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THE WALKABILITY OF THE METROPOLITAN CITY CENTRE AS LEVER FOR BRUSSELS'S MOBILITY TRANSITION

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› **Abstract**

Drawing on the studies undertaken by several interdisciplinary teams from the BSI-Brussels Centre Observatory (BSI-BCO), this chapter seeks to contribute to reflections on the development of a walkable city and its capacity to promote the mobility transition of Brussels. Specifically, it will focus on the metropolitan area of Brussels and lay emphasis on the multi-scalar dynamics of the entire metropolitan area. It is based on two assumptions. The first posits that the perimeter of the metropolitan area, as defined by the BSI-BCO, is large enough to develop a walkability that could span throughout Brussels. The second suggests that although the dynamics at work across the region support this potential, they require a systemic articulation. In other words, a multi-scalar approach to the city's dynamics, integrating the different dimensions involved (political, economic, social, etc.), linking the different actors who help shape the walkability concept. In conclusion, this chapter calls for the creation of the socio-technical system necessary to the realization of a walkable city.

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1 > INTRODUCTION

From the pedestrian zones around the central boulevards to the development of *school streets*, without forgetting the redevelopment of Place Jourdan, Place Rogier and Parvis de Saint de Gilles, the metropolitan area of Brussels has been marked by multiple transformations of its public spaces throughout its history. These different projects have all sought to adapt the accessibility of urban spaces to pedestrians' needs and capabilities (Mezoued and Letesson, 2018: 62). This has largely resulted in a reduction in vehicle presence, improved living spaces, and a general adaptation to the pedestrian *metric*.[3] In parallel, regional measures involving mobility planning and regulations such as the GoodMove Plan, the Regional Sustainable Development Plan (RSDP), or the drafting of Regional Development Regulations, as well as various civil society initiatives, share similar objectives. These developments, which we set out below, appear to signal a shift in the mobility paradigm, in which the notion of 'Car as King' is called into question, and walking, cycling and public transport become the baseline metrics.

The transformations being undertaken in Brussels are part of a global trend, where criticism is levelled against the city as it was developed in the twentieth century (Jaillet, 2016) and the lifestyles that these developments created (Audikana et al. 2019; Jaillet, 2016). This movement advocates making urban centres and their households car-free (Haden Loh, Leinberger and Chafetz, 2019; Deleuil, Barbey and Sintès, 2017) through increasing the ability to access jobs in the city centre using alternatives to cars or public transport, rethinking cities on a human scale (Gehl, 2010), improvements to services and the quality of life through the encouragement of greater diversity and compactness (Lavadinho, 2011), and introduction of a slower pace of life (Audikana et al., 2019). This results in the promotion of a culture of walking and daily physical activity in a healthy, unpolluted environment. Such a space ceases to be only a matter of spatial planning, and attention is also paid to health and environmental aspects. As a result, the fight against obesity, cardiovascular and respiratory diseases and the sedentary lifestyle of the young (and the not-so-young) are becoming issues that contemporary urban planning must address. Moreover, while in the last century Léon Krier considered that a comfortable walking distance could be situated between 500 and 800 metres (5 to 10 minutes) (Krier, 1977), several contemporary studies have shown the emergence of new daily walking practices that increase walking distances to 5 kilometres (more than an hour) (Christie, 2018), as was the case in the period before cars. Admittedly,

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[3] Jacques Lévy (2005) defines a metric as the unit of measure of distance relative to each mode of transportation. This is also used to define criteria in urban development. For example, a tram is adjusted in relation to its own metric, and it can be adapted to the pedestrian metric: platforms may be placed at the same level as pavements, shared public spaces may be established, etc. Considering that public transport users are pedestrians who take a break makes it possible to adapt the entire public transport system to this metric.

these are niche practices. However, they have radically transformed preconceptions about the scale and extent of the city's walkability potential.

Alongside these project trends and the evolution of practices, there has been a renewed interest in walking in recent years, in the research undertaken in the fields of urban planning, geography, anthropology and urban sociology. To a certain extent, all these studies borrow from the studies initiated by Kevin Lynch (1969), Jane Jacobs (1961) and Jan Gehl (1971). These authors established a relationship between a city's morphology and its urban and mobility practices, highlighting the importance of pedestrian mobility and perceptions. These pioneering studies, and others undertaken more recently, view the city as 'an iterative encounter between the actor's activated mobility potential and the hospitability of urban spaces to their projects' (Kaufmann, 2014). They lay the foundation for analysing the walkability of cities and the extent to which their spaces are hospitable to pedestrians. More recently, research on the walkability of cities has become associated with environmental issues. The development of walkable areas in cities is viewed as a tool for promoting mobility transition, understood as the transition to a more sustainable mobility centred around the needs of citizens, or even, more broadly, as a tool for sustainability. However, few studies have addressed the contribution of walking in the mobility transition using a systemic approach that takes into account the multi-scalar (local and global) and multi-level (political, economic, cultural, etc.) relationships between the spatial organization of cities, technological innovation and lifestyle transformation (Kaufmann and Mezoued, 2019: 304).

This chapter focuses on the creation of a walkable environment in the centre of Brussels and how this may act as a tool to promote the mobility transition of the entire Brussels region. It is based on two hypotheses:

1 The perimeter of the metropolitan area as defined by the BSI-BCO (see Chapter 5) is sufficiently large to enable the development of walkable areas and initiate a mobility transition that could be expanded throughout Brussels.

2 While the dynamics at work in Brussels go in this direction, they require the establishment of a systemic articulation.

The first part of this article contextualizes current pedestrianization policies and situates the methodology in relation to the literature associated with the walkability of cities. The second part analyses existing institutional and citizen tools for the development of Brussels's walkability. Based on the results of three multidisciplinary studies, the third part of the article then highlights the challenges and opportunities associated with developing walkability in Brussels. The article concludes with two essential points. First it outlines the characteristics of the metropolitan city centre of Brussels and the extent to which these represent potential levers in the mobility transition at the regional level. Second, to achieve this objective, the article concludes that it is important to adopt an approach that pays attention to the multi-scalar nature of the city as well as to users' experiences and to the diversity of practices and imaginaries.

2 > THE DRIVERS OF THE WALKABLE CITY

2.1   A brief recent history of walking in cities

Before addressing the current challenges facing the aspirations for a walkable city, it seems necessary to present the chronological outline of how pedestrianization policies developed over time. In the post-war years, pedestrian mobility at an urban scale was hardly at the centre of concerns. The zoning approach nevertheless sought to allocate dedicated spaces to pedestrians, for instance through the creation of numerous passages giving them access to the car-linked transport infrastructure which was almost ubiquitously privileged. In the decades that followed, the dynamics triggered by modernist urban planning contributed, in parallel, to an urban exodus and to the 'slow decline' of city centres (Jaillet, 2016). Subsequently, both in Europe and across the Atlantic, projects followed to rehabilitate these centres, leading to the emergence of the first pedestrian zones. These were initially intended as a heritage-oriented approach aimed at preserving the habitat and historical neighbourhoods, but along the way commercial and economic aims were often added (Feriel, 2015). As Jaillet (2016) points out, these initiatives were established following a strong modal segregation rationale: the first developments were exclusively pedestrian.

The same line of reasoning involving the separation of flows and the specialization of routes was pursued more broadly across larger urban areas, especially on the outskirts of city centres. However, the limitations of this approach quickly emerged when the issues specific to intermodal nodes – where the different metrics eventually meet – were addressed (Jaillet, 2016). More recently, it is the rationale of shared public space that has emerged from these situations. These recent experiences in the cohabitation of urban transport modes have two major characteristics. First, priority is generally given to the weakest users, i.e. to pedestrians. Second, unlike previous experiences that were essentially based on layouts specific to the different modes of transport, the sharing of public space now also calls for a change in behaviour alongside infrastructural changes. This attempt at traffic calming may also be linked to a contemporary concern for 'urbanity' (Feriel, 2015; Sieux et al., 2019).

This strong interest in walking – and the desire to make urban areas walkable – can be perceived as a response to a combination of factors – or challenges – characteristic of our contemporary societies. In addition to the saturation of the urban space by vehicles and the desire to decongest the city, growing ecological and climatic concerns (greenhouse gases emissions, dependence on fossil fuels, destruction of ecosystems) affect an increasing number of people and are addressed in the literature related to the collapse of the current socio-technical system (see, for example, Cochet, 2005 and the studies undertaken by the Momentum Institute,[4] of which

4   See their website : https://www.institutmomentum.org/ (last viewing on the 06/03/2020)

he is a member, or Urry, 2013). It therefore seems obvious that 'the promotion of walking meets [...] the new demands for sustainable development' (Jaillet, 2016). In parallel, the promotion of walking has frequently been associated with public health (Lee and Buchner, 2008), air quality (see, for example, de Schio, de Geus and Bouland, 2018), personal well-being, and quality of life in general. More fundamentally, walking has also occasionally been described as an activity that generates a privileged relationship to the city, matching a desire to reduce the frantic speed that characterizes many aspects of our contemporary lifestyles (Rosa and Chaumont, 2012). Indeed, as Lavadinho (2011) states, walking also means taking part in a different temporality, in a relationship with the city that one could almost qualify as more sensual, more interactive, and even, as the author says, more playful. It is, therefore, not just a mode of transport or a means of circulation; it can also represent a radical stance. Put differently, it is a way of relating to life and to the city, which can set in motion important systemic changes whose repercussions may help redefine certain aspects of our lifestyles. Lifestyle here refers to the sense of 'a composition – in time and space – of daily activities and experiences that give meaning and form to the life of a person or a group' (Pattaroni, 2013).

2.2   Defining the walkability of a city

Numerous studies have sought to define the criteria for measuring urban walkability, although often without conceiving their approach in the light of the framework mentioned above (even though they always refer to at least one of the facets comprising the system of aspirations and issues described). While outlining an exhaustive catalogue is beyond the scope of this chapter, two major trends emerge from such studies. The first highlights the criteria relating to the density and diversity of the urban environment, such as the presence of mixed activity zones and amenities, and a high density of residential and commercial areas and jobs. The second trend highlights the characteristics of the built environment, such as the connectivity of the road network, the land use, and the continuity of pavements from origin to destination (for details, see Letesson, 2018: 19–22).

It is worth mentioning that other criteria may also promote walkability. Features of the built environment, such as local topography, the presence of walking and cycling paths, the presence of green spaces and trees, the number of traffic lanes, the width of pavements, the number of parking spots, etc., are certainly important factors. Today, however, it remains difficult to objectively measure their relative importance, even though this may have been assessed intuitively in more or less recent developments or policies that have sought to reallocate certain public spaces. Moreover, qualitative studies, which are attentive to the experience and perceptions of users, are certainly required to fully assess the more complex parameters that should be integrated into policies in favour of walkable urban areas. Consequently, assessing the walkability of a city requires one to go beyond

the criteria of diversity and connectivity, and to develop a more systemic approach that integrates the various technical, social and environmental aspects.

2.3   The socio-technical system of walking

More generally, it also appears crucial to think of the walkability of urban environments in relation to the mobility transition (Kaufmann and Mezoued, 2019). As mentioned above, this means transitioning to a more sustainable mobility that is no longer dependent on petrol. It is clear that such a transition can only occur as a result of reflexively and critically taking into account the associations of actors (Latour, 2006) and the socio-technical system (Markard, Raven, and Truffer, 2012) that have helped maintain and perpetuate the domination of cars (Urry, 2013). However, to consider walking as an integral part of a sustainable and desirable alternative, it is also necessary to seriously address the systemic framework which may support and sustain its development. This attention, as Kaufmann and Mezoued (2019) state, should revolve around 'three dimensions: (1) the spatial organization of territories in terms of activities and exchanges; (2) innovation and technological transition in terms of transport and communications; (3) the evolution and/or transformation of lifestyles'. This division is relevant as long as the dialectic between space and lifestyles is viewed as 'necessarily multi-scalar […] and multi-level' (Kaufmann and Mezoued, 2019).

The need for a multi-scalar approach is frequently mentioned in connection with the expansion of walking spaces in urban areas. This 'scales crisis' has accurately been described by Salat (2011). He underscores that, traditionally, there is a consensus that two, potentially conflicting scales, exist within the city, i.e., the metropolitan scale and neighbourhood scale. While the former is associated with large infrastructures and clear zoning, the latter is related to the close proximity to which many virtues are attributed, although these are difficult to define (Salat, 2011). While modernism affirmed the supremacy of the metropolitan scale over neighbourhood scale, the trends described above were primarily aimed at 'reconciling the two scales, i.e. local and global, by "connecting" them to each other' (Salat, 2011). Quite rightly, Salat questions the relevance of such an approach: '[…] can we settle for this connection, for this linkage between the two scales? Can the local scale of men and the very large scale of regional development simply be juxtaposed without intermediate elements? Can the city be reduced to its two extreme scales: the globalized global scale and the human local?' (Salat, 2011). Salat's response to this question relates to what he defines as the 'fractal nature of cities' (Salat, 2011), upon which we may draw to reflect on multi-scalarity. Concretely, reflecting on the city in relation to the issue of mobility implies that one must take into consideration the existence of multiple scales made up of similar structural elements and inter-scalar hierarchical relationships which intricately link the functioning of the whole to that of its separate parts. More fundamentally perhaps, while the city actually contains morphologies and structures that are repeated at

different scales, it inherently contains the seedlings of spatial resources necessary to its requalification in terms of walkability. In other words, while the different scales of the city share similar configurational and morphological characteristics, these characteristics may be mobilized to articulate around the constraints and opportunities specific to neighbourhood, city, and metropolis. This approach can make it possible, for instance, to develop walkable neighbourhoods, as is the case in Melbourne, with its network of 20-minute walkable neighbourhoods.[5] The initial sketch of a similar approach is now integrated into the measures and guidelines of the Regional Sustainable Development Plan for the Brussels-Capital Region (PRD).

The need for a multi-level approach has also been underscored by authors analysing the factors that drive contemporary pedestrianization processes. For example, Brenac and colleagues (Brenac, Reigner and Hernandez, 2013) highlight the role of pedestrianization projects in interregional competitive processes aimed at pushing cities forward on the tourism stage. After analysing several case studies, they notably conclude that these policies contribute little to sustainable development. Rather, they are part of 'urban marketing strategies of cities engaged in inter-urban competition processes – which increase the value and attractiveness of strategic places in the city and tend to shift problems (and deprived populations) to other parts of the urban territory' (Brenac et al. 2013: 271). Similarly, as emphasized by Sieux and colleagues (2019), Genard and Neuwels (2016) noted in the case of Brussels that 'ecological challenges do not lead to a cultural redefinition of modern society, but rather to a mere regulation of nuisances which is achieved through capitalist technologies and logics'.

These different reasons show that there is a pressing need to focus attention on walking as a socio-technical system that integrates with and acts upon several levels – or dimensions – of the city, rather than on economic or logistical dimensions alone. This requires a level of attentiveness to the existence of a wide variety of lifestyles, in order to facilitate a walkability project that is as fair and inclusive as possible, throughout the city and not only in a few privileged neighbourhoods.

3 > WALKABILITY LEVERS IN BRUSSELS

Faced with the failure of the 'Car as King' (Hubert, 2008) paradigm and the numerous associated consequences, in terms of mobility, the environment and health, the need for alternative mobility has gradually conquered the hearts and minds of the inhabitants of Brussels. Although often too partial and too local to substantially redefine the walkability of the city at the metropolitan scale, various institutional initiatives may help initiate a mobility transition conceived from the pedestrian's metric. The various institutions responsible for the planning and development of the city have thus attributed increased importance to walking within their plans,

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[5]   See: http://theconversation.com/people-love-the-idea-of-20-minute-neighbourhoods-so-why-isnt-it-top-of-the-agenda-131193, retrieved on 6 March 2020.

and have implemented several initiatives aimed at developing walking practices in Brussels. The issue, however, is not limited to politicians, city planners and other decision-makers. Citizens have taken it up as well, launching a number of initiatives to promote a city centred around its inhabitants and freed from cars. While some actors are involved at the educational level by justifying and drawing attention to the importance of developing a culture of walking, others outline the legal and strategic basis necessary for improving walkability. The paragraphs below outline the most representative examples of these institutional and civic initiatives.

3.1   Institutional drivers

Brussels officially began its transition to walking in 2011. In the same year, the IRIS 2 plan replaced its previous version and proposed a new vision for mobility in Brussels. Indeed, since its creation in 1989, the Brussels-Capital Region (BCR) has been able to make its own decisions concerning its development, particularly in terms of mobility. After the initial plan, a new mobility plan was established, which sought to combat the omnipresence of cars and to promote active modes (walking and cycling) and public transport. To achieve these objectives, it was accompanied by a Pedestrian Plan intended to operationalize the measures outlined with regard to pedestrians. Various tools were identified to promote walking in the BCR, including the annual organization of the Pedestrian Symposium and the creation of a map of walking routes. Following the IRIS 2 plan coming into effect, an inventory of the slow lanes in Brussels was undertaken with a view to publishing an atlas, better known as Stapas[6]. This atlas lists all the lanes in the region that are closed to car traffic, as well as the speed restricted zones that share space with other modes of transport. Based on this work, a pocket atlas for pedestrians was published and a website providing information to pedestrians and cyclists was created. The data was updated in 2016, and a smartphone application was also created (Be walking. Be Brussels[7]). The results were also used to create a publication[8] intended for political decision-makers in the Brussels area and for professionals involved in the design, planning and management of roads. The objective of this publication was to provide the necessary information and tools, in particular via a list of 'recipes', to successfully implement policies in favour of slow routes. It also sought to convince decision-makers of the potential of such zones.

After the IRIS 2 plan, the new Regional Mobility Plan (RMP), better known as GoodMove, further increased the role of active modes of mobility across the region, with a series of new measures being introduced in line with this. Although approved only recently, i.e. in early March 2020, we can nevertheless

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6   https://www.stapas.be

7   Online, retrieved on 5 March 2010. https://play.google.com/store/apps/details?id=be.tragewegen.brussels&hl=en
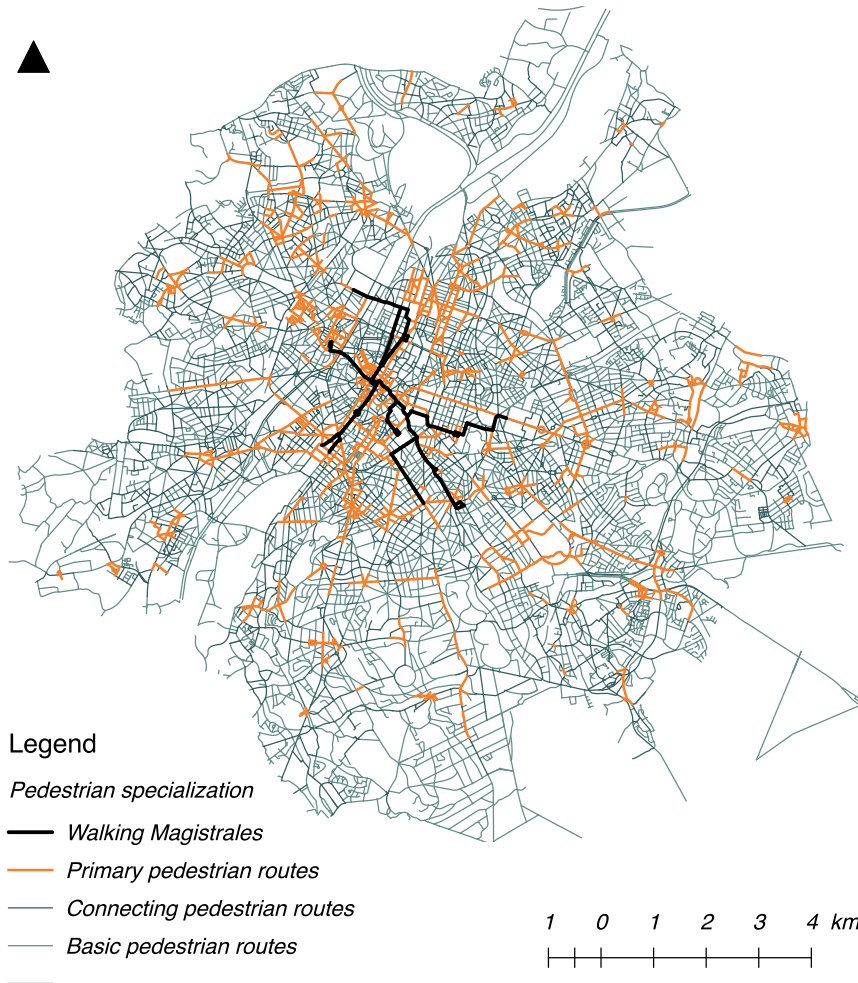
8   Bruxelles Mobilité, 2018, *Guide pour la valorisation des voies lentes en Région de Bruxelles-Capitale*, Vade-mecum piétons en Région de Bruxelles-Capitale 6, Brussels: Bruxelles Mobilité.

quote some important measures included in the project. The plan states that the organization of the region was redesigned based on a multitude of centres, in order to transform Brussels into a walkable city where all the services needed on a daily basis are conveniently located within a 5-10 minute walking distance of one another. Through this, the number of trips and the distance of these trips will be reduced, making walking and cycling a more efficient transport option. Mobility is considered from the general principle of 'meshes', or street networks. This refers to a series of zones with a diameter ranging from 1 to 2.5 km around the centre of the neighbourhood, in which car traffic is discouraged to make way for more active mobility and public transport. The stated objective is the creation of 250 km of calmed zones by 2030, and 400 km by 2040, in the form of pedestrian zones, residential areas and contact zones. With the exception of certain major routes, the maximum speed allowed within the BCR will be limited to 30 km/h to allow for a more harmonious coexistence between the different transport modes. The ranking of modes will be carried out according to the STOP principle, which gives priority to pedestrians (*Stappers*), then cyclists (*Trappers*), then users of public transport (*Openbaar vervoer*) and, finally, users of private vehicles (*Personenwagens*).

GoodMove also intends to implement pedestrian *magistrales* (major pedestrian axes, Figure 1). These refer to eight axes that will connect several neighbourhoods outside the Pentagon,[9] but which lie within the metropolitan area as defined by the BSI-BCO, and which have great potential in terms of walkability. These routes, like those developed in Strasbourg, Buenos Aires, Paris or Rouen following Sonia Lavadinho's concept of a superconnector, may ultimately represent the main structures of a pedestrian network that would ultimately cover the entire region (see Figure 1). In addition to their physical characteristics that add to their walkability, these magistrales also display sensory aspects associated with dwelling, aesthetics and recreation (see the recreational city proposed by Lavadinho, 2011). An additional stated objective is the promotion of greater elasticity in the distances people are prepared to walk, focusing on distances from one to three kilometres for which people today still often privilege cars, rather than distances under one kilometre, for which people primarily walk already.

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9   The heart of Brussels is referred to as the Pentagon because of its morphology, which is delimited by the boulevards of the small beltway and which is also where the second wall surrounding the city formerly stood.

Figure 1. Pedestrian map of the modal specialisation of roads in the GoodMove Plan

Legend

Pedestrian specialization

— *Walking Magistrales*

— *Primary pedestrian routes*

— *Connecting pedestrian routes*

— *Basic pedestrian routes*

1 0 1 2 3 4 km

Source: Authors' cartography
Data sources : Brussels Mobility, Mobigis 2020

To fully implement the pedestrian network, in 2014 the Brussels-Capital Region launched the development of Roads and Public Spaces Accessibility Plans (PAVEs) for each of its 19 municipalities. These schemes, which seek to tangibly address the criteria defined in the Pedestrian Plan, are aimed at universal accessibility. A space is considered as accessible insofar as any person – and in particular persons with reduced mobility – can use it independently.

In addition to the development of the pedestrian network at regional and municipal levels, it should be noted that the strengthening and progressive reorganization of the public transport network by STIB (public transport in Brussels excluding railway trains) and SNCB (the National Railway Company of Belgium) have also

shaped the development of an alternative to cars in which walking is perceived as the benchmark (see for example Lévy, 2008; Lavadinho and Lévy, 2010; Appel-Muller, 2015).

These different institutional initiatives reveal a desire for a change of paradigm in Brussels's mobility. However, as shown by Figure 1, it is regrettable that the network lacks continuity across the different levels. Put differently, the main, connecting and basic routes are not continuous. Hence the multi-scalarity of the network is still insufficiently developed at this stage.

3.2   Civil society's role

Alongside the region's regulatory measures, plans and recommendations, civil society plays an important role in the development of a walking culture in Brussels, similar to its role in increasing the cycling modal share. The issue of air quality recently generated a considerable and organized response from civil society, in particular from parents of students. Indeed, the publication of the Greenpeace report 'My air, my school' in 2018 acted as a trigger and caused many parents to take a stand. The report revealed that out of the 222 Belgian schools where the air quality was measured, the concentration of nitrogen dioxide in the air was above the legal limit in 19 schools. Moreover, the air quality of many of the other schools assessed was also poor, particularly for those located in urban areas (Greenpeace, 2018). Following this report, parents launched the 'Filter Café Filtré' movement in March 2018, in order to campaign for better air quality in all schools, notably by organizing symbolic roadblocks around them[10].

The dismay at the quality of air also led to the emergence of the citizen movement Bruxsel'air in 2016, who demanded that politicians implement concrete measures to improve air quality. One of the movement's 12 demands is to 'redistribute public space in favour of active mobility and public transport'.[11] In 2019, driven by 'Filter Café Filtré', some of these demands were formalized by passing a law recognizing the status of a 'school street' in the Highway Code.[12] A school street is a street upon which the entrance of a school is located, and which is temporarily closed to car traffic during school entry and exit hours, with limited exceptions (for instance residents leaving the street and public services). This concept had already been in place in Flanders since 2012 to ensure better safety around schools,[13] but its application was not backed by any legal foundation. A street is granted this status upon the decision of the road manager, and therefore responsibility lies primarily with

10   Filter Café Filtré, retrieved on the 7th of November 2019. http://www.filter-cafe.org/
11   Bruxsel'air, retrieved on the 7th on November 2019. https://www.bruxselair.org/#revendications
12   Paraat voor de schoolstraat, retrieved on 7 November 2019. https://www.paraatvoordeschoolstraat.be/wat/
13   City of Ghent, retrieved on the 7th of November 2019. https://stad.gent/sites/default/files/page/documents/20160915_DO_folder%20schoolstraat%20def_0.pdf

the municipalities.[14] In early 2019, the Brussels-Capital Region created a fund of more than one million euros to help municipalities set up school streets and establish other measures to secure the areas surroundings schools. In autumn 2019, the region had six permanent school streets, including one in the city centre, whilst 13 were in the test phase[15].

Similarly, other measures allow citizen pedestrians to take a certain ownership of the streets. This is the case, for instance, of 'living streets', with the first example in the region located in the City of Brussels, on Rue de Saint-Jean Népomucène (see Figure 2). A living street is one closed to traffic for several weeks, during which residents can experiment with new forms of using the public space. The request must be made by the residents of the street themselves or by neighbourhood committees and associations supported by residents. One of the main objectives of these initiatives is to strengthen social ties in the neighbourhood. A budget may be allocated to enable the street's reassignment, whether that is for the use of temporary street furniture, public activities or vegetable gardens.[16] Other similar measures, such as 'streets reserved for games', also exist.

> **Figure 2.** Saint-Jean Népomucène street, the first 'living street' in Brussels

Source: Authors' photography

14   The Police, retrieved on 7 November 2019. https://www.police.be/5285/actualites/nouveaute-du-code-de-la-route-les-rues-scolaires

15   BX1 (2019) 'Treize nouvelles rues scolaires en Région bruxellois', website viewed on 07/11/2019. https://bx1.be/news/treize-nouvelles-rues-scolaires-en-region-bruxelloise/

16   Brussels Mobility (2018) Guide for the promotion of speed restricted zones in the Brussels Capital region: part II, illustrated recipes with examples in the 19 municipalities.

Although isolated and not envisaged as part of a network, school streets, living streets and streets reserved for games are major drivers that encourage the development of a walkable city. Although their key objective is to ensure road safety, improve air quality, or strengthen social ties, they nonetheless make it possible to initiate temporary or permanent car-free places that encourage users to reclaim the public space and reflect on their mobility patterns. They also promote a modal shift in parents, students and residents of the districts concerned. They could thus help unlock imaginaries (Genard and Berger, 2020) and allow people to experiment with other uses of space and other forms of mobility. These experiences therefore provide valuable learning opportunities for understanding the multi-level nature of the mobility transition.

4 > THE FACTORS WHICH DEFINE A WALKABLE ENVIRONMENT IN THE CENTRE OF BRUSSELS

In terms of legal tools, plans and social dynamics, the key drivers of walkability in Brussels appear to be moving in a positive direction. The trends identified above, and the manner in which they are implemented in terms of planning, projects and mobilization, can lead to a genuine change in favour of walking. However, there is still a long way to go before a paradigm shift and a mobility transition occurs at the level of the Brussels-Capital Region, or at least in the city centre. Indeed, the results of the three studies drawn from various disciplines described below reveal three major shortcomings in Brussels's approach to the development of a walking culture that need to be addressed to enable the systemic development of this culture.

The three studies cited below are based on different but complementary methodological mechanisms. They have focused directly or indirectly on diverse topics associated with walking, and have considered multiple scales. The first, 'Brussels Slow Metropolis', is essentially based on spatial analyses of the Brussels-Capital Region. The study mobilizes both geomatic methods and a space syntax analysis. The second, 'The obstacles associated with pedestrian movements in commercial streets', is based on both spatial and morphological analyses, as well as on the analysis of images and of sociological aspects. The study focuses on three important commercial streets in Brussels and the methodology utilized involves interviews and commented walks with target audiences, notably persons with reduced mobility (PRM). The third study, on the lifestyles found within and around the pedestrian area, takes on a more anthropological and sociological approach. It combines qualitative interviews (60 people), in situ observations and travel logs made using a smartphone app installed by a few interviewees. The application tracked the movements of volunteers over several days within and around the pedestrian zone.

## 4.1   Reflecting on walkability using a multi-scalar approach

The first observable shortcoming in the mobility transition initiatives adopted by Brussels concerns the connection between the different scales of the walkable city. In order to go beyond the 'scales crisis' provoked by, among other things, modernism and its consequent mobility, i.e. cars (Salat, 2011 : 226), the first priority was to reassess the walkability of public spaces in light of a new relationship to scales and modes of transport. To this end, let's first take the scale of Brussels's metropolitan city centre as defined by the BSI-BCO (see Chapter 2 , Wayens et al, 2020). This space – which fits into a square measuring 5 kilometres along each side – is delimited by the five major stations and the metro, and its boundaries are very similar to those of Brussels before the arrival of the tram; this is highlighted in Figure 3: the city's limits between 1860 and 1888. This area, whose users have historically moved around on foot for the most part, is greater than the usual pedestrian comfort level – which ranges from 500 to 800 metres – and can be a relevant starting point for developing walkability. However, nearly two centuries have passed since this representation of Brussels. In addition to extending even beyond its suburbs, the city has also undergone major structural transformations, first with the train and the North–South junction , then with the 'Car as King' paradigm. The boulevards that shape the Pentagon have been transformed into urban highways and have broken up pedestrian continuity and crossability. Therefore, the first challenge is to restore the natural walkable ties between the Pentagon and these first suburbs, which are now an inherent part of the metropolitan city centre. Today, the inclusion of the small beltway in the metropolitan city centre calls for the reimplementation of its crossability, which necessitates the reconsideration of the role of cars at the scale of the entire city. Moreover, with the inclusion of major train stations, the metro, and major public transportation lines, the accessibility to the metropolitan city centre is one of the highest in the region, allowing for considerable modal shift potential. Indeed, the public transport network has a potential to become a walkability 'expander'. Therefore, the four walkable axes defined by the BSI-BCO (see Chapter 7, Vanin et al. 2020), which are more or less the same as the *magistrales* put forward by the region, require initially radical changes in the layout of the small beltway[17] and the continuity of public spaces hospitable to the pedestrian metric.

Brussels Slow Metropolis, a study carried out at the EPFL Technical University of Lausanne and UCLouvain (Letesson, 2018; Mezoued and Letesson, 2018), resulted in the creation of a map of the walkability of public spaces in the BCR (see Figure 4). The map evaluates, according to the imprint of each mode of transport on roadways, the place or the priority given to pedestrians across the entire road network. It bears some similarities to the evaluation of the S (*Stappen*) in the STOP principle.

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17   In this regard, the research led by Bye Bye Petite Ceinture is of high relevance as it has helped push forward the redevelopment of urban highways on the political agenda and promote a transformation of narratives with regard to the place of cars in the city http://www.petiteceinture.be/2019/05/08/bienvenue-sur-la-petite-ceinture/

The colour gradient makes it possible to classify the entire regional road network into four categories, from the least walkable areas (in red) to the most walkable areas (in green). It is clear that the Pentagon is globally hospitable to the pedestrian metric. The exclusively pedestrian zone, as well as squares and gardens, have the highest values and are shaded in dark green on the map. The network's other streets (see Chapter 6 , Vanin et al., 2020) are ranked at a lower level (level 3), but generally remain walkable when this metric is analysed. However, other streets, notably the major routes born, among other things, from the city's developments in the 20th century, are much less suitable for pedestrians. This is the case with the small beltway in particular and of the majority of the streets outside the Pentagon, which are sometimes incredibly hostile to walking (Mezoued and Letesson, 2018). The numerous red lines on the map draw attention not only to the poor walkability along these axes, but also to the obstacle that these represent to any continuity between walkable axes (already existing or projected). Thus, improving their walkability may help reduce divisions and discontinuities.
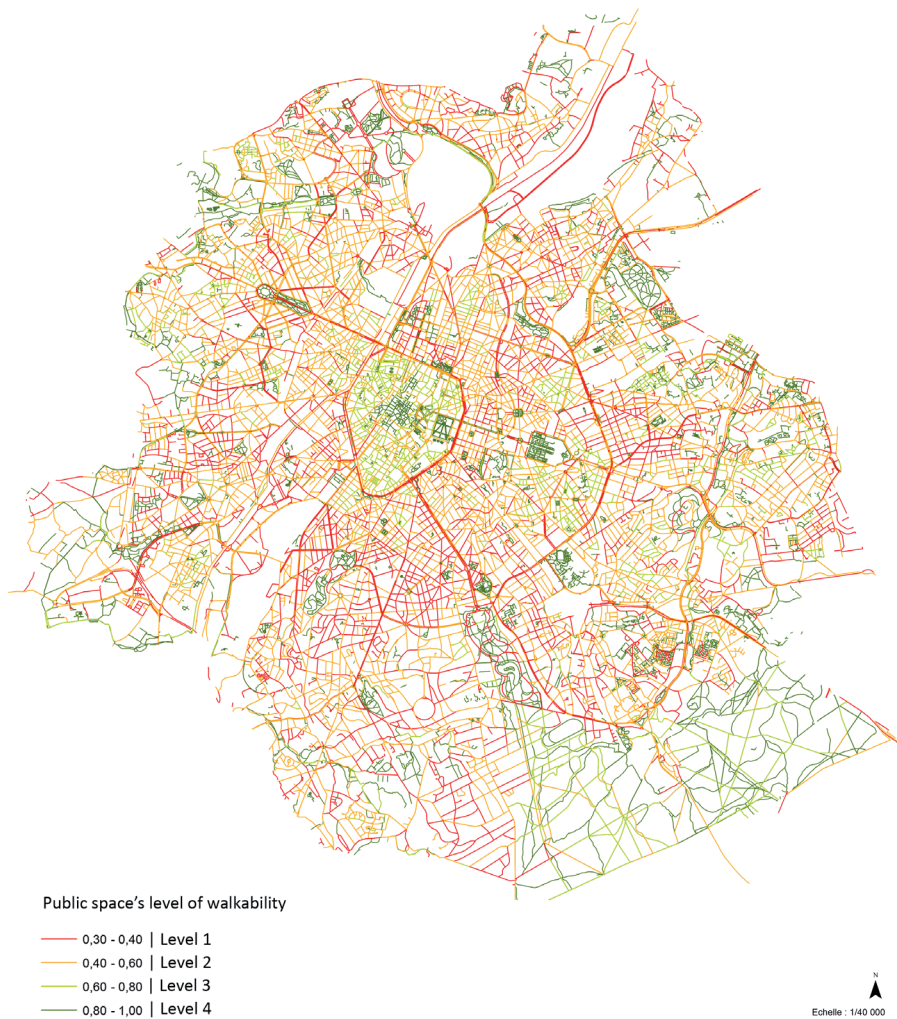
> Figure 3. Brussels's urbanization periods: the city's territory before the arrival of the first tram is highlighted in orange
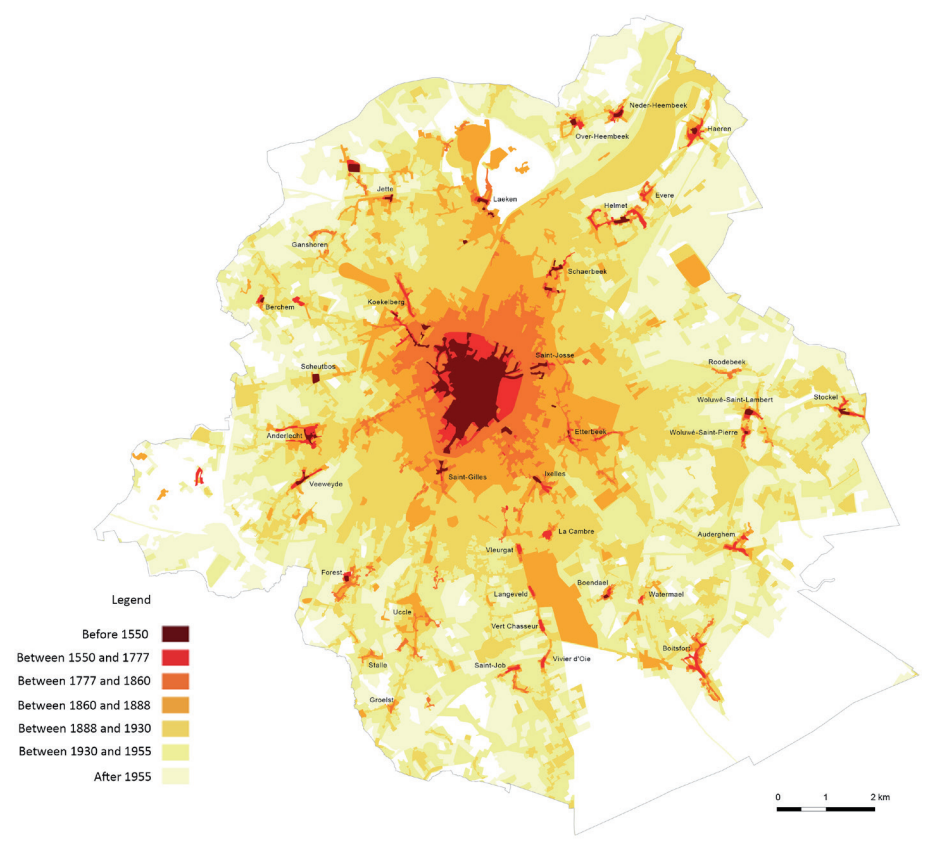
Source: Dessouroux, C. (2008). *Espaces partagés, espaces disputés. Bruxelles, une capitale et ses habitants.* Brussels: ULB and BCR

Suppose that, adopting a radical posture, we desire to make the whole map green at the level of the metropolitan area (or even beyond), i.e. make all the public spaces of this perimeter walkable based on the pedestrian metric, without transforming them into pedestrian zones. In this perspective – which could aim to create a *Walk Oriented Development* – two aspects would emerge as needing more attention.

> Figure 4. The walkability of public spaces

Public space's level of walkability

—— 0,30 - 0,40 | Level 1
—— 0,40 - 0,60 | Level 2
—— 0,60 - 0,80 | Level 3
—— 0,80 - 1,00 | Level 4

Echelle : 1/40 000

Source: Brussels Slow Metropolis research; Mezoued et Letesson, 2018

1 Connecting different scales

The first major issue concerns the entanglement of scales and the balance that is required between, on the one hand, an approach centred on proximity and the enhancement of local spaces, and, on the other, a metropolitan approach involving

the expansion of the city centre beyond its limits combined with the development of walkable zones across the entire urban area.

The approach centred on proximity finds an echo in the concept of a city reachable within a 5–10 minute walk that is backed both by the City of Brussels and the region (GoodMove Plan and PRDD with the polycentric city). Moreover, the walkability map shows that, on the regional scale, there are pockets that either exhibit good walkability or at least have a certain potential for it, and which correspond to these central points in Brussels. The challenge of the proximity approach is therefore to improve walkability between different central points.

The challenge encountered by the metropolitan approach is that it must link these central points to each other using walkable spaces capable of overcoming the disconnections generated by infrastructure, and which would help connect the metropolitan city centre to the rest of the region, or even beyond. The emergence of avid walkers[18] and the popularity of sports, especially daily jogging in urban area,[19] reinforce this concept of walkable connections over a large territory. From this perspective, we believe that major pedestrian networks should go beyond the borders of the metropolitan city centre, and act as connectors between the different scales.

Moreover, walkability at the metropolitan level must be associated with a reinforced public transport network. Indeed, the central position of the Pentagon and of its surroundings implies a need for a degree of accessibility that the development of a walkable network, however extensive, cannot meet. In addition, there have also been strong demands for the maintenance of an efficient connection to the car network. However, the studies undertaken by Kevin Lebrun on the accessibility of different neighbourhoods in Brussels (Lebrun, 2018) using public transport show that the metropolitan city centre has a high multimodal accessibility to the entire region, with the exception of a few distant points. If, as Jacques Lévy (2008) suggests, we consider the public transport user as a pedestrian taking a break – or vice versa – the development of walkability as an 'expander' of transport systems and as the condition for their articulation with urban space (Appel-Muller, 2015), the idea of the development of the walkable city on the basis of efficient accessibility through public transport is reinforced. There have been considerable efforts around this dimension in Brussels, but they require further improvement, notably in terms of regularity at certain times of the day, comfort and connection schedules (Lebrun, 2018). The case of parking spaces is also particularly representative of the importance of a multi-scalar approach. Indeed, the ratio covered by these spaces is quite disproportionate in the city centre, yet adopting car-free

18   Although this practice is not well documented in Brussels, it should be perceived as a sign of behaviour change.

19   On this subject, see the article by Simon Cook 'Le Jogging pendulaire, un mode de transport en plein essor"' published in 2019 on the Forum Vies Mobiles website: https://fr.forumvies-mobiles.org/mobilithese/2019/02/07/jogging-pendulaire-mode-transport-en-plein-essor-12852

places requires better management of car parks across the entire region, including the metropolitan area.

2 The reassignment of public space

The second issue involves the sharing of public space across the different modes. Shading the walkable areas of the map in green does not mean excluding all modes of transport for the benefit of pedestrians. Rather, it implies reorganizing them in order to apply the STOP principle (explained above) and ensuring that this metric takes precedence over others. Such an approach is intrinsically linked to the first issue, i.e. to the connection between the scales. To test the possibilities, and within the framework of the 'Brussels Slow Metropolis' research, we analysed the space syntax and the matter of choice in particular (see Figure 5). We used the Depthmap software, which, on the basis of the topology of the space and the distance of the routes (according to a predetermined radius), makes it possible to identify the streets people tend to choose when moving from one point to another within the region. The analysis focused on six radiuses: 400 m, 800 m, 1,600 m, 3,200 m, 6,400 m and 12,800 m. The starting point was the walking comfort distance, defined as between 400 m and 800 m. The others were multiples that could be combined with other modes of travel: long-distance walking, cycling, public transport and cars. Each radius revealed a road network ranging from the smallest and busiest that repeats endlessly to the least-branched, comprising of longer and fewer axes. The connection across different scales mentioned by Salat (2011) is visible here, at least in part, and it may help support the plugging-in of scales on the one hand, and the reassignment of public space on the other.

Each category of distance can see an additional metric associated to the pedestrian metric, which remains the benchmark in this approach. Thus, the public spaces that do not appear in any of the radiuses – or those that emerge from 400 m and 800 m – may provide a springboard to the locally scaled city. This would be possible by rolling out 'calmed down' streets that are exclusive to pedestrians or possibly shared with cyclists or public transport users when the space allows for it or when it is necessary to ensure a connection with certain other streets. Next are the axes that emerge from the 1,600 m radius analysis and which begin to highlight a con-tinuity beyond the small beltway by covering a large section of the metropolitan area. Here, a plainer sharing of space between bicycles and light public transport may be considered.

Lastly, the axes that emerge from the analyses at 3,200 m and 6,400 m radiuses are spread out over longer distances and reduce in number as the radius increases; there are also fewer bifurcations (the axes are more linear). These two networks of public spaces may be used to support long-distance cycling routes and the over-ground public transport system. Efficient lines with a high service level can be supported by the 6,400 m network or even the 12,800 m one. The latter two may support the car as the final element of the STOP principle.

> Figure 5. Choice analysis (space syntax). From left to right: 400 m, 800 m, 1,600 m, 3,200 m, 6,400 m and 12,800 m radiuses
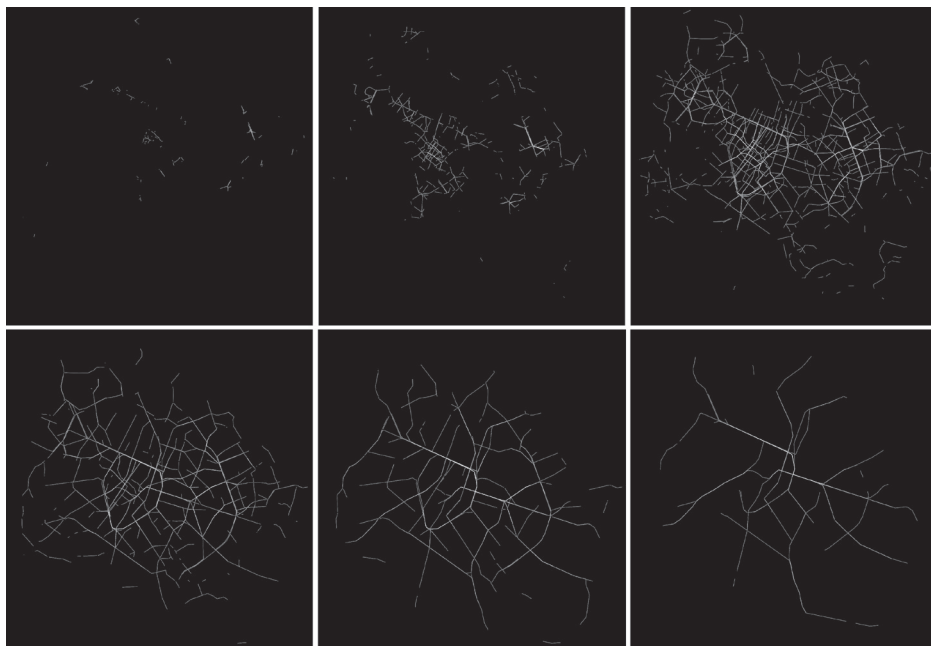
Source: Letesson, 2018

By rethinking the connection between the scales, based on their articulation and on how the sharing of public space between the metrics is ranked, it is possible to obtain a better understanding of the contours and challenges of the walkable city.

4.2 Acting on the materiality of space while remaining attentive to the most vulnerable users

The walkability of public spaces is strongly linked to its material characteristics, such as the type of land or the presence of obstacles. In this sense, the work initiated by Brussels Mobility and by all of Brussels's municipalities with the Pedestrian Plan and the PAVEs enables us to identify all the shortcomings that could hinder the development of proper routes for pedestrians. However, this substantial work does not take into account all the possible obstacles to pedestrian movement. This is why Brussels Mobility mandated a team from the Université Saint-Louis – Bruxelles (USL-B) and from the Center for Road Research (CRR) to assess all the potential hindrances to pedestrian movements in commercial streets, which are assumed to include many obstacles related to commercial activities. After the initial selection of 20 streets hosting the region's most important commercial strips, three streets located within the metropolitan area were selected for the study: la Chaussée de Gand (with la Rue Dansaert), la Chaussée d'Ixelles (with la Rue de Namur) and la

Chaussée de Waterloo (with la Rue Haute et a section of la Chaussée d'Alsemberg). The first two cases will soon be transformed into pedestrian *magistrales.*

This qualitative study made it possible to note the 'degree of obstruction' of certain objects and spatial configurations according to different user profiles. The study combined three methodologies: a spatial and morphological analysis to identify the spatial framework in which the obstacles are found, an analysis of pedestrian flows and behaviours depending on several time frames analysed using cameras installed for each case study, and an analysis of the feelings and experiences of users with reduced mobility (visually impaired people with a cane and guide dog, people in electric wheelchairs, parents with children in prams and elderly people) using commented walks . The combined use of these three approaches allowed the researchers to establish a relationship between the objective aspect of the physical facilities and the use of space, and the subjective experience of users.

A first observation from the commented walks and interviews reveals that users' experiences of obstacles differ depending on several factors. First, they differ depending on the nature of the obstacles and their perceived legitimacy. As a result, while some obstacles are tolerated (terraces, stalls, construction sites or the presence of bicycles on pavements) others are not (mainly scooters, advertising billboards and banners). This variation in tolerance may be explained in part by issues such as aesthetics, public space design and the reasons behind the presence of the obstacle. A billboard may thus be perceived as something that visually impairs the public space, which does not belong there, and which voluntarily causes discomfort to the majority in order to serve private interests.

Obstacles also vary depending on the person concerned and their physical condition. Each category of PRM relates differently to space, depending on their condition. For instance, a curb that is too high at a crossing will not have the same impact on a wheelchair user as on someone who is visually impaired. However, even between these categories, not all people are equal. Whilst a person in a wheelchair or an elderly person using a walker may or may not be able to bend to remove an annoying obstacle, a blind person will move more or less easily depending on their cane technique, and the functionality of a wheelchair or pram will influence how people feel about certain obstacles.

Lastly, the inconvenience caused by an obstacle differs depending on whether an individual is going to an appointment or work, or whether they are window shopping. In the first case, space is used for mobility purposes, and the ease to move around quickly is prioritized. In the second, space is perceived primarily as a promoter of recreational activities where sensory properties are prioritized over functional ones. The irregularity of the space – stalls, terraces, the presence of other people and street furniture – is valued because it provides a lively and pleasant environment despite the fact that it limits walking speeds and is the source of many obstacles. As this last example shows, the removal of all obstacles to create a smooth and sanitized public space is undesired. Between the Chaussée de Gand,

full of people and displays, and the beginning of the Rue Dansaert, with fewer obstacles and less animation, individuals often prefer the former, which evokes, as an elderly participant stated, '[...] memories of holidaying in Italy. It's very colourful. It's very pleasant.' These irregularities, which slow down pathways, are also necessary for traders. Indeed, the latter seek to slow down or even halt movement, in order to attract attention either by architectural mechanisms or through the arrangement of furniture or display signs and shop windows.

Naturally, there is need to reflect upon and take action with regard to the presence of objects and obstacles on pavements (by grouping them, improving their layout, etc.). However, it seems crucial to expand our reflection beyond simply developing spaces dedicated to pedestrians. For example, improving the mobility of people in electrical wheelchairs can also be achieved by developing cycling infrastructure which will be more effective in supporting their movement than infrastructure dedicated to pedestrians. Moreover, it is possible to reduce the presence of bicycles (whether in self-service or not), scooters and bins by promoting a car-free strategy and transforming car parking spaces into 'drop-off' zones for active mobility means and waste and bulky refuse management. These examples show how the pedestrian metric may be developed by expanding it to spheres where it was previously excluded, as well as how a redistribution of public space between the different metrics associated with walking can be undertaken. These interventions at the local level hold great potential for a systemic transformation of walking, a transformation that may address the different dimensions of the city with regard to the development of a culture of walking.

Lastly, while it is undeniable that it is essential to establish development standards that favour all parties involved, space should not be thought of through the prism of one specific category of users alone. Unlike motorists, who all have almost identical mobility, pedestrians are extremely heterogeneous and unequal in terms of their mobility and their relationships with space. Reflecting on the city based on a single category alone (PRM, women, children, the elderly, etc.) means overlooking the needs of other users, or even excluding them from the local space. Drawing on the research results, we can cite, for example, pavement curbs, which act as a reference point for blind people but as an obstacle for anyone using a wheeled object. Spatial planning must therefore be based on the pedestrian metric in the broadest and most inclusive sense possible. Indeed, one of the complexities of setting up a pedestrian system is the ability to consider this great diversity of needs, feelings and perceptions, which, unlike other modes of transport, cannot be addressed exclusively by means of a technical and normative rationale.

4.3   Reflection on practices, lifestyles and the immaterial

As Lavadinho points out, the polysemic concept of walkability is still, in most of the available literature and scientific studies, too easily reduced to the physical factors of the built environment. Yet, many other factors relating to social, sensory and

symbolic aspects help define walkability (Lavadinho and Pini, 2005). Moreover, mobility itself often neglects certain sociological aspects associated with transport modes, in spite of them being highlighted by sociologists analysing the mobility turn (Urry, 2007; Kaufmann, 2014). These studies have shown the importance and the diversity of individuals' life trajectories and needs that coexist in the urban space. Taking this diversity into account is essential in highlighting today's socio-technical system, but also when thinking about the socio-technical system of walking from its different dimensions.

As such, the recent studies undertaken by Pattaroni and colleagues (Pattaroni, Thomas & Kaufmann, 2009) show that understanding the way mobility takes place within a specific environment depends largely on the grips this environment offers to a lifestyle's multiple dimensions. They therefore refer to the 'hosting potential' of a place. This can generally be assessed through the lens of five qualities: the relationship to amenities (concerned with access to services and infrastructures, as well as with their spatial distributions), ease (understood as ontological security), tranquillity, familialism (understood as welcoming more 'vulnerable' populations, children, persons with reduced mobility, etc.) and, lastly, sociability. These qualities are combined and intertwined – oscillating between functional, sensory and social relationships with the environment – in the users' appraisal of the public space and in how they take ownership of this space.

A study undertaken by the BSI-BCO and commissioned by the Mobile Lives Forum focused specifically on the pedestrianization of the Boulevard Anspach based on the aforementioned theoretical framework. Although the final report is currently being drafted, a few comments can be made with regard to this particular case study. The study notably reflects the questions that have been at the heart of debates within the scientific community for several years now and, in particular, those relating to the actual effectiveness of pedestrian facilities in city centres (Brenac et al. 2013). The central question of this research can be summarized as follows: Do the policies aimed at encouraging the development of a culture of walking in the heart of cities promote sustainable development and the creation of a beneficial and inclusive living environment, or, rather, are they aimed at urban marketing and social sorting?

These questions are fundamental, as reflecting on walkability requires a critical reflection as to the consequences of pedestrianization processes. Field observations and interviews conducted as part of this research have clearly shown that the absence of a project clearly and explicitly defined by the authorities, both during the initial pedestrianization processes and whilst building works were in progress (although many sections of the boulevard are now fully developed), has created a state of general uncertainty. As a consequence, there have been multiple conflicting uses, misunderstandings and frustrations as different dynamics (commercial development, real estate development, tourism, social interactions, etc.) play out within the physical and conceptual space.

The pedestrian zone, which one might imagine to have spearheaded walkability policies in Brussels, is actually the theatre, the prism through which aspirations and visions for the city collide (Genard and Berger, 2020; Genard, Berger and Vanhellemont, 2016). It is beyond the scope of this chapter to present the controversies and (dys)functions highlighted by our study in depth. However, it is obvious that the importance of tourism, the development of large commercial brands, the high frequencies of people visiting an area, the logistical requirements of delivery within the perimeter, the phasing of the building works, residents' desire for a calm and good quality environment, the presence of precarious and marginalized populations, the coexistence of active mobility and motorized modes, are all elements that create dents, friction, tension spots and misunderstandings. Moreover, and perhaps more fundamentally, if these are not explicitly circumscribed, they play out in power struggles that do not necessarily contribute to the creation of a hospitable, mixed and sustainable city centre.

Working to increase the walkability of an urban centre therefore inevitably involves changing certain power relations, radically altering habits, and re-prioritizing values. Consequently, if the ambition is to implement this process in an inclusive manner and using a genuinely sustainable development approach, it is essential to pay attention to how different lifestyles are organized in urban areas, and to try to understand how a specific environment can offer varied and multiple grips (reflecting the diversity of users) and, therefore, increase its potential to host a greater variety of people.

5 > BEYOND THE PEDESTRIAN PLAN … THE WALKABLE CITY AS A SYSTEM TO DEVELOP

The elements developed in this chapter show that the scale of Brussels's metropolitan city centre has the capacity to encourage reflection on and problematization of the walkable city beyond the pedestrianization of its centre framed solely for tourists, commercial attractiveness or to shuffle mechanical mobilities (the car) to the outskirts.

It also shows that the development of walkable areas in Brussels seems to have been initiated both in terms of spatial planning and public policies and planning on the one hand, and in terms of citizens' practices and mobilization in their favour on the other. However, as the results of the three studies presented above show, the real development of the walkable city – that enables both the mobility transition and the development of a sustainable city – requires going beyond a mere change in the layout of public space and its continuities. Connecting mobility and urban planning and taking into account practices and lifestyles are necessary for the systemic development of walking and its culture. Alongside practices and lifestyles, attention must also be paid to imaginaries, or '[the] abstract intention with a performative power capable of guiding and motivating action, but without ever being

able to define it clearly, delimit it, clarify it' (Genard et al., 2016: 64). These are necessary for the establishment of the system of the walkable city. Such a city must be hospitable to pedestrian mobility and be able to host a wide variety of lifestyles, spatial practices and social diversity.

The theoretical contribution of this chapter has highlighted elements drawn from transition studies which emphasize the need for a multi-scalar approach. In the case of Brussels, this approach allows us to reconsider the edges of the city centre, on the one hand, and to rethink the sharing of public space between the different modes of transport and their coordination on the other. The scales must be coordinated not only between the local scale and the city centre scale, but also with the region and the entire metropolitan area. A paradigm shift can occur only if simultaneous action is taken across these scales – even if this seems complicated in the actual Belgian and Bruxellois institutional context – to enforce radical traffic calming (or even a car-free city), a *sine qua non* condition for the mobility transition.

In this context, a multi-scalar approach is inseparable from a multi-level approach. Indeed, there is a need to address transport systems and their organization, but also urban planning, political decision-making, the economy and culture to increase the chances of transforming practices and lifestyles in a more sustainable manner. For example, the rolling-out of a locally scaled city should be accompanied by land policies making it possible to maintain affordable housing and to offset the pressure associated with tourism and commercial attractiveness. This is all the more relevant because succeeding in developing walkable spaces depends on the residential density and the reinvention of a specific form of urbanity associated with these spaces.

All the measures mentioned in this chapter may help shape imaginaries and initiate the transition of the centre of Brussels, or even the entire region, towards a walkable city. The latter is the key to a sustainable mobility system understood as a transition process. This may enable the system to make the most of all possibilities offered by the new forms of mobility, by information and the smart city, by the restructuring of the region and by the development of sustainable lifestyles. The only condition is that walkability must be addressed as systemic, using a multi-scalar and multi-level approach that enables a radical posture with the potential to define an alternative to the car-city system: the pedestrian-city system.

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