoccupied with what would be possible in Calgary during the slow economic growth that the city was experiencing at the time of my interviews (2019). Perhaps economic factors came up more in Calgary than other cities because it was in front of mind at the time, or perhaps economic growth is part of the culture of planning in the city. It is worth noting that the vast majority of municipal funds in Alberta come from property taxes - a reality that means there is a huge incentive for cities to continue developing the same way they always have. Calgary has struggled with job losses and high vacancy rates in its downtown in the past several years (Calgary Economic Development, 2020). One planner made it clear that the most recent downturn has forced a shift in planning:

> *That's something that's important. Even if economic impacts aren't like a rationale or in a true planning rationale, it is part of it [planner decision making] and so we can't ignore it.*

- Calgary Planner 1

It was clear that Calgary planners understood the difficulties they were up against if they were to plan a city for more than cars. Calgary came to prominence during the rise of the automobile and has a planning history that further entrenched car-dominated planning. The physical structures already in place will, no doubt, make shifting to different modes of transportation a tough task:

> *Most of the physical growth of the city's been in the era of the car, which means we're in a really different situation than cities like in eastern coast Canada or US, which got a bit more of the European vibe going, because more of the city grew up when you were still horse and cart and that kind of thing. So more grid streets, more walkable.*

- Calgary Planner 2

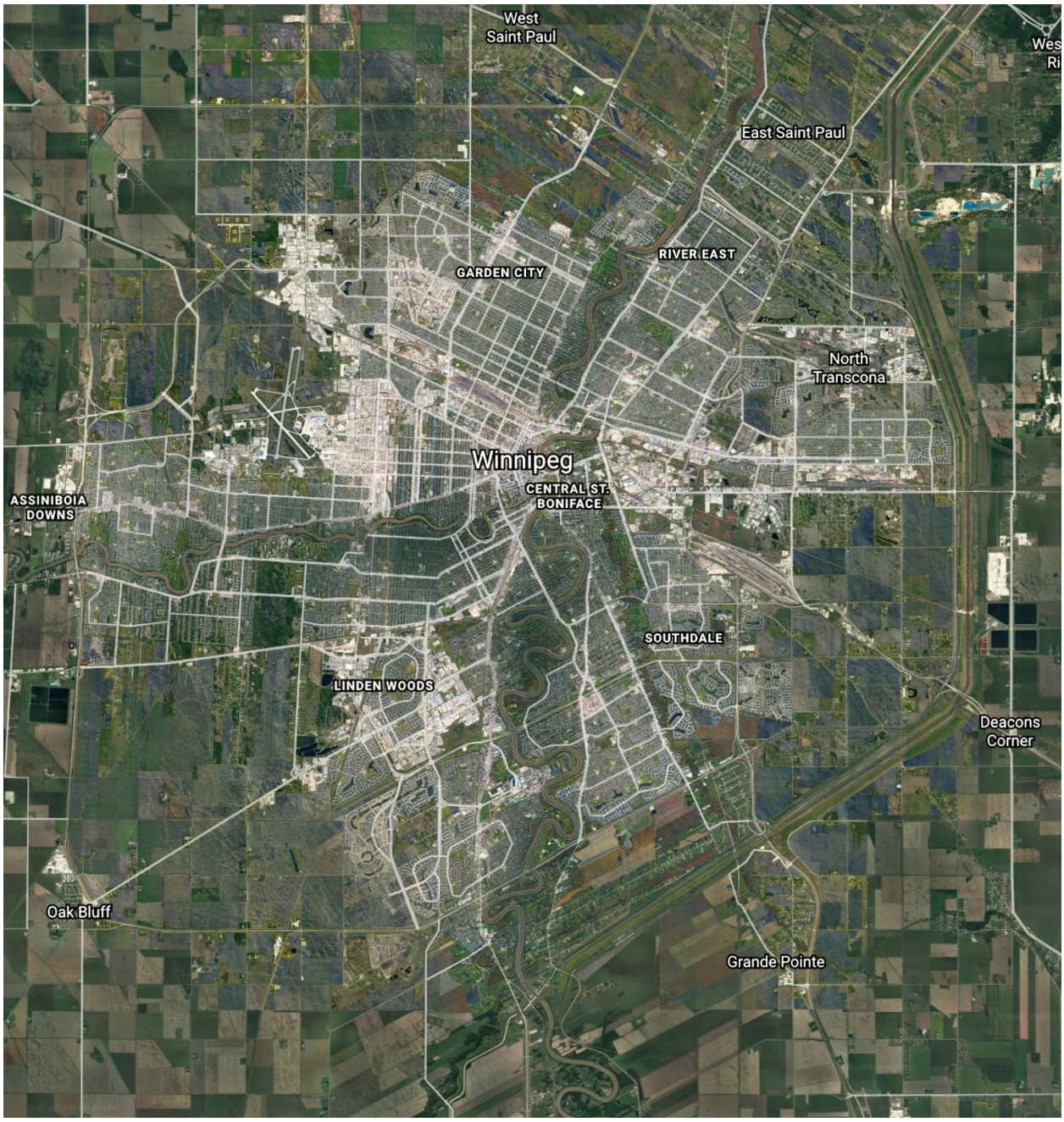
Understanding the municipal history is a planner's first step to changing the city's future. As Calgary comes face-to-face with not only physical barriers from its past but also a new social and political environment for the energy industry, the culture of the city also faces a potential shift. Younger residents with more sustainably-minded behaviours may be starting to pry open a crack in the otherwise impenetrable car culture that still dominates. City planners have the opportunity to potentially move Calgary into a future of mobility that works for everyone, regardless of age and ability. As one planner said, the future of planning not about eliminating cars, but instead providing options beyond the car:

> *We've got a few people that try and say we've got a war on cars. We don't. We recognize that not everybody wants to drive, so whether that's a cultural thing, I think we've got a bit of a changing demographic that is Millennials and the younger generations, they aren't as quick to jump into getting a driver's license. They're very comfortable riding their bike, taking the bus, taking an Uber, so how the next generation of Calgarians gets around is very different from how their parents got around. And I think just making sure that we're cognizant of that.*

- Calgary Planner 6

A new era of people willing, and even wanting, to travel by means other than a private car may be a first step for the city moving to a more sustainable future. While another economic boom cycle may never materialize, the planners in Calgary appear to be trying to prepare the city for a future beyond the car in the heart of oil and gas country.

The City of Winnipeg



(City of Winnipeg, Google Earth, 2020)

Situated near the longitudinal centre of Canada, Winnipeg is the capital of and largest city in the province of Manitoba. Built at the junction of the Red and Assiniboine rivers the city has a current population of almost 800,000 and a population density of 1,615 people per square kilometer. At the beginning of the 20th century Winnipeg was one of the fastest growing cities in North America, thanks to the arrival of the Canadian Pacific Railway. The city was the only access point to and from the western provinces and northern territories and, as a result, gained the nickname “Gateway to the North.” This ease of access and preferable shipping rates attracted large businesses to open branches and warehouses in Winnipeg, in the now historic Exchange District. This business investment saw the city become Western Canada’s manufacturing centre. However, the opening of the Panama Canal in 1919 reduced reliance on the railway for international trade and began a decline for the City of Winnipeg from its peak as a hub of international trade and commerce (City of Winnipeg, 2017).

The rich history of Winnipeg is still seen in many aspects of its built environment. Perhaps the most famous example is the intersection of Portage Avenue and Main Street. Originally a crossing of ox-cart tracks (CBC, 2012) “Portage and Main” has even appeared on a commemorative stamp. More recently, however, the intersection has become infamous, at least for pedestrians in Winnipeg. Those walking on the city’s main street are unable to cross Portage and Main on the street level. They are instead forced underground and through a series of pedways in an underground mall to eventually make their way to the other side of the street, provided they can successfully navigate the labyrinth of tunnels. Several attempts to open the intersection to pedestrians have failed and were met with vocal opposition about how such a

change would negatively affect vehicle traffic. These concerns are legitimate, as Winnipeg is laid out in a unique way. One planner described the strange reality that Winnipeg commuters are up against:

> *I don't think there's a comparable city anywhere in the world to the geography of Winnipeg. What I mean by that, it's not a grid. It's a radial city. I think I counted 11 radial corridors that merge, essentially come together at the same point downtown. They feed into, I think, about five radial corridors then feed into Portage Avenue and Main Street, North and Main Street South, and then they all meet at one point.*

Pinch points like these for any commute across the city are a constant reminder of the planning decisions of the past. While Portage and Main is a large scale example of these choices, Winnipeg has many examples of a car-first culture of planning. One planner emphasized the history of these decisions and the cumulative effects they have on the city as a whole:

> *Winnipeg decided not to build freeways in the '70s, but certainly didn't decide to not increase road capacity, and then spent the next 40 years trying to turn urban streets into the highest capacity vehicular throughput mechanisms that they could. There's this legacy of a lot of small, like hundreds of thousands of small decisions throughout the city that were made to cumulatively, quote unquote, improve traffic flow at the expense, in many cases, of all other modes, or especially non transit, non automobile modes. So walking and cycling.*
>
> - Winnipeg Planner 2

Building car infrastructure out of the ruts of oxcarts was easy in comparison to moving away from cars to other modes of non-vehicle transportation. The Winnipeg planners I spoke with are keenly aware of the physical and cultural challenges that lie ahead if they are to transition to more sustainable and space-efficient modes of transportation.

More recently, Winnipeg has made attempts at giving residents more transportation options by adding a bike lane network to its downtown core (City of Winnipeg, 2019). While the planners I spoke with saw these types of additions as a positive move, they also felt it was a

single step in a long journey. To one of the planners the major barrier to improved access would be the culture within the city that dismisses anything that does not benefit automobile drivers:

> *If Winnipeg wants to become the walkable and bikeable city that many other cities have decided to become, and even Winnipeg's policy statements do head in that direction, but the decision that needs to be made will involve undoing small targeted intersection, quote unquote, improvements from the '70s and '80s and '90s, which were made for drivers' benefit. Because in most cases drivers take the one and only route between origin and destination, there's usually not a bunch of options coverage - the constituency of every decision is going to be large and vocal. They're going to be tough decisions.*
>
> - Winnipeg Planner 2

This concern about a culture maintaining a car-dominant status quo was not unique to Winnipeg, but it may prove to be more difficult to overcome in this city. Winnipeg has plenty of work to do if it is to become a city that embraces alternate modes of transportation beyond the private automobile. One of the planners I spoke with was new to Winnipeg. They highlighted both the lack of historical perspective the city has and the incredible opportunity it has in its future. For example, they mentioned that the city has never done a deep-dive into its transit network:

> *For me to come here and have a chance to work on a master plan which may not result in a full redesign of the transit network, but that's on the table ... you don't usually get to do that. That's literally never happened in Winnipeg's history. Streetcars have been around since the 1870s or something, and no comprehensive re-evaluation of the network as a whole has happened since then.*
>
> - Winnipeg Planner 2

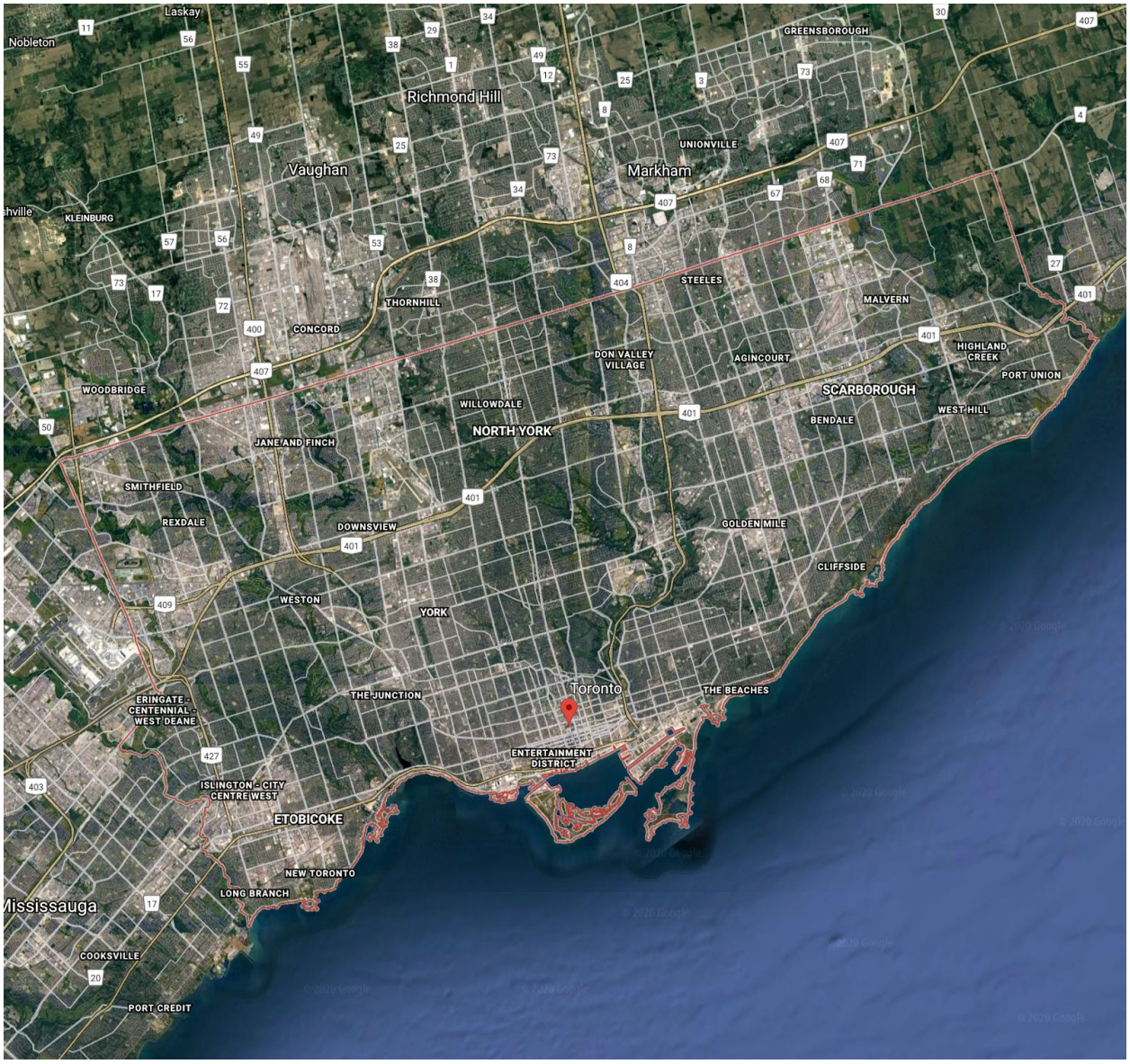
This type of comprehensive re-evaluation will be the start of a long process for the city of Winnipeg, one to which the planners I spoke to are committed. It remains to be seen if Winnipeg's car-first culture will allow space for other forms of transportation. Perhaps eventually drivers will realize what one planner already has—Winnipeg's unique layout makes it hard for anyone to get around regardless of mode of transportation:

There's all of the disadvantages of a car-dominated city, with none of the advantages to car drivers of a city planned around cars... where here we have the historical nature of the city with small roads, except for the ones that are enormous.

- Winnipeg Planner 2

The truth is, a city built for the car works well for almost no one, including car drivers. A city needs to build for all residents and be able to find a balance that works for everyone. Winnipeg has always had huge potential as a city with interesting history and intense passion.

The City of Toronto



(City of Toronto, Google Earth, 2020)

As Canada's most populous city with 2.75 million people, Toronto is situated on the northwest shore of Lake Ontario and has a population density of 4,649 people per square kilometre. It is part of the Greater Toronto Region, which includes the regions of Durham, Halton, Peel, and York, which combined has a population of 6.5 million people. In the late 19th and early 20th century Toronto was a destination for many European immigrants as well as Chinese immigrants arriving from the west. During the 1920s, Toronto was trailing Montreal in population and economic importance. In the mid 20th century, however, the city of Toronto and twelve surrounding municipalities formed a regional government, known as Metro Toronto, to help coordinate services and policies to help plan for the postwar population boom and new suburban development. Metro Toronto eventually became The City of Toronto in the late 1990s. Now, the city is clearly the financial and economic hub of Canada and is the fourth-largest municipality in North America. It is a big city by any standards.

No project better defines Toronto's recent planning history as much as the Gardiner Expressway. Known then as the Lakeshore Expressway, the project received a lot of resistance when it was first introduced in 1953. The hope was it would alleviate increasing congestion as the city population grew and the number of cars grew with it. Years after the project was first conceived, yet still not built, the Metro Toronto Executive Committee took it up as their first major project. The committee was chaired by Fredrick G. Gardiner, a man who "liked big solutions to big problems, and (who) brought an entrepreneurial flair to city government. He loved building things, loved to get plans pushed through and get the shovels in the ground" (Toronto Life, 1993, para. 5). A few years later, the first urban highway in Canada was complete. For Torontonians at the time, the expressway was emblematic of the progress the city

had made post World War II. In an interview at the time, Gardiner was quoted as saying, “I used to lie in bed dreaming in Technicolor, thinking it was too big. Now I know it isn’t. Maybe in 20 years time, they’ll be cursing me for making it too small. But I won’t be around to worry then. Right now, I’ve come up smelling of Chanel No. 5” (Colton, 1980, p. 45). It turns out, he was right about the curing, but not the reason. The Gardiner is now the road the people of Toronto love to hate, being dubbed ‘The Mistake by the Lake’ (Kane, 2014). Mr. Gardiner’s grand achievement now draws far more criticism than compliments. The Gardiner Expressway still dominates much of the waterfront in downtown Toronto, but physical space is only one element of the highway's influence over the city. As a recent Toronto Star article points out, “The roadway will gobble $2.2 billion of the transportation department’s 10-year capital spend. That’s 44 per cent of the total, although the highway carries only about seven per cent of commuters in and out of downtown” (Rider, 2020, para. 4).

A history of auto-centric planning came up again and again in my conversations with Toronto and regional planners. One planner, for example, was realistic about the difficulty the city will face moving forward:

> *It's all challenges going forward, unfortunately. Because we didn't make the investments we should have made in the last 30 years, and so we're behind. We continue to stall out.*
>
> - Toronto Planner 3

Planners in Toronto are stuck between a history of inflexible decisions and a future of seemingly unlimited growth. To compound the issue, those planning who are working towards a city that provides mobility options beyond the private automobile need to also convince a public that has habituated traveling by private car. One planner spoke about

the need for change that Toronto is up against given its size and level of growth, that perhaps other Canadian cities have not needed to be aware of in the same way:

> *I think people's, the public's, lack of understanding of the need for change in places like Toronto. Maybe not a place like Winnipeg, if they aren't experiencing pressures of growth. But in places that are growing, we need to change. People need to understand that we need to change, and we need to get out ahead of that.*
>
> - Toronto Planner 3

Due to its size, Toronto often acts as an example for the other cities in Canada as it often needs to deal with problems of density other cities will only confront in the future. Yet, the sense I got from some planners was that their city was, in many ways, beginning to fall behind confronting these issues. For example, because of its large scope, Toronto always has a number of competing priorities with which planners need to deal. The city has an urban versus suburban divide that has grown wider as house and condominium prices have ballooned in Toronto, which has forced more people to live further from the core (Ireland, 2017). Some planners alluded to this division when speaking about how their city council has traditionally made decisions. They noted that these priorities are starting to shift as more people move downtown to avoid lengthy commutes as a result of past planning decisions:

> *I think it's shifting a little bit as more people have moved downtown, but with the recent realigning of the wards, we may see that some of the political power has shifted downtown. We'll have to see. But certainly over the last few years Council has been dominated by the outer ring of the wards in the city. Those areas of the city are legitimately difficult to get around any way other than a car. The distances between things are big, the roads are wide, traffic isn't great, but it's still much faster than taking transit or trying to walk or bike. They take that perspective and apply it to the whole city.*
>
> - Toronto Planner 4

Planners in any city can only do so much to force a change in culture and behaviour. This is particularly so in a huge city like Toronto where more variables exist for any potential decision. One planner in Toronto had come to understand this reality and spoke honestly about the role of a planner in the process of city building:

> *If planners had their way, much more would happen, and would that make for a better city? That's hard to say. Council is ultimately the one responsible to the public. Staff are responsible to the Council. We'll put forward our recommendations, Council will weigh the recommendation against what they think the public actually wants, make a decision and direct us to implement it.*
>
> - Toronto Planner 4

Such a realistic view of the planning process has led to new approaches that aim to strategically shift perspectives of Torontonians. The King Street pilot project, for example, aimed to show that by prioritizing people and public transit first, the city could move more people more efficiently than by private car. The project was a success and "over the course of the following year, the pilot demonstrated, relatively quickly and cost-effectively, its ability to move people more efficiently on transit without compromising the broader transportation road network" (City of Toronto, 2019, p. 3). As one planner put it, "You can't continue to let 20,000 drivers, and single-occupancy vehicles run the show".

The Gardiner Expressway is still standing in Toronto, despite multiple attempts to tear it down. Most recently the City Council voted narrowly in favour of repairing the aging urban highway instead of taking down a portion to open more space on the waterfront, a decision that went against the recommendations of the planning department and the Chief Planner at the time, Jennifer Keesmaat. In a series of tweets denouncing the decision, Keesmaat highlighted the dichotomy that many cities have

between funding public transit and funding infrastructure for the private car: “In so many cities, we have a big debate—and a user fee—when it comes to funding transit. But building new highways and roads? We assume the general tax base should pay for that. We need a new model that incentivizes what we want most: efficient mobility, sustainable choices” (Keesmaat, 2018). If Toronto is to continue to lead the way for other cities in Canada, it clearly has work to do. Listening more closely to planning professionals would be a solid first step

Discussion

This paper explored the cultural, historical, and geographical differences between five major Canadian cities with respect to urban planning. These differences have affected the planning history of each municipality and are likely to also shape future planning. Having spoken to these planners, it is clear to me that they were only one part of a much larger process that differed for each municipality. Looking specifically at each city's geography, a municipality with no natural or imposed barriers to growth could sprawl as much as the market could allow. Edmonton, Calgary and Winnipeg are surrounded by ample land to grow into, and none of these cities have introduced meaningful urban growth boundaries that would stem the tide of suburban sprawl. Both Vancouver and Toronto have natural barriers stopping their growth on one or more sides and both also have numerous other large municipalities surrounding them, forcing a dense urban form. Unfortunately, such density has been implemented by necessity more than by choice. While Vancouver and Toronto struggle with finite space and a quickly growing population, other municipal leaders have yet to see the need for densification for health and sustainability reasons. These cities have thus been resistant to change.

These geographical realities have, in many ways, also influenced the planning history of each city. The planners in Vancouver understood the need for space-efficient transportation many years before other cities; the result has been transit usage by over 35% of residents, bike-share options, and walkable neighbourhoods throughout the city. The culture in Vancouver is clearly different from the other cities I studied, as its residents seem to place more value on sustainability. In contrast, Edmonton, Calgary and Winnipeg continue to struggle with urban forms that force many people to use cars as their only viable mode of transportation. Hence, many planning decisions that go against an ingrained car culture are difficult to justify to politicians, stakeholder groups and a car-first minded public. These municipalities are trapped in the cycle of auto-dependency in which suburbs beget more cars and more cars create a need for more suburbs. Toronto, however, faces many of the same density issues as Vancouver, which one would assume would have them adopting equally sustainable planning decisions. Instead, Toronto municipal leaders have often gone against their planners' recommendations, promoting more of the same car-centric city building of the last fifty years.

Political changes can shift elements of planning culture almost overnight. Toronto, for example, provides interesting insight into how those in leadership positions have changed what the planning culture can accomplish. With Rob Ford as its Mayor, Toronto was hard pressed to fund badly-needed public transit infrastructure (Alcoba, 2013). Now, with Rob's brother Doug Ford as premier, many planners and municipal leaders are sceptical about his ability to get major transit infrastructure plans completed (Spurr, 2019). This is in stark contrast to previous governments that have placed transit funding in Ontario as their top priority (Furguson, 2013). Vancouver, on the other hand, has an ingrained political culture of transit building and has benefited from dedicated funding from all levels of government. One planner I spoke with from

the regional transit provider in Vancouver even said they were “drunk on Trudeau transit money” alluding to the large amount of funding coming from the current Liberal government. These planners and municipal leaders know that they can push for new and progressive plans for city building with the backing of their political leaders.

Edmonton and Calgary have had plenty of time to develop a culture that puts the car first, considering that for 44 years the province had the same right-of-centre government and continues to have an economy that runs on oil and gas. It is still easy to see how much the economy and private business factors into each city's public planning decisions. Winnipeg has gone back and forth between governments that support public transit and those that see it as an afterthought. Most recently however, a funding promise that shared the cost of transit for the city with the province has been cut, leaving the city with a major transit funding shortfall. These examples show that certain elements of planning culture can be altered by a single election cycle, and the shifts can begin to change the overall culture within a municipality or further engrain the established planning culture of a city. Lessons from my interviews point to the central role of political leadership in changing a city's planning culture.

The three factors shaping municipal planning culture that I have identified (geography, history, culture) are helpful in understanding how and why planning decisions get made within each city. They also allow for a reflection on what municipal planning decisions are not executed, or simply not even proposed, within a given municipality and why that may be. The Culturalised Planning Model allowed me to more fully understand the complex processes that planners must wade through in order to get things done in their respective cities. The three factors mirrored the layers of the Culturised Planning Model used as part of my theoretical

framework. A city's geographic realities are, in essence, part of the structural “planning artifacts” that Othengrafen places at the top of the pyramid (Othengrafen & Reimer, 2013, p. 1274). The elements of planning history I explored could easily be seen as a large component of Othengrafen’s “planning culture” considering these cities' propensities to continue to pursue whatever plans had worked in the past. Finally, these elements have combined to influence the larger municipal culture that Othengrafen calls the “societal environment”. This broader culture maintains the planning status quo and makes the adoption of progressive decisions for sustainable and equitable cities increasingly difficult.

However, the model in combination with the theory of *automobility* provides a more robust understanding of these processes by revealing the vast systems that underlie them. Together they show how rooted a current municipal planning culture can be. Automobility is now the overarching cultural influence in all five cities I studied and has influenced all levels of the culturalized planning models' influences to varying degrees.This includes, for example, allowing large infrastructure projects for cars to take priority (e.g., The Gardiner Expressway in Toronto), a continued push for new projects that will lead to more of the same car-dominate planning (e.g., sprawling suburban developments in Edmonton and Calgary), and a doubling down on car-first culture for drivers (e.g., keeping Portage and Main closed to pedestrians in Winnipeg). My interviews with transportation planners from across Canada showed they generally understand what cities need to prioritize in order to become more sustainable. However, the cultural elements within each municipality and planning community can often make sustainable plans difficult to adopt. Only by first understanding the cultures in which planning exists in their cities can those in charge of planning them begin to change what has been the norm for too long.

Conclusion

The future of Canadian cities will hinge on a culture that values sustainable planning and resilient city building. As people continue to flock to urban centres in larger numbers the need for city planning that acts locally and thinks globally will intensify. As a new generation of planners leave schools across Canada and begin their careers, I hope the planning cultures they join will begin to value space-efficient transportation over the status quo of car-dominant planning. Further, as new technologies are developed such as advancements in electric cars and fully autonomous vehicles, it will be all the more important that planners resist the urge to plan for these vehicles first and instead remember that cities should be built for people first.

While this research took place in a Canadian context, it illustrates how the Culturised Planning Model (Othengrafen, 2010) is a useful tool for planners to consider as it allows them to critique their municipalities' planning decisions with a more robust understanding of all aspects of their work that takes into account the ‘why’ of past decisions. However, all municipal planners in western cities should first acknowledge that planning decisions exist in a larger system of automobility. Addressing this reality would help planners, politicians, the public, and private developers to see planning decisions within a broader context and aid in making decisions that not only change the culture of planning but, in doing so, create more sustainable and equitable cities. By taking seriously the municipal planning culture, decision makers can more effectively work to change that culture to allow for more progressive and sustainable decisions in the future. Understanding how some members of the public and politicians may be against a particular project, for example, may lead to more nuanced communication efforts around certain

decisions or to more pilot projects that alleviate the fears of drivers and politicians before permanent changes are put in place.

Looking at the Culturised Planning Model through a lens of automobility also allows for a model made for a European context to be more quickly integrated into North American planning process discussions, as the major cultural element of automobility is already presumed. By using both of these perspectives in combination, this research contributes to both areas of literature. This work is also helpful in developing new planning processes for the future that will require in-depth knowledge of why past planning decisions were made. The model would benefit from further research that aims to expand its conceptual framework to include the effects of social movements or advocacy groups on the culture of planning, such as those highlighted for Vancouver and Edmonton in my findings. Locally focused research that aims to expand the model to include the culture of sustainability and sustainable planning within a given municipality would also be helpful as climate change issues become more prevalent for city planners and their municipalities.

Future research on the topic of planning culture should include similar studies in locations outside Canada, which could illuminate differences in municipal planning cultures across countries. Interviews with municipal political leaders about the culture of planning in their city could also provide a new angle to understand the cultures in each municipality. Further, a study using quantitative analysis through a survey sent to planners or municipal leaders could also yield useful results by asking questions about planning culture in their particular city. Planning culture research would also benefit from a specific focus on affordability in the various housing markets in Canada. An exploration into how certain decisions can make a city more or

less affordable, and what political forces and planning cultures exist in each city that contribute to these decisions could begin to find solutions to a growing problem of affordable housing in cities that look to densify for the good of the environment. A similar approach that investigates the cultural underpinnings of a municipal planning culture could also be used to explore questions of disability, gender, and race in current city building with the goal of creating cities and spaces for everyone.

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Chapter 4

Summary

As my research began, I wanted to talk to the professionals responsible for the layout of our cities. I was eager to understand what city planners saw as the future of urban mobility. I was keen to reveal how this future would change our urban environments. But, as my exploration began, a bigger picture presented itself. The full complexity of city planning, with its political oversight, layers of bureaucracy, and influence from private interests, compelled me to concentrate on the past and the present as much as I had planned to concentrate on the future. This shift was not unwelcome. I embraced the opportunities it presented me and allowed my research to diverge from the original plan when necessary. What was originally a research project about how planners were preparing for autonomous vehicles became an exploration into the process of urban planning in a time of changing mobility options and an inquiry into municipal planning cultures. The result is two empirical papers that do not follow a typical narrative for a thesis of this kind. The first paper asked if planners across Canada are preparing for new technologies, including autonomous vehicles, and increased privatization in the mobility sector. The second paper looked at the differences in municipal planning cultures across five major Canadian cities.

Both papers provide insight into an ever-evolving planning profession and the systems and culture in which it exists. By examining the points of intersection between these papers, my research also provides a unique perspective on Canadian urban planning, city building, and urban sustainability.

General Observations

Contrary to the tone of numerous news articles on the subject, my interviews found that autonomous vehicles are not close to being a technology that Canadian planning professionals are preparing for in a meaningful way. With the exception of a small team in Toronto, no municipality had devoted significant resources to planning their cities around this emerging technology. This finding aligns with those of Guerra (2016), Guerra & Morris (2018), Legacy et al. (2018) and Stone et al. (2018) who found that planners in the United States and Australia had also not invested considerable time in planning for AVs. Instead, the planners I spoke to were focused on providing space-efficient transportation including more mass transit options (Bus, Light Rail) and infrastructure for active transportation (e.g., biking, walking). While these options lack the novelty of more technologically advanced modes of mobility, the planners I spoke to felt these more traditional forms of transportation were the best option for building sustainable cities. Given that planners were united in their focus on providing space efficiency in their transportation options, why then do the cities in which these planners work continue to provide more space for the private car? At least a partial answer is found in the larger culture of planning within these cities. My interviews suggest there is a significant disconnect between what planners want and what cities are delivering.

A similar disconnect could be seen in regards to sustainable planning. The proven, effective, and mundane alternatives to the private car – walking, biking, mass transit – favoured by most planners are also more sustainable for cities. However, what looked on the surface to be planners' prioritizing the environment was shown to not be a strong influence on their decision making. While these planners understood what makes for more sustainable mobility, they admitted that environmental concerns played little or no role in a city's final planning

decision. The planning culture within Vancouver may have been the lone exception, but even planners in that city chose to lead with other messaging when promoting new planning and mobility projects. The cultural contexts of planning within each municipality made sustainable-first initiatives difficult to adopt. In the majority of the cities, planners felt that city residents and municipal politicians were rarely motivated by a message centered around sustainability.

My interview questions that centered around AVs would inevitably lead to the more general topic of private industry moving into urban transportation. Planners had seen the effects on other cities of ride-share services like Uber and Lyft, car-share services like Car2Go, and micro-mobility options like e-scooters by Lime and Bird. What they knew was these services, while useful in some capacities, could not be relied upon to replace public transportation. This impression was born out only a few months after my interviews when Car2Go announced its departure from North American markets. This decision left many people who had relied on the car-share service without a viable option for longer distance trips. A reliance on private industry to provide public transportation leaves cities at the mercy of these companies should they decide to change terms, service offerings, or leave the city altogether. While many planners would much rather improve their city's current transit offerings, should a city council decide to engage a private company like Uber or Lyft, the planners are left to make the best of a bad situation.

My research showed that municipal planning cultures differed subtly, but meaningfully, between cities. The histories, geographies, and shared experiences of a municipality played a relevant role in how a city's planning professionals prepared for the future. With the support of

residents and politicians, planners in some cities could implement measures that would be unfeasible in others. Dominated by private vehicles, each city was still mired in a history of planning for the car first. However, my data suggests that a goal of moving to more equitable and sustainable mobility is closer to reality in Vancouver than the other four cities I visited. While some of the reason for this finding stems from a planning culture that values equity and sustainability more than in other cities, the high density in Vancouver has forced a keen focus on space-efficient transportation that most cities have yet to experience.

Strengths, Weaknesses, and Future Research

Through interviewing planning professionals, hearing their thoughts on the future, and exploring the contexts of their profession, my research examined city planning from multiple angles. I interviewed twenty-six planning professionals in five Canadian cities (Vancouver, Edmonton, Calgary, Winnipeg, Toronto) using semi-structured questions while allowing the interviews to flow conversationally. These interviews were then coded using qualitative research software. Personal memos were also written throughout the process of my research. The resulting findings were a product of both what was said during the interviews as well as personal observations made while conducting these interviews.

In-person interviews allowed for data collection that went beyond what was said. By meeting face-to-face with these planners, I was able to get a sense of their attitude and demeanor when answering questions. Hearing exacerbated tones when talking about governments, for example, provided more non-verbal information about an answer. Being present provided valuable insight into the work of planning professionals that would have been difficult to gain through phone interviews or quantitative research involving these participants.

Visiting the planners' cities, using the streets and transit networks in these cities, and seeing their built form first-hand also provided worthwhile observations and context. Conversely, in-person interviews have their own endemic problems. For example, the participants' lack of anonymity may have limited the depth and transparency of the responses, although I seldom sensed this during my interviews.

The sample of planning professionals I interviewed provided useful geographical diversity for my research. Nevertheless, similar research could be undertaken within a single municipality to provide a greater depth of understanding at the local level. An unforeseen difficulty in researching planning professionals was the subtle differences in naming conventions, work responsibilities, and project types between planners within different municipalities. The structures of planning departments, and the interdisciplinarity of the profession, can make interviewing some planners very difficult. While I was able to interview subjects who worked in planning departments, I often found their work to be drastically different from each other. Future research would benefit from focusing more specifically on matching work projects between the planners interviewed. It is also worth noting that my introductory email to prospective interviewees mentioned an interest in autonomous vehicles. Highlighting this specific topic gave pause to many of the planners I approached and some turned down an interview because they knew little about the topic. In hindsight, I would have provided a more generic email introduction to avoid a potentially biased sample.

The ability to study municipal planning culture in depth depends on more than interviews with planners. These professionals are only one element of the culture within a municipality as planning does not exist in a vacuum. It both influences, and is influenced by, the many elements

of its city to varying degrees. Interviewing politicians, advocacy groups, private developers, and municipal historians, as well as planners, would give a much clearer picture of the planning culture at work within a city. Further, these cultures are always shifting subtly and will differ by time and the focus of those in charge. A longitudinal study on this topic could highlight these changes happening over time. A study of this nature would give insight into what forces our planners are up against in their goal to make a more equitable city and how best to navigate the various adversities they will likely face. An understanding of a city's history, geography, and culture can provide a starting point from which planners can begin to write their own history, alter the physical geography, and change the municipal planning culture.

Conclusion

The theory of automobility has helped lay the groundwork for my understanding of the decisions that cities have made about urban mobility in the past and how they are likely to act in the future. While planners and politicians in some cities speak more openly about providing access to alternate modes of mobility, I maintain that the system of automobility is still the dominant paradigm that underscores most decisions by city planners, politicians, and municipal leaders. Automobility favours and promotes car use through transportation and land use patterns, tax incentives, and planning policies while providing insufficient alternatives and sustainable modes of transport such as public transport options, cycling infrastructure and walkability initiatives. Thus, any attempts to shift mobility options away from the car are up against two complex forces. First, this shift must navigate a physical infrastructure built specifically for the car over the last century. Second, this shift will undoubtedly be difficult to promote in cities with planning and political cultures steeped in automobility.

Those with the final say on planning decisions are like drivers on a road they are all too familiar with. Our cities have become so comfortable for drivers that we, as citizens, have zoned out behind the wheel, and are yet to regain attention. As Lefebvre writes, “the driver is concerned only with steering himself to his destination, and in looking about sees only what he needs to see for that purpose” (1991, p.312). Put simply, it is very hard for city planning decision-makers to imagine a city without the car. In this way, planning has become habitual. Social practice theory provides a lens that allows municipalities to seriously consider their relationship with the car, and begin to question how it can be dismantled. Driving, as a practice, requires a range of other practices to take place—including road building, transport planning and a lack of viable alternatives (Watson, 2012) —all things over which cities have much of the control.

Contemporary planning discourses “often neglect the ‘why’ and ‘for what’ that gives transport such a priority in their policies” (Freudendal-Pedersen & Kesselring, 2016, p. 575). Traditional city planning’s singular focus on automobile traffic has meant urban mobility has not worked for any form of transportation, including cars. The renowned author and urban activist, Jane Jacobs (1965), famously identified the car and its affiliated spaces and infrastructure as “powerful and insistent instruments of city destruction” (p.338). How are cities to fix this mess of congestion and seemingly endless streams of cars? They have tried to tackle it with what Hagman (2016) calls “The ‘old’ solution”—“the one preferred by most car users … build more roads. However, history has shown that it is not a sustainable solution. More roads attract more cars” (p.67). This observation raises questions about why a traffic-first approach has remained so ingrained in many cities. Some believe that modern planning paradigms have lacked

flexibility as they are still predominantly ‘technocentric’ (Freudendal-Pedersen & Kesselring, 2016).

Living in a city that is built primarily for cars is not easy – even less so if you have decided to live without owning a car. Such people are likely used to checking bus schedules before they leave home, dressing warmly in case their bus fails to run on time, and sending apology texts to their friends for being ten minutes late. If these examples seem oddly specific, that is because I know these issues first hand. Three years ago I made the decision to sell my car and use other modes of mobility to get around. While this might not seem all that drastic if I happened to live in a densely populated city like Vancouver or Toronto, I live in Edmonton, a city that came to prominence at a time when the car was king and has since sprawled to a size larger than the city of Chicago with a third of the population. North America's northernmost major city, Edmonton also has temperatures that can drop to -40 degrees Celsius for days on end. When I started to take these secondary modes of transportation in Edmonton, a place I have lived my whole life, I suddenly saw the ‘missing links’ in our sidewalks first hand as the concrete I was walking on gave way to a beaten path of mud and rock. I noticed corners without curb cut access for wheelchairs, strollers, and the mobility impaired. I also felt the animosity first hand that many cyclists face as I navigated an incomplete bike lane network.

Even as an able-bodied white male who happens to live close to the city’s downtown core, relying on these alternate modes of transportation is significantly harder than it should be - and how I look ensures I rarely need to worry about the racial, sexual, or physical harassment that is a daily concern for many people who need to exist outside of a car. Many people rely heavily on public transit to get them and their families to school, jobs, a grocery store, and

medical appointments. These families are often left waiting hand in hand at a bus stop, hoping they have not missed the last connection to get home. Many will give up and eventually buy a car in search of more certainty in their mobility - and who can blame them? Politicians, planners, and engineers in most major Canadian cities have historically prioritized the car to the detriment of everything else. Our cities, and the people that live in them, are at a crossroads. In the last few years, private industry has taken up the slack left by often underfunded and neglected public transit providers. Companies offering ride- and car-share services like Uber, Lyft and Car2go have filled the gaps between owning a private vehicle and relying solely on public transit. While these companies pitch their products as being revolutionary, they fail to solve the real transportation issues that plague most major cities. That has not dissuaded some of the world's biggest companies from pouring billions into transportation technologies that we are told will change everything.

The future of cities will hinge on a culture that values sustainable planning and resilient city building. As people continue to flock to urban centres in larger numbers the need for city planning that acts locally and thinks globally will intensify. Understanding the current planning culture in these cities is important in an era of climate uncertainty. As a new generation of planners leave schools across Canada and begin their careers, I hope the cultures they enter and then begin to shape will begin to value space-efficient transportation over the status quo of car-dominant planning. Further, as new technologies are developed such as advancements in electric cars and fully autonomous vehicles, it will be all the more important that planners and politicians resist the urge to put these vehicles first. The rapid pace of technological advancement combined with the often slow speed of bureaucracy and increased influence of private interests will only leave Canadian cities further behind.

The automobile has driven our cities to a dead end. A transition to low-carbon space-efficient transportation will require changes to a car-dominated culture in almost all cities in Canada. Politicians, and the voters that put them in power, must question both the ethos of automobility and the current underlying culture of planning within their municipalities. Allowing planners to build better cities by giving their opinions more political weight than those of private interests will provide us with spaces that are more sustainable and equitable.

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Appendix A

Interview Guide - The Future of Urban Transportation

Department of Resource Economics and Environmental Sociology - University of Alberta
Julian Faid - MSc Candidate

The questions below are the main points of interest for the interview. However, due to the semi-structured nature of the interviews, a series of follow up questions may be asked for each of the ten questions. The goal is to engage in an open conversation that last between 45-60 Minutes.

Q1 - Tell me about your planning role in the municipality.

Q2 - From your perspective, what have been the major changes to city planning in this city over the last ten years?

Q3 - Tell me about some of the challenges that planners in this city face, or have faced in the past.

Q4 - What are the challenges that you think transportation planning in your city will have to prepare for in the next twenty years?

Q5 - Through city planning initiatives, has your municipality made specific efforts to reduce greenhouse gas emissions from transportation?

Q6 - Is there discussion about autonomous vehicles at your organization?

Q7 - How is your city preparing for the potential/eventual arrival of autonomous vehicles?

Q8 - Do you think we will ever have fully autonomous vehicles? If so, what is your best guess as to when that might occur?

Q9 - From your view as a planner, how would autonomous vehicles change transportation planning more generally, and public transportation more specifically?

Q10 - Through the eyes of a planner like you, what would the ideal city look like?

Appendix B

Information and Consent Form

Study Title:
Technologies & Transitions: Urban Transportation Planning in Major Canadian Cities and the Contribution of Autonomous Vehicles

Research Investigator	**Supervisor**	**Supervisor**
Julian Faid	Dr. Naomi Krogman	Dr. Harvey Krahn
MSc Candidate	Professor - REES	Professor - Sociology
University of Alberta	University of Alberta	University of Alberta
780-970-2082	780-492-4178	780-492-3322
jfaid@ualberta.ca	nkrogman@ualberta.ca	hkrahn@ualberta.ca

Overview

- You are being invited to participate in an interview because of your position as an expert in the areas of city and/or transportation planning in a major Canadian municipality.
- Your contact information was provided to me through my academic or professional circle of colleagues, via articles/reports you helped create for your municipality, or your municipality's website.
- The results of this study will be used in my thesis presentation and potential publications.
- The interview will take place within an office setting of your choice. If that is not possible, a video interview through Skype or Google Hangouts will be arranged.
- The audio recording of the interview may also be used in an audio summary at the completion of this thesis. Should a portion of your interview be used for this summary, additional and specific permission will be sought before any such audio is used.

Purpose

This Master of Science (MSc) thesis project will include an analysis of the selected major Canadian cities' most recent transportation plan, as well as semi-structured interviews with transportation and planning professionals from each of these major cities. My aim is to discover how professionals are planning for the future of urban transportation and in particular whether their plans include consideration for autonomous vehicles. This analysis may provide valuable information for planners in all cities and provide a path for research regarding the environmental effects and planning impacts of future modes of urban transportation.

As a participant, you will be asked to respond to a series of questions on the themes of my research thesis. Our interview will follow a guide and lead-in questions, but otherwise the goal is to have a conversation that follows an open-ended format lasting between 45 - 60 minutes.

Your name and position will not be identified within the final thesis report, nor will they be associated with your interview responses directly. Your municipality will only be identified should the need arise to highlight differences between municipalities.

Voluntary Participation

You are under no obligation to participate in this study. Participation is completely voluntary. You are also not obliged to answer any specific questions during the course of the study, and you can opt out at any point during the interview.

You can also ask to have any collected data withdrawn from the database and not included in the study by notifying me by email (jfaid@ualberta.ca) within 2 weeks after your interview date. In the event of opting out, the digital data from your interview will be permanently deleted.

Benefits

Your participation in this research offers you a chance to think deeply about the future of urban transportation and future technologies. Further, you will be sent a summary of the research upon its completion.

Confidentiality & Anonymity

Data from your interview will be used within my thesis, but will not be associated with you directly. All efforts will be made to keep specific interview answers anonymous. Your full name and position will not be identified within the final report.

Further Information

If you have any further questions regarding this study, please do not hesitate to contact me at jfaid@ualberta.ca or 1-780-970-2082.

The plan for this study has been reviewed by a Research Ethics office at the University of Alberta. If you have questions about your rights or how the research will be conducted, you can call (780) 492-2615. This office is independent of the researcher.

Consent Statement

I have read this form and the research study has been explained to me. I have been given the opportunity to ask questions and my questions have been answered. If I have additional questions, I have been told whom to contact. I agree to participate in the research study described above and will receive a copy of this consent form after I sign it.

_____ _____

Participant's Name (printed) and Signature Date

_____ _____

Name (printed) and Signature of Researcher Date

_____ _____

Interview Date Final Day to Withdraw Data (2 weeks after interview date)

Appendix C

Code Book

Name	Description	Files	References
Affordability	Housing & Transportation	9	22
Aging Population		5	8
AVs	Autonomous Vehicles	22	141
Behaviour	Examples of what people do	5	12
Buses		3	9
Challenges	General Challenges in Planning	23	243
Regional Challenges		8	32
Choice	Mode Choice	5	10
City Comparison	Examples of a planner comparing one city to another	22	167
City Geography	Physical geography	20	86
Commute		6	17
Congestion		11	19
Congestion Pricing	References to congestion pricing	8	13
Connected Mobility		4	6
Curbside Management		11	27
Data		3	9
Density		20	76
Development	For-profit development	9	69
Economic		16	109
Electric Vehicles		13	46
Environmental Concern	General	18	113
Climate Change		18	104
Equity		2	4
Example		3	8
Food		1	1

Funding	Economic issues of planning	14	51
Future		6	12
Health		8	21
History	Past planning decisions	6	19
Hype		5	5
Ideal City		22	61
Infrastructure		10	22
Job Loss		1	1
Labour Issues		1	6
Land Use Policy		18	43
Livability		2	4
Lived Experience		2	3
Living Location		5	18
Lock in		1	1
Logistics		5	7
Marketing		4	8
Micro Modality	Scooters, E-bikes	7	14
Millennial Shift		1	3
Minorities		9	25
Mode Preference		14	40
Modeling	Transportation modeling	1	3
Multimodality	Using more than one mode of transport	7	16
Negativity	General negative sentiment	12	27
New Technology		21	181
Options		9	13
P3	Public / Private Partnership	1	6
Parking		17	63
Partnership		2	2
People Moving	References to moving people vs moving a mode (Car, Train, Bike, Etc)	5	8
Planning Practice	Examples of how planning is done	23	231

Policy		15	44
Politics	The political nature of planning	21	126
Privatization		10	23
Public Engagement	Examples or references to Public Engagement	14	61
Public Transit		19	148
Quote	Used to code potential quotes for writing	22	201
Regional Authority		2	6
Regulation		1	1
Ride Share	Uber, Lyft	14	59
Safety		5	11
Sentiments		16	74
Positive		15	51
Skepticism		8	23
Shared mobility		8	16
Social City		17	70
Space Efficiency		4	7
Sprawl		9	32
Street Design		1	2
Sustainability		11	41
TOD	Transit Oriented Development	5	9
Trains		1	2
Transportation Modes		22	224
Active Modes of Transportation		13	31
Bike Lanes		17	63
Walking		18	51
BRT	Bus Rapid Transit	4	8
Car Share		10	15
Cars		22	112
Light Rail Transit		14	38
True Cost		2	2

Understanding Transportation	Examples of understanding how people move, but not why.	2	4
Urban Design		1	1
Urban Growth Boundary		1	1
Weather		5	7
Work History	Personal - Planners work history	19	91