

# Automobilism in Wallonia and Montreal: a practice-based approach

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## Abstract

In Europe and North America, the car is the most popular mode of transportation. What make this practice successful despite its highly negative impact on the environment? To answer this question, this research focuses on the accelerators and brakes that drive automobility. The originality of this research is that it uses the theories of social practices as a conceptual framework whose particularity is to consider the practice (and its components) as a unit of analysis. Thus, this paper addresses material, political, administrative, social and family dimensions as well as their interactions to better understand the persistence of daily automobile use. Based on a mixed method using data collected between 2014 and 2019 in French-speaking Belgium and Canada, the results show an interdependence between the practice of automobility and other essential practices of daily life (work, shopping, leisure, etc.) but also the existing influence of relatives (especially spouses and children) and the role of companies and governments in maintaining daily car use. The combination of all these elements maintains the practice of automobility the dominant mode of transportation for both the Montreal and the Wallonia population. The objective of this research is to show the relevance of going beyond the individual dimension in the study of factors and contexts favouring the adoption of practices with a lower impact on the environment: sustainability is played out at all levels and to encourage it, no dimension and no contributor should be omitted.

## Introduction

In Europe and Canada, car is the most popular mode of transport. In Quebec, owning a car in a household represents the second largest expense after housing and before food, meaning that more than 20 % of household income is spent on road transport (Trajectoire Québec, and Fondation David Suzuki, 2017). At the same time, the latest Belgian mobility survey conducted in 2017 comes to the conclusion that the car remains by far the most used mode of transport since 1999 (MONITOR, 2017, p. 7), the year of the first survey conducted on the issue. Moreover, the European Parliament estimates that transport is responsible for almost 30 % of the European Union's total CO<sub>2</sub> emissions, and that of this "private cars are one of the main polluters since they account for 60.7 % of total (transport-related) CO<sub>2</sub> emissions". While reducing greenhouse gas emissions is considered one of the greatest challenges facing the world, why is *automobilism* still a popular practice?

This article focuses on the concept of *automobilism*. Jean Remy (2007) articulates a conceptual point differentiating between automobility and automobilism. The latter corresponds to the use of a tool (in this case a car) for travel, while the former corresponds to the potential to move in multiple directions, at various times, according to convenience. The car meets these aspirations for travel in space and time. As we shall see in this article, context, it is necessary to meet the aspirations of automobility while detaching oneself from *automobilism* is the product of series of mobilisations, notably political, and scientific (Courty, 2007).

## Theoretical framework

For the study of mobility, the empirical applications of theories of social practices are still few. Initially, “mobilities represented the ‘black box’ of the social sciences, and were most often considered to be at the origin of a set of neutral processes providing for forms of economic, social and political life that could be explained by other processes whose causal relationships were more visible” (Urry, 2005, pp. 27–28). Nevertheless, “the unprecedented increase in physical mobility over the past century and the growing awareness of related sustainability issues have initiated a ‘mobility turn’ in many social science disciplines” (Rau and Sattlegger, 2018, p. 1).

Recently, studies on mobility issues have multiplied. Different authors (Mattioli, Anable, & Vrotsou, 2016; Scheiner & Holz-Rau, 2013) carry out typologies classifying and distinguishing different ways of doing research on mobility issues. Scheiner and Holz-Rau (2013) observe three ways in which travel is studied in the literature: the study of short-term travel via the ad hoc analysis of daily trips, for which they also cite a state-of-the-art study on this issue by Pendyala (2003); travel studied over a few years with a particular interest in transitions and triggering events over a given period; and finally, the study of travel linked to ageing, stages of the life cycle and/or membership of a cohort (Greene and Rau, 2016). At the same time, Mattioli et al. (2016) update a typology to distinguish different approaches (macro, meso, or micro) to car dependence. They consider the study of mobility through practices to be currently under-conceptualized and understudied, whereas this perspective “allows for a ‘view’ of the elements of a practice and thus a better assessment of how practices might be diverted from car dependence” (Mattioli et al., 2016, p. 69).

Finally, Greene and Rau (2016) state that the field of mobility studies through the lens of social practice theories “has been dominated by quantitative methodologies that use large-scale data to model different trajectories and identify life events and domains that impact individuals’ travel behaviour” (Greene and Rau, 2016, p. 6). While not discounting the value of such quantitative research (Kennedy, Krahn, & Krogman, 2013; Rau & Manton, 2016; Rau & Sattlegger, 2018; Spotswood, Chatterton, Tapp, & Williams, 2015) in capturing large-scale trends, these methods nonetheless obstruct the visibility of some of the processes and mechanisms by which practice changes occur, which is why this article adopts a mixed methodology.

## CAR DEPENDENCY

Among the sociological literature on mobility issues, a significant portion is devoted to the car, and more specifically to car dependency (Mattioli et al., 2016; Mattioli, Roberts, Steinberger, & Brown, 2020). For example, regarding the car, Urry (2004) explains that “the automobile can be conceptualized as a system that is self-organizing, autopoietic, and nonlinear, and spreads across the globe; it includes cars, car drivers, roads, oil supplies, and many new objects, technologies, and signs” (p. 27). By Autopoiesis, Urry (2004) considers the capacity of a system to produce itself, permanently and in interaction with its environment, and thus to maintain its organization in spite of the events and the modifications that it meets.

This system of automobility developed massively in European countries in the late 19<sup>th</sup> century and Mattioli et al.

(2016) consider “three different understandings of ‘car dependency’, corresponding to three levels of analysis: micro (car dependency as an attribute of individuals), macro (an attribute of society and/or the built environment), and meso (an attribute of particular journeys, activities or practices)” (p. 57). The micro-analytic level views the individual as the sole driver of change. Mattioli et al. (2016) criticize mobility studies carried out from a macro-analytical perspective, considering that differences in mobility practices between different trips are not sufficiently taken into account, given that this research starts from the assumption that “people drive mainly because they have no alternative” (Newman et al., 2009, p. 84 cited in Mattioli et al., 2016, p. 58). Finally, meso-analytic studies, which for the authors are the least numerous, allow for car dependence “to be viewed not as an attribute of individuals or societies, but rather of travel or related practices and activities” (Mattioli et al., 2016, p. 58). Empirically speaking, the authors observe that car dependence is mainly present in practices related to managing children, shopping, but also moving heavy objects.

In a 2020 article, Mattioli, Roberts, Steinberger, et Brown (2020) further deepen the analysis of car dependence by listing five dimensions that compose it: (1) the automobile industry, (2) the availability of automobile infrastructure; (3) the economic policy of sprawl; (4) the availability of public transport; and (5) the cultures of automobile consumption. By comparing each of these different elements with each other, they conclude that auto-mobility can be seen as “a profoundly self-reinforcing system, seemingly immune to the swings of the economic and political pendulum, capable of bending the forces that tilt the rest of society toward its goal” (p. 14).

## SOCIAL PRACTICES THEORY

The theories of social practices are inspired by the philosophy of Wittgenstein, Taylor and Lyotard, the theory of structuration of Giddens (1984) and also scientific concepts from the field and studies of science and technology (Callon & Latour, 1985). Theodore Schatzki (Knorr-Cetina, von Savigny, & Schatzki, 2001; Schatzki, 1996) Andreas Reckwitz (2002) are the leading figures in this movement. The originality of the theories of social practices is to consider the practice as a unit of analysis and Schatzki (1996) defines this concept of practice as “a temporally unfolding and spatially dispersed nexus of doings and sayings” (1996, p. 89). Reckwitz (2002) later reformulates this definition by stating that a “a practice is a routinised 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” (pp. 249–250).

Although the theories of social practices do not constitute a homogeneous sample of contributions, most theorists claiming to belong to this stream of analysis generally agree on the two interpretations of practice as set out by Schatzki (1996): practice as a coordinated unit and practice as performance. Although the theories of social practice do not constitute a homogeneous sample of contributions, most theorists claiming to belong to this stream of analysis generally agree on the two interpretations of practice as set out by Schatzki (1996): practice as a coordinated unit and practice as performance.

Schatzki's first definition concerns practice as a coordinated unit, which he designates as "a set of doings and sayings that unfold in time and are dispersed in space" (1996, p. 89). Schatzki illustrates this point by citing culinary, electoral, industrial or leisure practices. He also adds that "to say that the sayings and doings that form a practice constitute a nexus is to say that they are linked in some way. There are three main ways in which they are linked: (1) through understandings, for example, of what to say and do; (2) through explicit rules, principles, precepts, and instructions; and (3) through what I will call 'teleoaffective' structures encompassing ends, projects, tasks, goals, beliefs, emotions, and moods" (Schatzki, 1996, p. 89). Thus, each of the three components listed above is constitutive of practice; each component must be present for practice to occur. This conceptualization is therefore characteristic of this generation of theorists of social practice theories, although some authors (Gram-Hanssen, 2010; Bartiaux and Reátegui Salmón, 2014) point out the fact that the naming and number of these components varies from author to author. Reckwitz (2002) furthermore adds a fourth component, material arrangements. All of these components will be defined and explored in greater detail below.

The second meaning of practice defined by Schatzki (1996) is performance, which he describes as "the 'doing,' the actual activity or energy, at the heart of the action. (...) It designates the continuous occurrence at the centre of human life as a flow of activity and reminds us that existence is an event that takes the form of a performance and an incessant realization" (1996, p. 90). In order to exist, a practice therefore requires to be performed, in other words, translated into concrete action. Very simply, this can be exemplified by raising one's hand to greet someone or turning the key in the ignition to start the car. It is the performance that engages the persistence of the practice over time. Nevertheless, Warde (2005, p. 141) also emphasizes the fact that practices have the "seed of constant change". Indeed, practices can persist over time but they can also adapt to new situations.

#### The component of each practice

If these two definitions are unanimous within the theories of social practices, it is nevertheless true that some theorists reformulate certain constituent components of practice. In order to clarify this, Gram-Hanssen (2010) summarizes, in Table 1, the

different conceptualizations of the components of practice in relation to Schatzki (2002), Warde (2005) and Shove and Pantzar (2005) and Reckwitz (2002).

Warde (2005) and Shove and Pantzar (2005) build on the work of Schatzki (1996; 2002) but rename or modify some of the items. They add material arrangements in reference to Reckwitz (2002) to refer to things, products, or simply consumer objects, respectively (Gram-Hanssen, 2010, pp. 154–155). For the purpose of this article, Schatzki's (1996) conceptual framing was also borrowed, while considering the addition of Reckwitz (2002). Any practice will therefore be considered to have four components: (1) skills and routines, (2) institutionalized procedures, (3) teleoaffective structures, and (4) material arrangements. Each of these components will now be detailed.

Schatzki (2002) does not deal directly with know-how and routines but rather with practical understandings. Taking Bourdieu's concept of habitus (1990) and Giddens' concept of practical consciousness (1994) as a starting point, Schatzki (2002) considers that "Practical understanding, resembles habitus and practical consciousness in being a skill or capacity that underlies activity. It differs in almost never determining what makes sense to people to do, in almost never, therefore, governing what people do. Practical understanding instead executes the actions that practical intelligibility singles out" (Reckwitz, 2002, p. 79). For Schatzki, practical knowledge should be understood to include the following three dimensions: knowing how to do a practice, knowing how to identify a practice, and knowing how to provoke and respond to a particular practice. Warde (2005, p. 140) rephrases this concept as "routine" and suggests that it can be equated with "habit, practical awareness, tacit knowledge, tradition, etc.". Routines can be seen as a form of "internalized evidence" in the sense of Kaufmann (1997, p. 124), and are embodied in the fact that certain acts become so routine that they are performed without thinking about them. This allows practice to develop a capacity for repetition, and even, in certain situations, for inertia. Concerning the use of the car, this is in line with Demoli and Lannoy (2019) who state that "gradually, automobile equipment is spreading to all working people, in the same way as other socially unavoidable goods: the refrigerator or the television" (p. 11). The car thus becomes an everyday object anchored in social and individual consumption routines.

Table 1. Different acceptances in the understanding of the practices.

Schatzki (2002)	Warde (2005)	Shove & Pantzar (2005)	Reckwitz (2002)
Practical understanding	Understandings	Competences	Body
			Mind
			The agent
			Structure/process
Rules	Procedures		
Teleo-affective structures	Engagement	Meanings	Knowledge Discourse/language
	Items of consumption	Products	Things

Source: Gram-Hanssen, 2010, p. 154.

The formal arrangements that govern practice correspond to the second component and are described as institutionalized procedures. Schatzki (2002) defines this dimension as “explicit formulations, principles, precepts, and instructions that enjoin, direct, or remind people to perform specific actions. To say that rules bind actions and words is to say that people, in performing those actions and words, consider and adhere to the same rules” (Schatzki, 2002, p. 79). From a motoring point of view, this corresponds to the highway code, the obligation to have a license to drive, but also to the tax benefits granted by the states to companies that offer company cars. All these rules regulate and promote car travel.

The third component of practice is titled “teleoaffective structure” and is defined by Schatzki (1996) as “hierarchical orders of goals, objectives, projects, actions, beliefs, and emotions that fall within a certain range of such possible orders” (p. 100). Schatzki points out that unlike explicit rules (which constitute institutionalized procedures), teleoaffective structures do not need to be verbalized or even made explicit. In an article devoted to a biographical approach to mobility practices, Greene and Rau (2016) illustrate this component of practice in particular by using the example of a driver named Claire. They explain “Claire emphasised various positive images of driving, including independence, freedom and popularity. Her narrative suggests that becoming a practitioner formed an important aspect of her developing young adult identity, with these positive connotations of car-based mobility being mirrored in wider society” (p. 74).

Furthermore, while Schatzki (2002) does not initially address material arrangements per se, several authors (Reckwitz, 2002; Shove & Pantzar, 2005; Gram-Hanssen, 2010) have emphasized the interest and relevance of incorporating this dimension as a fourth component of practice. Reckwitz (2002) thus asserts that “objects are necessary components of many practices – just as indispensable as bodily and mental activities. To perform a practice, it is very often necessary to use particular objects in a certain way.” (p. 253). Bartiaux (2013) illustrates this component through the prism of alternatives to the car. She explains “Defecting from the practice of car driving relies indeed on new material arrangements that often include several ‘objects’, of the same type (means of transport) or not (means of transport and new communication technologies). Diverse competences are associated in novel ways (emailing or surfing on internet before traveling with others or by bicycle)” (p. 1046). Thus, like the other components, the material arrangements are also essential to the realization of each practice since they are the concrete “equipment”.

Therefore “theories of practice offer the sociology of sustainable consumption an understanding of social action that promised a way out of the cul-de-sac of the ‘value–action’ or ‘attitude–behaviour’ gap: the phenomenon of the discrepancy between reported pro-environmental values and obdurately unsustainable behaviour” (Welch et Warde, 2015). By adopting social practice theories, the idea is to move beyond the individual dimension and extend the analysis to a set of factors and contexts that promote or limit more sustainable mobility. This theoretical framework thus seems particularly adapted to the research question that interests us, namely: What make the practice of automobilism successful despite its highly negative impact on the environment? Indeed, adopting this theoretical

trend allows us to go beyond the traditional dualism opposing structure (holistic vision) and actor (individualistic vision) (Warde, 2005).

## Methodology

Concerning the methodology, our results are based on quantitative and qualitative data obtained from three separate studies carried out either in Canada or in Belgium. This results in a mixed-method approach (Teddle & Tashakkori, 2009), which combines qualitative and quantitative data to expand knowledge and corroborate findings (Johnson, Onwuegbuzie, & Turner, 2007, p. 123). The mixed method allows for corroboration, defined by Rossman and Wilson (1985) as the bringing together of “data collected by different methods to see if there is convergence between the results” (p. 632). This amounts to triangulating results in the sense of Webb, Campbell, Schwartz, and Sechrest (1966) who state that “once a proposition has been confirmed by two or more independent measurement processes, the uncertainty of its interpretation is greatly reduced. The most persuasive evidence comes through a triangulation of measurement processes. If a proposition can survive the onslaught of a series of imperfect measures, with all their irrelevant error, confidence should be placed in it” (Webb, Campbell, Schwartz, and Sechrest, 1966, p. 3). Cross-referencing data collected through different methods therefore reduces the possible margins of error and strengthens the value of the results.

The qualitative method used in this research are in-depth interviews, defined by Boyce and Neale as a “qualitative research technique that involves conducting intensive individual interviews with a small number of respondents to explore their perspectives on a particular idea, program, or situation” (Boyce & Neale, 2006). The objective was to obtain a narrative of practices in the sense of Bertaux (1997), that is to say a set of in-depth and meticulous descriptions of personal experiences as far back the interviewees could remember. This research includes 33 in-depth interviews: 22 in-depth interviews with young adults reinforced by 11 in-depth interviews with some of their parents. These cross-interviews on two generations (Delcroix, 1995; Delcroix & Lagier, 2014) as well as between siblings are interesting because they solidify the quality of the data collected individually while providing key information for understanding family dynamics and the construction and evolution of consumption practices. Face-to-face interviews were conducted from September to November 2018 in all provinces of French-speaking Belgium.

The quantitative data used for this paper comes from two research projects: one realised in Belgium and the second in Canada. The Montreal survey focused specifically on car drivers who take their car individually. A questionnaire was created and tested from October to December 2020 and distributed in neighbourhood groups on the social network Facebook from January to March 2021. A total of 345 residents of the Montreal metropolitan Community completed the entire questionnaire. The objective of the Belgian survey was to compare the consumption practices of lambda consumers with those of consumers belonging to citizen ecological transition initiatives. The link of the said questionnaire was disseminated in neighbourhood groups on the social network Facebook in November and December 2014. The database established after the distribution of the questionnaire includes 1,785 people. Nevertheless, the analy-

sis of this questionnaire showed a significant proportion of non-responses since 522 people did not complete it, probably due to the fact that it consisted of 122 questions and that the time to complete it was estimated at half an hour. Of the 1,263 respondents, 368 (29.1 %) were affiliated with at least one citizen ecological transition initiative. The quantitative data were processed in SPSS statistical software while the interviews were analysed using NVIVO qualitative data management software.

Wallonia and Montreal have been chosen as the field of study for their heterogeneous characteristics. Indeed, if the French-speaking world is a common point, these two case studies are distinguished by their population density (890 inhabitants/km<sup>2</sup> for Montreal versus 215 inhabitants/km<sup>2</sup> for Wallonia) as well as by the urban character of Montreal versus the semi-urban character of Wallonia. Furthermore, it should be noted that these two regions cannot be compared as such, as the data collected are of a different nature: there is no qualitative data for Quebec and the questionnaires distributed are different between the two study regions. Nevertheless, combining the data from these two areas is still relevant because it allows us to strengthen the results and to identify some clear trends (regardless of location) that influence or limit the adoption of a mode of transport with a lower environmental impact.

## Results and Discussion

This section presents and discuss the results obtained in the two research studies by detailing the four components of *automobilism*. For each component of this practice, a set of accelerators and brakes are identified in order to highlight the tensions that play out in the recruitment or abandonment of mobility practices that have a heavy impact on the environment. The objective of these points is to provide a set of empirical elements to better understand the continuity of car use despite the high environmental impact of this practice.

### HOW-KNOW AND ROUTINES

How-know and routines are a first component inherent to each practice. Among these dimensions, some encourage continued use of the car while others hinder or limit it. The objective of this section is to show how this component can condition the adoption or abandonment of car use in daily life.

#### Accelerators: interdependent practices and family

Car use allows the realization and the coordination of many social activities. The results show that driving allows practitioners to (1) go to work, (2) carry out domestic activities (shopping, administrative tasks, trips to transport children, etc.), (3) go to places of leisure and (4) engage in socializing activities (visiting family, friends, etc.) (Castreman & Bartiaux, 2021).

At the same time, the car also allows for long trips that include several trips, the so-called trip-chaining phenomenon which McGuckin et Nakamoto (2005) define as a “sequence of linked trips between two key destinations, such as home and work” (p. 3). For example, a person may leave work and, before returning home, go shopping and pick up his or her children “on the way”. Doris illustrates this concept through her daily travels:

“As I’m on my way to drop the kids off at school, I take the opportunity to run an errand, drop this off at the post office,

come back and make a detour for one thing or another.” Doris, born in 1983 (34 years old at the time of the interview), stay-at-home mother, in relationship, 2 children.

Thus, a set of routines which are part of the diffusion of constant acceleration (Rosa, 2010) limit the impact of those that encourage the adoption of “green” mobility practices. This dimension of speed and acceleration encourages people to carry out more and more practices in as little time as possible, which amounts to being enrolled in the practice of trip-chaining and therefore in the use of the car. In particular, these chains of practices can hinder the recruitment of new practitioners into more sustainable practice as Claire expresses with the example of carpooling:

“Carpooling is too complicated in terms of daily time management, actually. Let’s just say that we are tied to schedules. And then, it’s impossible one is dependent from the colleague. In fact, the car, there is nothing to do, it allows a flexibility, a freedom that has no equal.” Claire, born in 1986 (32 years old at the time of the interview), commercial, in relationship, one child.

In addition, living with a partner and having children are quantitative variables that have a significant impact on mode use (Table 1). To test the hypothesis that there is a significant relationship between the workers’ mode of transport and whether they are in a couple or have children, we need to look at the significance (p-value) associated with the test. In our analyses, we considered that a significant Chi-Square must have a p-value lower than 0.05. A p-value of less than 0.05 means that there is less than a 5 % chance of being wrong when asserting that there is a significant relationship between the two variables being tested.

In the Belgian survey, living with a partner and/or having children increase the likelihood that respondents will use a car for travel. This is consistent with the observations of Sopjani, Stier, Hesselgren, et Ritzén (2020) who carry out a “living lab experiment” in which they propose to sixteen Swedish households to replace their private car with public transport and car sharing, which proves to be particularly complicated especially for users with children.

The Canadian study shows similar results. Indeed, as Table 3 shows, the car as the main mode of transport has significantly more practitioners with children, and the other modes of transport more practitioners from households without children. As pointed out by Bartiaux and Reátegui Salmón (2014), household size influences daily practices: the larger a household, the more the organization of practices will have to fit with those of members. On the one hand, the various hectic and rhythmic routines of daily life reinforce *automobilism*. On the other hand, *automobilism* enables the routines of car users (practice carriers), whether they are drivers or passengers. Thus, this section highlights that family members and their respective intertwined routines maintain car use as a daily practice.

#### Brakes: proximity, bicycle reflex and limited physical abilities

In addition to these accelerators, other skills and routines can also be obstacles to becoming a driver. First, driving requires special skills as Barbara puts it:

“I don’t even have a driver’s license. I’m scared to death of driving, and I get my feet stuck in the pedals every time

Table 2. Distribution of working people's modes of transport according to whether they live in a couple or with children.

	Do you live in a couple? ( $\chi^2 = 0.037$ )		Do you live with children? ( $\chi^2 = 0.0001$ )	
	Yes	No	Yes	No
Car	76.0 %	70.2 %	78.0 %	63.3 %
Other modes of transport	24.0 %	29.8 %	22.0 %	26.7 %

Source: Survey on eco-consumption practices and citizen initiatives, November–December 2014 (N=1,217 people).

Table 3. Distribution of the mode of transport mainly used during the week according to the presence of children or not in the household.

Presence of children in the household	Yes	No	Total	$\chi^2$
Main mode of transport used	%	%	%	
Car	57.6	42.4	100	0.0001
Other modes of transport	22.8	77.2	100	

Source: Survey on the mobility by car (alone) of the inhabitants of the Montreal Metropolitan Community, January–March 2020 (N=345).

I think about it, so ... (laughs)." Barbara, born in 1994 (24 years old at the time of the interview), unemployed, in relationship, without children.

Here, this excerpt allows us to highlight two obstacles to car use: the proximity and lack of skills. Since Barbara does not provide the necessary driving skills, she cannot be recruited through this practice. Specialized skills are therefore necessary to enable *automobilism*. In this sense, not all candidates are competent and practise *automobilism*. Other interviewees also mentioned that their physical condition may prevent them from driving. This is the case for Astrid:

"With my disease, I shake too much and don't have enough leg strength to drive." Astrid, born in 1956 (62 years old at the time of the interview), early retired, divorced, one child.

Finally, when other modes of transport are integrated into daily routines, this can limit car use. Fabrice testifies to this:

"And I don't have a car reflex at all. I don't ask myself what I choose: it's the bicycle naturally. And it's been like that since I was a child." Fabrice, born in 1966 (51 years old at the time of the interview), secondary school teacher, in relationship, 4 children.

In Fabrice's quote, it is noted that her daily routines adopted since childhood limit car use. Thus, this point also highlights the importance of the role of routines in the adoption of a mode of transport with a lower environmental impact.

In this section, we realize that the car is an integral part of people's daily lives and that routines are adjusted according to this mode of transport (for example, it is possible to make several stops on a journey because one has a car). Nevertheless, the brakes in this section showed that a lack of physical or driving skills or the adoption of another mode of transport since childhood could limit car use.

#### TELEOAFFECTIVE STRUCTURES

As a reminder, Schatzki (1996) defines teleoaffective structures as "hierarchical orders of goals, objectives, projects, actions, beliefs, and emotions that fall within a certain range of such possible orders" (p. 100). These practitioners' values and

plans are regularly pointed out (especially by the media and social networks) as the pivotal factor in reducing the impact of individual consumption on the planet. Indeed, according to Shove and Spurling (2013), "in popular and political discourses, it is usual to explain these changes as the result of individual choices" (p. 19). Furthermore, the rational action paradigm (Ajzen, 1985; Ajzen & Fishbein, 1980) based on attitudes and behaviors is regularly mobilized to address issues of sustainable consumption (Spaargaren, 2011). This section proposes to explore these issues in more detail, keeping in mind that this component must necessarily be combined with the others in order for practice to take place. To take an example, just because an individual is environmentally sensitive does not mean that he or she never uses a car. So, without neglecting the importance of this dimension, the social practices theories emphasize the importance of taking into account other dimensions (i.e., know-how and routines, material arrangements, and institutional norms and rules) in order to better understand how practices evolve towards "greener" options.

#### Accelerators: autonomy, comfort, freedom and a break

In this way, a set of teleoaffective structures promote the use of the car. For example, motorists who do not want to part with their car are very significantly more likely to characterize driving as: freedom, an extension of their personality, pleasure, obligation, and independence. Simultaneous, they characterize the benefits of the car as: driving the vehicle, comfort, having one's own space, the pleasure of listening to music, staying in the same mode of transportation, and the choice of co-drivers (Castreman & Bartiaux, 2021). Damien highlights another dimension that hinders his adoption of *automobilism*:

"Do I carpool? No. Do I want to do it? No. To tell the truth, these two trips, alone, in my car, are a bit of time just for me. I listen to music or a good radio show and I don't really want to force myself to make small talk. Then when I get home with the kids, it's just impossible to be quiet to listen to anything else, so no. I'm fine alone in my car (laughs)." Damien, born in 1982 (35 years old at the time of the interview), engineer, in relationship, two children.

In this excerpt, Damien highlights the fact that carpooling requires a form of socialization that he does not want. It is thus the social imperative that slows down the recruitment.

In addition, representations associated with other modes of transport such as inflexibility, loss of time, noise, insecurity, quality of service also reinforce *automobilism*. Proportionally, a very significant number of car users who do not want to leave their car consider the following disadvantages of public transport (bus, metro, train): discomfort, noise, large number of users, insecurity, and interior and exterior appearance. We notice that the representations positively linked to the use of the car are negatively linked to the use of public transport. What is a lever for one mode of transport can therefore be a brake for another.

#### **Brakes: the car as a source of pollution**

Conversely, other emotions, feelings and/or values may inhibit car use. Thus, as far as the adoption of “green” mobility practices is concerned, environmental sensitivity is from the outset a teleoffective dimension, highlighted to justify the adoption of a mode of transport with a lesser impact on the environment. This is illustrated by the excerpts from Florence and Louise:

“And otherwise, I walk to work and I come back by bus. And Nathan goes by bike and it is a purely thoughtful and ecological choice.” Florence, born in 1992 (25 years old at the time of the interview), psychologist, couple, without children.

“I have radical ecological ideals, including not having a car. I wanted to have a minimal impact arising from? my actions. Therefore, working by bike was a logical choice for me.” Louise, born in 1984 (34 years old at the time of the interview), shopkeeper, single, without children.

In the Montreal survey, when asked “Would you like to have no car?” 39.7 % of motorists surveyed (137 out of 345 respondents) would like to do without their car partially or completely. One of the main reasons for this desire is environmental. The proportion of car owners who wish to partially or entirely get rid of their car is proportionally and very significantly higher than the proportion who consider visual pollution and air pollution as disadvantages of the car (Castreman & Bartiaux, 2021).

It is interesting to note that among the respondents who have actually reduced their car use over the past ten years, i.e. 33.8 % of the motorists surveyed, 48.1 % did so for ecological reasons. Of course, there are several reasons in addition to environmental concern for reducing driving. Thus, a change in professional life (71.1 % of respondents), a change in family composition (47.7 %), a relocation (46.1 %), a change in household income (36.7 %) and health problems (7.0 %) also affect driving, sometimes simultaneously. Significant changes in practitioners’ lives (Greene & Rau, 2016; Bartiaux, 2013) alongside a concern for the environment can generate a change in practice.

The qualitative survey conducted in Wallonia shows that people who use other modes of transport (than the car or in addition to the car) daily are indeed driven by ecological motivations. Nevertheless, they complicate their journey (by extending their travel time, taking different modes of transport for the same journey, being less flexible in their timetable, etc.).

This complication is possible because they generally live without children and do not practice trip-chaining (see how-know and routines section). This demonstrates the interdependence of the different components of the practice.

#### **MATERIAL ARRANGEMENTS**

Material arrangements are a third component and are defined by Shove, Pantzar and Watson (2015) as defined as “objects, infrastructure, tools, equipment and the body itself” (p. 23). Depending on the material arrangements at hand, self-mobility may be encouraged or inhibited.

#### **Accelerators: infrastructure that facilitates the car and limits other modes**

As we have seen in the section on skills and routines, the car transforms space and time thanks to its great flexibility (Urry, 2004). Thus, the urban sprawl makes *automobilism* essential to the realization of social activities. The road network constitutes 9.5 % of the surface area of Greater Montreal, or 36,509 hectares out of a total surface area of 437,410 hectares, but can be as high as 30 % in certain municipalities (Observatoire Grand Montréal, 2019). The Walloon road network is among the densest in Europe with 4,821 km of roads per 1,000 km<sup>2</sup> while the rail network represents 98 km per 1,000 km<sup>2</sup>. In other words, the car has a network 48 times denser than the train.

These considerations have consequences for car use. Indeed, the Montreal metropolitan community is divided into five major zones: the first is the City of Montreal or the Island of Montreal, the second and third are the suburbs of the city, the agglomeration of Longueuil to the south and the agglomeration of Laval to the north of Montreal, the fourth and fifth zones are more distant agglomerations with the Northern Crown to the north and the Southern Crown to the south of Montreal Table 4 indicates that the further away from the Island of Montreal a home is, the more the car is a routine mode of transportation, and the less the inhabitants use other modes of transportation such as the train, bus, metro, walking or cycling. This can be explained not only by the fact that a large number of infrastructures have been built around the automobile, but also by the fact that the supply of alternative transportation to the car is denser on the Island of Montreal than in its periphery.

The lack of public transport services reinforces the position of the car in the social space. Indeed, to move around in a more “sustainable” way also requires the existence of material alternatives available to do so, which is not always the case, as Bernadette and Germaine confide:

“Here without a car, you are screwed.” Bernadette, born in 1964 (54 years old at the time of the interview), private sector pensioner, single, two children (including Barbara).

“I only get around by car. It’s a bit difficult to do otherwise here, in the province of Luxembourg and living in a village, moreover.” Germaine, born in 1956 (62 years old at the time of the interview), retired from education, divorced, one child (Gaëlle).

At the same time, Shove et al. (2015) also consider that most analyses of self-mobility systems “do not show how spatially extended networks are involved in the localized reproduction of many practices at once (and vice versa)” (p. 278). Yet, ac-

Table 4. Mode of transport mainly used by car users according to their living area.

Areas of the Montreal Metropolitan Community	Car alone		Carpooling		Other transports		Total		$\chi^2$
	N	%	N	%	N	%	N	%	
Montreal Island	80	58.4	18	13.1	39	28.5	137	100	0.0001
Laval/Longueuil	40	78.4	5	9.8	6	11.8	51	100	
Northern and Southern Crown	130	82.8	15	9.6	12	7.6	157	100	

Source: Survey on the mobility by car (alone) of the inhabitants of the Montreal Metropolitan Community, January–March 2020 (N=345).

Table 5. Number of vehicles owned by households in the commune of Ottignies-Louvain-la-Neuve compared to the average and median in Wallonia.

Number of cars in the household	Share of households in the municipality of Ottignies-Louvain-la-Neuve	Share of average households in Wallonia	Share of median households in Wallonia
0	31.4	19.3	18.1
1	45.7	48.2	48.0
2	18.1	25.2	25.1
3 and +	4.8	7.3	6.8

Source: Walstat (2020).

cording to these authors, certain material arrangements, such as the car and, more broadly, the automobile system, link a set of a priori independent practices. Thus, material innovations lead to changes in social practices, including those concerning shopping, travel and school attendance. For these authors “understanding car dependence is, therefore, about understanding how these domains of everyday life evolve, separately and together, and in their collective relationship with infrastructures and systems of automobility” (Shove et al., 2015, p. 284).

If the car is sometimes the only alternative for getting around, in other situations, like that of Alexis who lives and works in the city center, public transportation is abundant. However, Alexis uses the car every day:

“Pfff yeah, for now, all the time by car. Otherwise, before I got my license, it was always the bus. The bike, too, but now, I don’t know if you’ve seen the hill to get home. I’ve done it before, but well... I’m not a fan (laughs). And the bus takes us down at the foot of the hill ... Not practical (laughs).” Alexis, born in 1990 (28 years old at the time of the interview), salesman in a ready-to-wear store, single, without children.

This testimony highlights the fact that the availability of public transport does not guarantee the adoption of mobility practices that have a lower impact on the environment. Indeed, the physical conditions on the one hand (concerning the bicycle and the hill to walk to get home) but also the geographical location of the destination (of the home and the bus stop) can slow down the adoption of “sustainable” mobility practices.

In addition, it is interesting to note that the perceived advantages of the car, such as time flexibility, coverage of a large geographical area and speed, are not significantly associated with the fact of wanting to do without a car. On the other hand, the low frequency of travel as well as the fixed schedule of public transport is a barrier to change. The car offers what other forms of transport cannot. Using the car is not only a matter of prefer-

ence for its technical qualities, but also works by elimination; the car is used because other modes of transport do not offer flexibility.

#### Brakes: the lack of infrastructures

In Montreal as in Wallonia, motorists who wish to partially or completely divest themselves of their vehicle are proportionally and very significantly more likely to consider the following as disadvantages of the car: (1) price, (2) congestion, (3) difficulty of parking, (4) noise, and (5) the price of parking. This means that material arrangements may disadvantage car use.

Thus, car use is sometimes limited by a lack of financial means, as in the case of Gaëlle:

“A car is very expensive! Well, paying for the car is one thing. But to the price of the car, you add the gasoline, the insurances, the taxes, etc. ... there it becomes consequent!” Gaëlle, born in 1984, (34 years old at the time of the interview), employed in the public sector, in relationship, one child.

Furthermore, the use of cars may decrease due to a lack of infrastructure, such as a lack of parking space. In this case, there are cities where other types of mobility are gaining users. For example, in Belgium, the city center of Louvain-la-Neuve is only directly accessible to pedestrians and public transport (bus and train). As a result, this city has a lower car share per household than the Walloon average, with almost one third of households without a car (see Table 5<sup>1</sup>).

In addition, the development of new metro lines as well as the work in progress for the introduction of the RER (Réseau express régional – regional express network) linking Brussels to the periphery or the extension of the metro network in Montreal are initiatives that can encourage the adoption of a mode of transport that has less impact on the environment.

1. <https://walstat.iweps.be/walstat-catalogue.php>



### INSTITUTIONALIZED PROCEDURES

The impact of some explicit rules may encourage the maintenance or abandonment of automobilism. This is what this last section shows. Institutionalized procedures act as a backdrop to the adoption of mobility practices, whether or not they have a lesser impact on the environment. Thus, although they are not explicitly mentioned in the data collected, this does not mean that their influence should be minimized.

#### Accelerators: the salary-car and road infrastructure investments

In Belgium and Quebec, government spending continues to increase in the transport sector despite budget cuts in other sectors (health, culture, etc.). Between 1995 and 2015, Canada's government spending grew 69 %, reaching \$6.664 billion in 2015 (Trajectoire Québec & Fondation David Suzuki, 2017). In Wallonia, in 2017, €600 million has been earmarked for highway lighting, compared with €72 million to help purchase electric bicycles. This massive investment in road infrastructure makes automobile transport useful and beneficial, which is a power that contributes to the subjugation of individuals to the functioning of the automobile system (Demoli & Lannoy, 2019).

As far as institutionalized procedures are concerned, some of them do not encourage the adoption of a "sustainable" mode of transportation at all, whether it be cycling, taking public transport or carpooling. Damien and Corine exemplify this:

"Me, I have a company car and a gas card so, in fact, I don't even ask myself the question." Damien, born in 1982 (35 years old at the time of the interview), engineer, in relationship, two children.

"So that's the ambiguity: if my husband leaves his company car here at home, he has to pay for the train. And then anyway, he realized that the shuttles are really not good." Corine, born in 1960 (58 years old at the time of the interview), teacher in a secondary school, in relationship, three children (including Colin and Corentin).

Indeed, some wage packages inhibit the adoption of a more "sustainable" modes of transport. If the car is available thanks to the employer's tax-friendly salary package, it is clear that this is a huge driver of daily car use compared with the ticket price for public transport which is – generally – not free.

#### Brakes: bicycle allowance, loan bike and carpool lane

In Belgium, since February 2009, all private companies must contribute 75 % of the cost of transport between home and work if the journeys are made by public transport. Thus, depending on the benefits included in the employee's salary package, certain practices may be favored to the detriment of others that are more or less "green". Fabienne, who regularly cycles to and from work, explains:

"I have a bicycle allowance. I get about 30 euros a month net, and I think that's nice too ... I think it's a good incentive too." Fabienne, born in 1970 (47 years old at the time of the interview), secondary school teacher, in relationship, four children.

In addition, other procedures, such as the "I'm testing the electric!" action organized by Wallonia encourage the mobility

by electric bicycle. Thus, between May 2017 and April 2020, 8,459 participants were able to benefit from a loan e-bike and 17 % bought the bike after the loan period while 41 % intend to do so. Some municipalities and provinces also provide financial assistance for the purchase of a bicycle, whether electric or not. All these institutionalized procedures encourage the recruitment of practitioners through cycling.

In Wallonia, various measures have been put in place to encourage carpooling. First of all, a poster campaign on the billboards of Belgian highways that was entitled "Still addicted to solitary pleasures?" during the whole month of May 2019. At the same time, an institutionalized procedure was set up specifically to encourage carpooling. This measure authorized any light vehicle with a minimum of three people – including the driver – to use the hard shoulder in case of traffic jams, with a maximum speed limit of 50 km/h. This test measure began in May 2019 with the stated objective of reducing traffic jams. The measure was immediately subject to strong criticism, as the chosen stretches were almost never congested and the carpooling lane was stopped dead in its tracks before arriving in Brussels, as Flanders did not participate in the experiment. In the end, the project was stopped in October of the same year and the Walloon government is waiting for an evaluation of the measure. The results, expected in April 2020, are not yet known which makes it difficult to assess the real impact of these two institutionalized procedures on the recruitment of new practitioners through carpooling. But at first glance, it does not appear that this measure has had a decisive impact on the adoption of more sustainable mobility. Thus, even when government measures are taken to reduce car use, they are not necessarily successful if they do not meet individual sensitivities and/or daily habits.

### Conclusion

Following the presentation of the results, we can argue that the results obtained in Montreal and those obtained in Wallonia are relatively similar. This means that the geographic heterogeneity of the case studies is not limiting in highlighting a set of accelerators and barriers in driving practice. Thus, for each of the components of the practice determined in the theoretical part, a set of positive and negative factors have been stated. All the accelerators and brakes discussed in the section above are listed in Table 6.

With this table, we note that the accelerators favoring *automobilism* are more numerous and stronger than the brakes related to this practice. Trip-chaining, urban sprawl, social distinctions related to the use of the car, and policies for the development of motorized roads are realities that encourage the use of the car on a daily basis. Alternatives to counter this practice remain underdeveloped and underfunded: subsidies for alternative modes of transport remain anecdotal in comparison to the tax benefits granted to companies offering company cars. Finally, it is understandable that the car remains the most popular mode of transport in both Belgium and Canada, as it has the most developed infrastructure, is associated with notions of freedom and independence, is an inherent part of daily routines. National and international institutions also continue to support this mode of transport through their legal decisions. Even if there are some brakes on the trend, they are minimal in comparison with the opportunities and ease of *automobilism*.

Table 6. Accelerators and brakes of automobilism according to the practice's components.

How-know and routines	
Accelerators	Brakes
<ul style="list-style-type: none"> <li>• Trip-chaining</li> <li>• Driving skills</li> <li>• Family practices interdependence</li> <li>• Constant accelerations in daily life</li> <li>• car habit since childhood</li> </ul>	<ul style="list-style-type: none"> <li>• Proximity of places of activity (shops, sport, telework, etc.)</li> <li>• Limitation in physical conditions</li> </ul>
Teleoaffective structures	
Accelerators	Brakes
<ul style="list-style-type: none"> <li>• Freedom and independence</li> <li>• Extension of the personality</li> <li>• Pleasure</li> <li>• Comfort</li> <li>• Time for oneself (e.g.) to listen to music</li> <li>• Staying in the same mode of transport</li> <li>• Choice of co-drivers</li> </ul>	<ul style="list-style-type: none"> <li>• Environmental sensitivity</li> <li>• Air pollution</li> <li>• Visual pollution</li> </ul>
Material arrangements	
Accelerators	Brakes
<ul style="list-style-type: none"> <li>• Urban sprawl</li> <li>• Important road network and car related services</li> <li>• Lack of public and sustainable transport infrastructures and services in some location</li> </ul>	<ul style="list-style-type: none"> <li>• Accessibility and efficient of alternative modes of transport</li> <li>• Lack of places to park</li> <li>• Congestion and traffic jam</li> <li>• The price</li> </ul>
Institutionalized procedures	
Accelerators	Brakes
<ul style="list-style-type: none"> <li>• Government investments favoring <i>automobilism</i></li> <li>• Advantageous tax regimes for company cars (Belgium)</li> </ul>	<ul style="list-style-type: none"> <li>• Obligation for private companies to contribute for employee transit passes</li> <li>• Actions of sensibilisation of sustainable mode of transports (electric bikes, carpooling, etc.)</li> </ul>

However, Jean Remy (2007) assumes that respect for the environment should not be opposed to automobility (linked to aspirations for autonomy and control): “it will be all the easier to get out of automobilism if automobility finds its own way” (p. 21). It is necessary to meet the aspirations of automobility while detaching oneself from automobilism. To this end, and to encourage the adoption of more sustainable modes of transportation, it is necessary to take into account all the components of the practice. All these observations tend to show the importance of considering the adoption of a more sustainable mode of travel as a crossroads of components that must all be taken into account. Stopping taking the car out every day is therefore beyond the individual's control but requires a rethinking of current social, political, economic, and geographic realities at the same time.

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