9

A COMMON VISION FOR THE BRUSSELS METROPOLITAN CITY CENTRE BEYOND THE PENTAGON

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Abstract

This article proposes an open vision for the Brussels metropolitan city centre. It serves as a framework for a working method for developing design initiatives that are project-oriented and focus on testing, evaluating, adapting and implementing such a vision at different scales in the Brussels extended metropolitan centre. It summarizes the results of the international master class 'Zoom in | Zoom out – Brussels hypercentre: from pedestrian area to urban project' organized by the BSI-BCO and perspective.brussels in January and February 2018. The authors propose a detailed interpretation of the metropolitan centre as a hypercentre, based on an ongoing interdisciplinary research process within the BSI – BCO. They also present the working method research-by-design and the results of the project-based research conducted by the participants. This creates a more global vision for the metropolitan centre, based on three strategic guidelines: 1) expanding the perimeter with the circle-shaped metro-loop (line 2), the Brussels Canal Charleroi-Antwerp and the central railway stations; 2) structuring the metropolitan centre around a network of public spaces that are beneficial for soft mobility and ecological system services; 3) developing support programs for a cosmopolitan urban culture. The chapter illustrates possible sustainable scenarios for the spatial and programmatic structuring of the future metropolitan centre, of which the pedestrian zone will be a part.

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1 > INTRODUCTION

The lack of regional contextualization of Brussels's pedestrian project (Hubert et al., 2020 [2017]) is one of its greatest weaknesses highlighted by the Brussels Studies Institute-Brussels Centre Observatory (BSI-BCO). This finding led to an overall reflection on the role of the second generation central pedestrian area within the broader spatial structure of the Brussels-Capital Region. It also led to a trajectory called research-by-design (RbD)[4] that aimed to define a new vision for this central area. This chapter is the result of the work performed in this context, and focuses the discussion surrounding the articulation between the pedestrian project, the broader urban context and the opportunities that exist on a wider, metropolitan scale for re-thinking Brussels's central area.

The pedestrian zone is an important lever for the transition of Brussels to a different urban paradigm. An optimistic reading of the project reveals the presence of seeds that might lead to several ambitious changes, which can be summarized as follows.

First of all, it boosts further development of a soft mobility network. The project gives priority to pedestrians, cyclists and public transport, as opposed to cars. A major aim of the project is to improve the grid of east – west streets and thus support better pedestrian-friendly connections between neighbourhoods (Mezoued and Letesson, 2018).

Secondly, it strengthens the ecological green network. The project helps to reduce pollution caused by car use and to reintroduce nature – albeit to a limited extent – within the city.

Thirdly, the project proposes a prioritization of public spaces as the main drivers for a 'new' cosmopolitan urban culture, being primarily a public space itself and not just an access space for buildings. The terminology used to describe the Brussels pedestrian zone in the plans of SUM emphasizes a culture of citizenship (agora, urban scene, etc.). Moreover, due to its location, the pedestrian zone forms an interface between the eastern and western parts of the city (Corijn et al., 2016).

Finally, the recognition of the special character of the metropolitan centre in a polycentric city vision is embedded in the PRDD (the regional sustainable development plan). It is not directly linked to the pedestrian project, but contributes to further reflection on the future of the city centre beyond its actual limits, along the inner ring road (the Pentagon).

Admittedly, these ambitions have been unclearly formulated by the project holders – designers and public authorities – and have not been planned in detail.

4 In French, the term "recherche par le projet" is generally used in which 'projet' refers to design and (urban) project at the same time. English speakers tend to use "research-by-design" – or "research through design". In Dutch, this is usually referred to as "ontwerpend onderzoek".

Ambiguities and less elaborated aspects are based on fear and opposition to the project. Nevertheless, according to the BSI-BCO (Corijn, Vanderstraeten and Neuwels, 2016; Vanderstraeten and Corijn, 2018), the opportunities offered by the project must be recognized, appreciated and enhanced. The pedestrian zone must be seen as a milestone in a broader and more ambitious transformation process of the metropolitan centre.

To explore these possibilities, the BSI-BCO and perspective.brussels jointly organized a one-week master class in January and February 2018. Based on previous work of the BSI-BCO (Vanderstraeten and Corijn, 2018), the aim was to provide a broader view of the city centre through project-based research supporting the public debate and – at the same time – to place the challenges of the pedestrian zone in a wider context. In other words, the ambition of the master class was twofold: to zoom out, moving towards a vision that goes well beyond the implicit promises of the pedestrian zone and that not only re-imagines the city centre but also the city and the territory of Brussels as a whole; and to zoom in, clarifying at the same time the pending challenges and questions related to the pedestrian project: the programming of public space and the adjacent built space, connections between public transport networks and active mobility, and the inclusion in the ecological network.

This chapter summarizes the vision developed by the BSI-BCO and its partners for the metropolitan centre of Brussels. It explains the methodology and the research-by-design process engaged and developed by the BSI-BCO. The first part explains the definition of 'hypercentre' on which the definition of the Metropolitan Centre, beyond the Pentagon, is based. The second presents the methodology and results of the first stages of the project-based research carried out during the master class. The final part summarizes the discussions and the outcomes of the master class, which were improved through exhibitions, seminars and roundtables. The conclusion suggests the steps that should next be taken, and presents some of the main aspects of the ongoing project that are explained in more detail in other chapters of this book.

2 > FROM URBAN TO METROPOLITAN CENTRE

European cities have historically developed around and from centres, places of multiple and varied interests, according to different features that can be broken down into three main interrelated and interdependent characteristics: 1) activities and populations, 2) the physical setting, and 3) connectivity (Vanderstraeten and Corijn, 2018). These three features are combined with a higher density and intensity in city centres than in other urban areas (Bourdeau-Lepage et al., 2009).

The first refers to the functional and social mix, which is the main characteristic of city centres (Wayens et al., 2020). They are based on a residential built tissue, and they are attractive mainly due to the concentration of shops, collective facilities or public services (administration, culture), where multiple social activities prevail

especially outside working hours and in the evening. Secondly, the centre's physical supporting palimpsest can be characterized by a high density of the built space and structured by remarkable buildings, landmarks and public spaces that give a symbolic dimension to the centre (Claval, 2000), but also encourage pedestrian use (squares, large sidewalks) creating shared intermediate or transitional spaces on the ground floor level (Remy, 1996). Thirdly, the connection between the centre, its periphery and the other centres is key, and depends on the performance of public transport services and the optimization of intermodality, which can enable the influence and appeal of city centres (Vanderstraeten and Corijn, 2018).

Moreover, according to Lefebvre (1974), an essential characteristic of the urban phenomenon is the attractiveness of cities, which creates a situation that allows different people (and ideas) that come from elsewhere – and which would otherwise languish (Mumford, 1968) – to relate to each other, while maintaining their otherness, and brings them together in a dense and concentrated setting. This creates a centrality (from a spatial point of view) and a simultaneity (from a temporal point of view) of encounters. However, looking at such phenomena through the lens of 'the Right to the City', city centres often emerge as discriminatory and segregating due to market logics, producing marginalization instead of inclusion (Rosa et al., 2020). In this respect, pedestrianization projects often produce a tension between the desire to promote sustainable urban development and the exclusion of part of the population (Bernac et al., 2013).

The issues of inclusiveness and accessibility are thus highly interrelated and are today central to the attempt to imagine the future of European city centres. Actually, the ambition for more sustainable development raises key challenges for urban centres regarding low car dependency, accessibility, the relationship between public transport and the location of activities, the pervasiveness of rail networks, and other issues. Being able to quickly access centres of various scales by public transport, to consequently reach the desired location on foot, is one of the foundations of what can be described as an 'areal network' – from the French concept 'réseau aérolaire' (Remy, 1996), or polycentric urban planning (Frey, 1999). This issue is particularly relevant for Brussels, and has gradually come to the forefront in many cities as they have grown in size and modes of transport have evolved, giving rise to different forms of agglomerations depending on the hierarchical structure of the centres and their geographical distribution (Vanderstraeten and Corijn, 2018). Despite the tension that may arise between the management of different scales (the metropolitan and the neighbourhood scale) in the development of consistent visions for city centres (Salat, 2011), their requirements and the flows that are specific to them (fast and slow) can be organized in coexisting networks within an integrated form of urban development, where slow mobility and the ecological network have a guiding role (Tjallingii, 2012).

From a social point of view, the symbolic power of the centre (Claval, 2000) enables, better than any other place, the bringing together of the population it concerns.

Its scale of influence makes it a privileged territory in which society can gather and express itself against a background of cosmopolitanism. In this respect, an extended Brussels city centre represents a major political issue in the context of an increasing social divide that the metropolis is confronted by (the affluent, upper, eastern part of the city versus the less affluent, lower, western part) and which has deep historical roots.

The level of accessibility of and connection between the centre, its periphery and the other centres, reflects Brussels's polycentric structure, determining the extent of its influence and situating its appeal. The performance of public transport in metropolitan centres and the optimization of intermodality (walking, cycling, public transport, taxis, shared vehicles) are essential conditions for territorial sustainability (Vanderstraeten, 2018). Ideally, a balanced metropolitan centre should be connected by non-automobile territorial networks towards the outskirts and internally structured by pedestrian and ecological networks, accommodating a high density and simultaneity of social and functional differences (Tjallingii, 2012).

3 > DEFINING THE BRUSSELS METROPOLITAN CENTRE: TOWARDS A PARADIGM SHIFT

Over the last few years, the multi-capital of Brussels has been the scene of several renewal and revitalization dynamics, such as the Plan Canal, various Master Development Plans (PAD)[5] (Loi, Maximilien, Ninove) and neighbourhood contracts (such as the ones of Marollen and Jonction-Midi), street and square renewals (Sainctelette square, Chaussée d'Ixelles), iconic projects (such as Kanal Museum) and infrastructural projects (metro loop, projects of Gare du Nord and Gare du Midi). Several real estate developments and public space projects initiated at both the local and regional scale, together with a series of lively debates that recently occurred – such as the ones on the inner ring (Bye-Bye Petite Ceinture), the ones on the productive city (Cities of Making, Croxford et al., 2020), and the ones on air quality (da Schio, 2018) – call for the reconceptualization of the city centre (Van de Wall and Menten, 2020; da Schio and Vandenbroucke, 2020).

In particular, the spatial delimitation of the city centre, historically interpreted as the *Pentagon*, should be questioned. Several development projects, as well as civil society initiatives, offer causes to redefine the limits of the area. On the one hand, there is the completion of the metro loop (lines 2 and 6), that includes the centre of Historic-Molenbeek and extends the perimeter of the city centre to the west flank of the valley. On the other, the Canal Plan redefines the water infrastructure as the backbone of the metropolis (Vermeulen, 2015). Moreover, more recently, a series of workshops organized by the Brussels Academy called 'Bye-Bye Petite Ceinture (R20)' explored the possibility of reinterpreting the inner ring as a public

5 Plan d'aménagement directeur : Master Development Plan

space, rather than a road infrastructure. All the above-mentioned initiatives offer an alternative to the existing geographic definition of the city centre of Brussels as the core of a concentric urban structure made up of a series of ring roads with penetrating transversal roads (Dessouroux, 2009; Hubert, 2020 [2017]). They also suggest the possibility of conceptualizing the centre of Brussels in ways other than that of a mere historical tourist destination. Due to its multi-layered space, the spatial concentration of inhabitants of different backgrounds and a myriad of local and metropolitan activities and services (Wayens et al., 2020), the door is opened to expanding the socio-spatial understanding of the Brussels city centre, resulting in a richer and more complex definition in terms of ecology, mobility, economy, social practices and representations, finally suggesting the figure of a *hypercentre*.

In a general way, a hypercentre encompasses spaces and places with a high density and intensity, both in terms of flows and exchanges, and it is primarily a laboratory of urban cultures, a place where the different dynamics of the city coexist, evolve, transform, influence each other, hybridize, oppose, regenerate (Lefebvre, 1974; Vanderstraeten and Corijn, 2018). It reveals a level of density and vitality that is probably higher than that of the rest of the territory, even when embedded into a polycentric urbanization. In order to determine which part of the territory corresponds to the qualities of a hypercentre and which key elements should be considered in defining its perimeter from a socio-spatial perspective, three basic conditions can be identified (Figure 1).

1. *Hyper-connectivity*: the hypercentre is an area composed of a dense node of different non-car mobility networks (pedestrian, bicycle, bus, tram, metro, train), occupying a strategic position within the ecological network.
2. *Functional hyper-diversity*: the dynamics of the hypercentre are generated by the complementarities and tensions between and the hybridization of a large diversity of uses and functions. The white lines concern overlapping shapes tracing 'density zones' on the base of a wide range of maps describing different socio-spatial features of the BCR, such as the concentration of foreign populations and shops (source: Neighbourhood Monitoring[6]).
3. *Socio-cultural hyper-diversity:* the dynamics of the hypercentre are generated by the complementarities and tensions between and the hybridization of high social and cultural diversity that activates and transforms its spaces, combined with a remarkable diversity of users and inhabitants.

According to the above-mentioned key features, there are good reasons for expanding the Brussels central perimeter towards what can be considered the new 'metropolitan centre'.

Firstly, in terms of connectivity and walkability (Figure 1), the structure of the metropolitan centre can be defined by the combination of a series of mobility

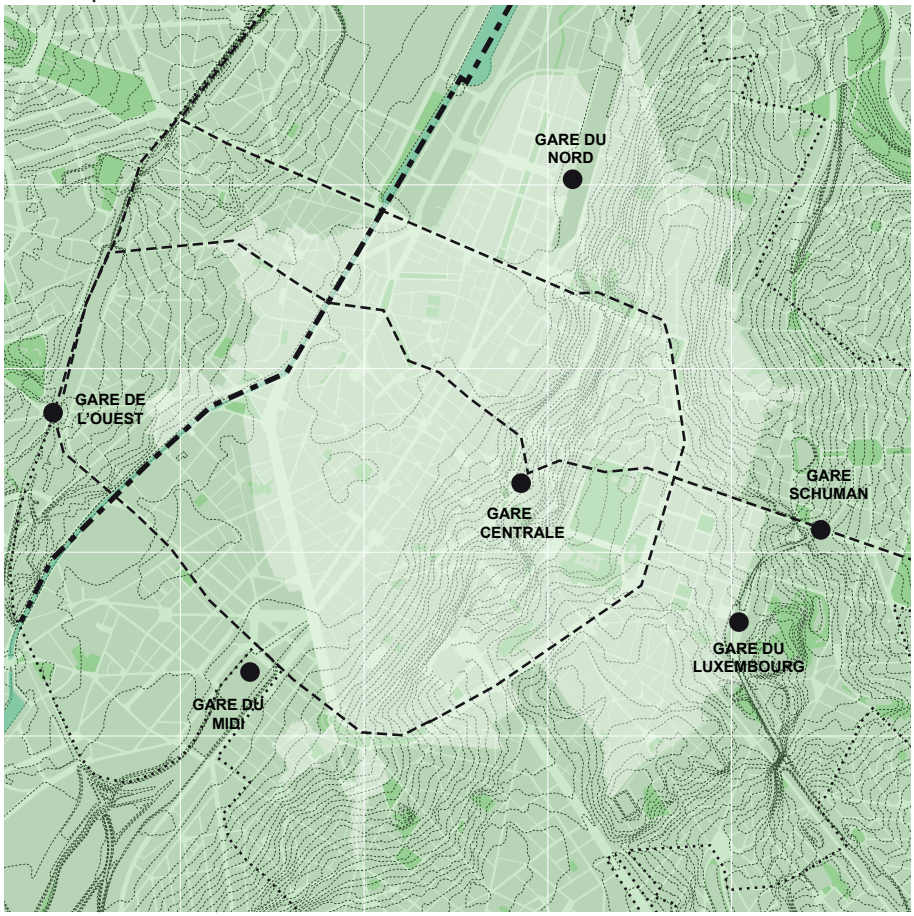
6 For the demarcation of the different Brussels neighbourhoods, we refer to the Neighbourhood Monitoring (IBSA-BISA).

Figure 1. Graphic reinterpretation of three conditions of the Brussels city centre: Hyper-connectivity, hyper-mixity (mixité) and hyper-diversity. The city centre is highly accessible by public transport (metro and train) (top). Different perimeters of the city centre (shown in white) exist in parallel, depending on their functional dynamics, morphology and social and symbolic meanings. They are shown in relation to the road network (centre) and the retail concentration (bottom)

Source: BSI-BCO, 2018

infrastructures qualifying the *hyper-connectivity*. The canal, the metro, tram, train and bus networks and stations, and the bicycle and pedestrian paths, must all be taken into account in determining the overall density of the network and the degree of accessibility of the various networks, hubs and modes of transport. Their performance is a precondition to starting to consider a reduction of the importance of the car network. The spatial figure that emerges from this analysis clearly exceeds the figure of the Pentagon, including not only the historical limits of the city and the first 'faubourgs' as delineated in the plan of Besme (1866), but also the 'metro loop', the main train stations, the central part of the canal (Figure 2), and the extension of the so-called 'walkable city' (Mezoued et al., 2020).

Figure 2. The main mobility networks and hubs (stations) that could define the Brussels's metropolitan city centre, based on the hyper-accessibility by public transport



Source: © BSI-BCO, De Visscher, Mezoued and Vanin, 2018

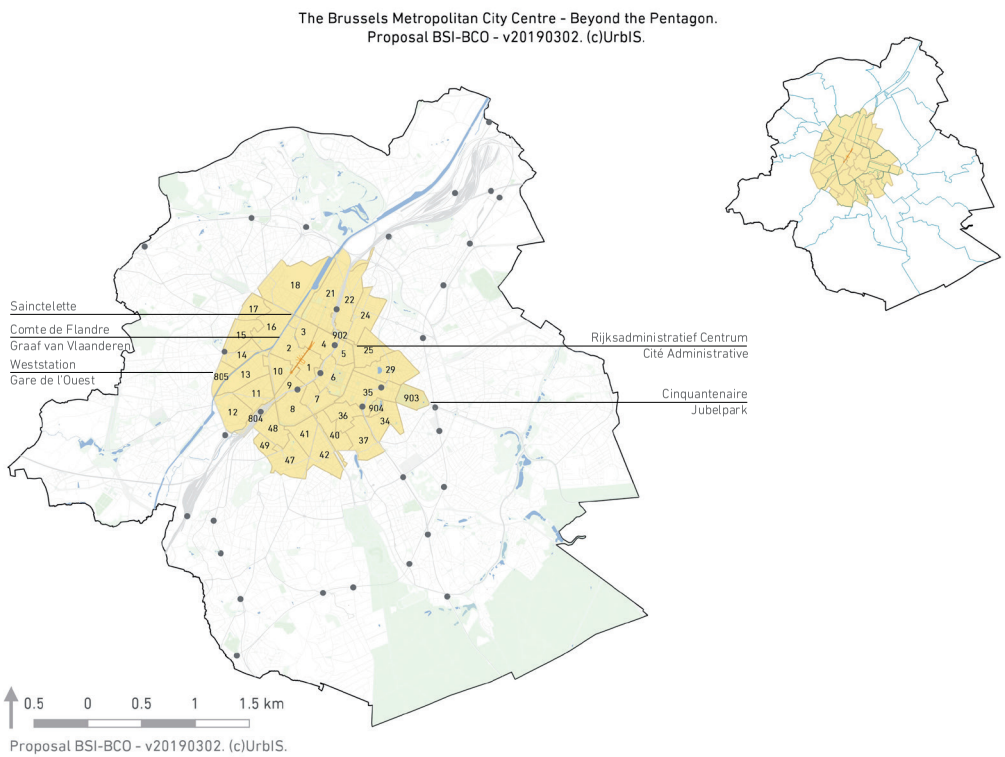
Secondly, one characteristic that supports the definition of a metropolitan centre is that of *functional diversity*. It is determined by the variety and proximity of the different functions of both the built and the unbuilt space, showing the intensity of the dynamics between a wide variety of uses. In spatially mapping Brussels's structuring economies (Corijn et al., 2009), the high diversity of mixed uses becomes clear in the coexistence of international institutions, the European quarter, business districts, active and declining industrial activities, manufacturing, touristic infrastructures, creative spaces, etc. However, the actual coexistence calls for a better integration of: a) the different central areas along the canal – productive sites, public spaces and metropolitan facilities, urban industry and creative economy (Abattoirs, Ninove, Citroën, Béco, Tour & Taxis); b) the different recreational, cultural and shopping nodes; c) the arrival neighbourhoods (Cureghem, Molenbeek, Matonge) and train station neighbourhoods (South, North); as well as d) the green spaces, meeting places and the ecological network.

The third of the basic constituents of the definition of a metropolitan centre is that of *hyper-diversity*. Brussels's cosmopolitan character is reflected in the high degree of social diversity that can be found in the central area. This super-diverse population is characterized by an enormous variety of nationalities and cultures, along with a large variety in terms of age, income and education (Corijn et al., 2009). This exceptional social diversity calls for a vision that widens the perimeter of the actual centre in order to fully embrace it in a consistent and unfragmented space. It specifically addresses the need to overcome existing socio-spatial and mental barriers, rethink the joints between the centre of historic Molenbeek, the different neighbourhoods, the districts around the main railway stations, the international institutions and the commercial luxury district at Avenue Louise.

As a result of this analysis, and based on studies by the BSI-BCO and other scholars, a wider area emerges representing the hypercentre, exceeding the rigid contours of the Pentagon and leading to what can be considered as the 'metropolitan centre'. Despite the difficulties in delineating its perimeter, an operational perimeter of this metropolitan centre can be traced (see Figure 3) by combining those 38 neighbourhoods that present the above-mentioned characteristics.

Along with this emerging definition of the Brussels hypercentre, the ongoing process of creating a pedestrian zone in the city core appears as a key opportunity to initiate a profound change in the urban paradigm. One of the most significant projects illustrating this trend is the pedestrianization of the Central Boulevards. Launched in 2015, the 'piétonnier' can be considered one of the most important projects of recent decades in Brussels's city centre, because of its size and complexity (Hubert et al., 2020 [2017]). However, a clear description of how its ambitions relate to the complexity of the ongoing and planned transformations is still lacking, as these interventions result from a political compromise that is supposed to meet mobility-related, as well as environmental, social, economic and cultural, challenges. The challenge that is nowadays becoming clearly tangible, is the urgency to

Figure 3. The proposed perimeter of the Brussels metropolitan city centre, based on the Neighbourhood Monitoring perimeters and data of IBSA-BISA



ID (Urbis)	NAAM WIJK – NOM QUARTIER	OPPERVLAKTE – SURFACE (m²)
WIJKEN BINNEN DE VIJFHOEK		
1	**GROTE MARKT / GRAND PLACE**	**386,593**
2	**DANSAERT**	**543,778**
3	**BEGIJNHOF - DIKSMUIDE / BEGUINAGE - DIXMUDE**	**376,519**
4	**MARTELAARS / MARTYRS**	**377,578**
5	**O.L.V. TER SNEEUW / NOTRE-DAME AUX NEIGES**	**292,074**
6	**KONINGSWIJK / QUARTIER ROYAL**	**706,598**
7	**ZAVEL / SABLON**	**453,252**
8	**MAROLLE(N)(S)**	**627,372**
9	**STALINGRAD**	**263,596**
10	**ANNEESSENS**	**440,301**
11	KUREGEM BARA / CUREGHEM BARA	591,432
12	KUREGEM VEEARTSENIJ / CUREGHEM VETERINAIRE	659,102
13	KUREGEM DAUW / CUREGHEM ROSEE	695,142
14	HERTOGIN / DUCHESSE	364,539
16	HISTORISCH MOLENBEEK / MOLENBEEK HISTORIQUE	720,419
17	KOEKELBERG	363,055
18	HAVENWIJK / QUARTIER MARITIME (incl. Tour & Taxis-site)	1,741,850
21	NOORDWIJK / QUARTIER NORD	1,308,145
22	BRABANTWIJK / QUARTIER BRABANT	785,404
24	HAACHTSE STWG. / CHEE DE HAECHT	712,128
25	ST-JOOST CENTRUM / ST-JOSSE CENTRE	615,603
29	SQUARES	805,802
34	JOURDAN	557,516
35	EUROPAWIJK / QUARTIER EUROPEEN	961,534
36	MATONGE	487,568
37	FLAGEY - MALIBRAN	641,551
40	LOUIZA - LANGEHAAG / LOUISE - LONGUE HAIE	448,371
41	BERCKMANS - MUNTHOF / BERCKMANS - HOTEL DES MONNAIES	442,912
42	KASTELEIN / CHATELAIN	659,863
47	HOOG ST-GILLIS / HAUT ST-GILLES	766,188
48	HALLEPOORT / PORTE DE HAL	532,421
49	BOSNIE	200,389
DUNBEVOLKTE WIJKEN		
15	WEESTSTATION / GARE DE L'OUEST (spoorwegsite)	513,519
804	ZUIDSTATION / GARE DU MIDI (spoorwegsite)	244,657
805	INDUSTRIE BIRMINGHAM (spoorwegsite)	240,251
902	KRUIDTUIN / BOTANIQUE (park)	71,287
903	JUBELPARK / CINQUANTENAIRE (park)	377,02
904	LEOPOLDPARK / PARC LEOPOLD (park)	117,741

Source: © BSI-BCO, 2019

identify which are the possible, desirable and feasible evolutions of the ongoing project within the scope of a larger space, namely the Brussels metropolitan centre.

A reading of the project reveals the start of several ambitious changes.

Firstly, in terms of the *active mobility network*, the project marks a priority given to pedestrians and public transport in relation to the car. In addition, the project intends to upgrade the east – west oriented street axes, supporting better inter-neighbourhood connections (Mezoued and Letesson, 2018).

Secondly, regarding the ecological mesh, the project contributes to reducing pollution related to car traffic, by reintroducing – albeit in a limited way – nature in the city, adding trees, flowerbeds, and other green elements to the newly redesigned pedestrian zone.

Another facet of the project is its introduction of public spaces as a support for a new civic and cosmopolitan urban culture. The project is primarily conceived as a public space, and not just a functional space, the aim of which is to merely serve adjacent buildings. The terminology that is used in the design of SUM to describe the pedestrian space, which is subdivided in 6 consequent parts (such as the 'agora', 'urban scene' and others) enhances the civic culture.

Finally, the new pedestrian arrangement makes it the interface between the city of the east and the city of the west, creating a spatial joint between these two very different urban areas. Such an east – west connection has been historically disadvantaged, privileging the north – south connections.

Admittedly, these ambitions are neither clearly formulated by the project promoters nor firmly planned. Ambiguities and shortcomings justify the fears and oppositions there have been around the project (Hubert et al., 2020 [2017]). Nevertheless, we will argue that the positive opportunities that are opened up by the project must be recognized, valued and strengthened. The pedestrian zone should be seen as a milestone in a wider and *more* ambitious transformation process of the metropolitan centre, where the special character of the latter in the context of a polycentric city project needs to be thoroughly investigated.

4 > FROM PEDESTRIAN PROJECT TO RESEARCH-BY-DESIGN PROCESS

Most of the key principles behind the ongoing pedestrianization process are, however, highly consistent with the definitions of the city centre (Wayens et al., 2020): the ambition of reducing car mobility, the improvement of walkability and the connections with the underground metro-tramway, the enhancement of air quality and green corridors, the focus on publics spaces as meeting places.

The positive reading of the *piétonnier* as a visionary pilot project for the future of the centre goes hand-in-hand with the lack of a wider plan for the city centre which concerns multiple aspects, such as the mobility, socio-cultural, economic and ecological dimension (Hubert et al., 2020 [2017]). The changes observed in the profiles of shopkeepers (Strale, 2018; Vanhellemont, 2016), the lack of communication with citizens' associations, the attitude towards homeless people, the lack of plans for public properties (Rosa et al., 2016), all unfold the lack of understanding of the complexity, the differences, and the nuances that are present in the Brussels city centre.

This constituted the starting point for an on-site re-exploration of the existing possibilities for restructuring the Brussels metropolitan centre. After a series of surveys and analyses (Portfolio 1, 2016) and public debates (Brussels Academy, Nuit du savoir), the BSI-BCO decided to complement its approach with some prospective work and an RbD process.

Before presenting the RbD trajectory pursued by the BSI-BCO, it is important to briefly explain what we mean by research-by-design as it covers a working definition and how we use it. Research-by-design is a form of research that is practice-based and prospective, and which looks at space as part of the solution. According to the Charter of the European Association for Architectural Education (EAAE), it is 'any form of research in which the design is the essential component of the research process' (Ellefsen, 2015). In research-by-design –, 'the architectural design process is the path along which new insights, knowledge, practices or products emerge. It generates critical research through design work'. Research-by-design usually follows an abductive[7] path making use of design patterns as 'primary generators' that both define the limits of the problem and suggest the nature of its possible solution. Within the limits of a given scenario and considering the practical limits of the research context, it provides the most promising conjecture, which is then subjected to further testing (Cross, 1982). In the design disciplines, such as (landscape) architecture, urban planning and spatial planning, it is an often used research method for testing various possibilities for socio-spatial issues. The visual way of communicating is seen as an important added value to make abstract and technical ideas about a future situation visible to various parties involved (Nijhuis et al., 2017; Rodgers and Yee, 2014). Following many authors, research-by-design – also helps bridging the gap between humanities and hard sciences (Cross, 1982; Frayling, 1994).

However, as stated by Frayling (1994), the designed solution is not the only outcome of such a research process. In many cases, the major output is rather the

7 Abduction is seen as a distinct type of reasoning in which a hypothesis is formulated to explain a surprising phenomenon from which a conclusion is consequently deduced and put to the test. The findings of the experiment may either lead to the formulation of a different hypothesis or to the testing of another conclusion than can be deduced (Hougaard, 2014).

performative power of design to mobilize people and foster collaborations by means of (visual) communication and participation (Vermeulen and Hardy, 2016).

Unfortunately, an insufficient number of research-by-design processes have been rigorously documented to assert its performative power.

In the context of the BSI-BCO, this general definition of RbD was adapted according to three specificities we were confronted with in our work: the scientific and multidisciplinary character of the platform, its independent 'third-actor' position, and its scientific objective of developing a long-term collective learning process beyond short-term problem-solving.

First, the RbD trajectory was based on the rich, diverse and rigorous research provided by the platform. Conversely, the trajectory is used to make the complementarity and contradictions between those various researches more concrete. The aim of research-by-design is not only to bring 'classic' scientists to participate in prospective and prescriptive experimentations, but also to install a scientific monitoring of the process, and to explore the scientific value of analysing such an unpredictable process rather than existing facts.

The second specificity of an RbD process carried out by the BCO is that neither public stakeholders (Serroen and Borret, 2020), nor study offices (commissioned by public stakeholders), activists or citizen's associations are taking the lead. The BCO is an independent research platform that aims to act as a 'third actor' mediating between multiple perspectives and interests (Mezoued, 2017). Therefore, design proposals are meant to objectify questions and possible solutions, not to implement specific (political) agendas. The hypothesis is that visually communicated proposals have a more direct impact than abstract recommendations, and that a prospective and enthusiastic approach helps in bringing the partners into a similar positive and open-minded attitude. However, quality and objectivity of the design is not enough. A key challenge is the trust in the independence and empathy of the mediator. Our experience has shown that scholars are likely to be accepted as mediators when stakeholders have conflicting (or mutually ignoring) agendas – a recurring problem within the institutionally hyper-complex structure of Brussels – thanks to their reputation for rigour and independence. Therefore, a key challenge is to bring together researchers of various ages and different backgrounds, representing different institutions and a wide range of disciplinary backgrounds, and get them to act as a critical peer beyond the limited framework of a short-term research project. From this point of view, nesting the BCO within a wider research platform such as the Brussels Studies Institute is crucial.

The last specificity of RbD at the BCO is the aim of fostering a long-term collective learning process that goes beyond short-term problem-solving. Considering that complex urban issues are generally seen as 'wicked problems' that have no unique solutions, design proposals are mainly carried out as a means to bring together

people and open up new perspectives. More specifically, the aim of the BCO is to connect spatial and programmatic design to partnership development and innovation in governance models.

4.1 Zoom in | Zoom out on the fine network of public spaces

First, in September 2017, the BSI-BCO organized a seminar on 'centralities', based on a working paper later published by Vanderstraeten and Corijn (2018), which defined the basis of a vision for the hypercentre, including some methodological principles for the research-by-design process. Then, in January and February 2018, BSI-BCO and perspective.brussels jointly organized a one-week master class, implementing the previously defined project-based research approach, the overall goal of which was to produce support for a public debate aimed at broadening the thinking to the hypercentre level and, in turn, contextualizing pedestrian issues.

In other words, the ambition of the work was twofold: to zoom out and zoom in at the same time. Zooming out was meant to be an action of widening the scope, to provide a new vision for the centre, extending the pedestrian zone's implicit promises to rethink the metropolitan centre and, indirectly, the entire city and territory of Brussels. This kind of reasoning goes against the idea of a city made up of juxtaposed, individual, mid-sized projects, and moves towards an integrated large scale approach. In turn, zooming in was meant to be an action of better understanding the strategic issues and opportunities and facilitate clarification of some issues that were relevant to the questions the pedestrian project continued to raise, in order to remedy the shortcomings of the current project and find a way to move beyond controversies. The programming of public spaces and adjacent built-up areas, the connections to public transport networks and active mobility, the implementation of the ecological network and the reduction of parking spaces, were just some of the thematic issues discussed during the master class.

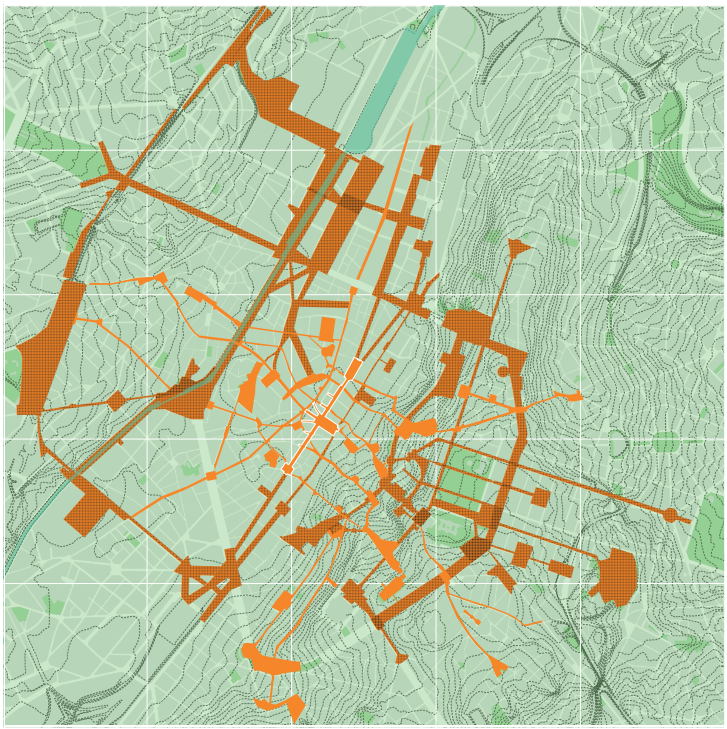
In order to define more precisely the new spatial figure of the hypercentre, it was first of all necessary to analyse the structure of the existing road system and the related public spaces structuring the central area of Brussels in greater detail. Closer inspection revealed a grid of spaces formed principally by north-south and east-west axes, which can largely be subdivided into two categories: spaces marking the main layout and spaces marking the capillary network (Figure 4).

The large public spaces and road infrastructure predominantly have a north-south orientation. They are usually formal, designed and planned. There are five groups of major routes: the royal routes, the junction, the boulevards of the centre, the canal, and, in a prospective vision, the west subway line. Even today, these major routes are the focus of significant strategic actions carried out by the public authorities such as the pedestrian area, the North metro (line 3), the Canal Plan and the Kanal museum.

The capillary network is mainly orientated according to an east-west logic. These streets and spaces often stem from medieval routes and are dominated by the presence of small roads and old passages to the suburbs. The capillary network has a character that is generally more informal and unplanned. It evolves over tactical interventions mainly carried out by private actors. Even today, that road network concentrates a significant portion of the retail activities. Given their secondary importance in terms of transit traffic flows, these spaces are a logical starting point for experimentation with new practices concerning sharing spaces. Given the complexity of the micro-dynamics that shape them, their transformation demands new modes of participatory urban planning. The capillary network is therefore a territorial project that is to be considered just as important as the major routes.

Moreover, the public spaces defining the figure of the metropolitan centre are shaped by the combination of these two categories of spaces. This duality constitutes a richness that allows for a multitude of combinations and interactions capable of contributing to reinforcing the hyper-connectivity, functional hyper-diversity and sociocultural hyper-diversity that make the metropolitan centre a laboratory of urban culture.

› Figure 4. The potential shared spaces network of the hypercentre. The large spaces (brown) and the capillary network (orange)



Source: © BSI-BCO, De Visscher, Mezoued and Vanin, 2018, based on UrbIS-Topo

4.2 Unfolding the structuring network of the metropolitan city centre

Mapping the structuring network of public spaces that support the dynamics of the metropolitan centre of which the piétonnier is a key component (zoom out) and identifying the concrete local opportunities and challenges occurring along such a network (zoom in), leads to the identification of a series of main spatial sequences.

Attempting to determine the main walkable network that, supported by public transport, can function as a connection between the social and functional differences present in the Brussels hypercentre, the first move was to look at the axes that structured the city centre before the construction of the train junction, the canal and the central boulevards, and which were dominantly east-west oriented. The main one was the 'Steenweg' (De Visscher, 2020), connecting the harbour district (Saint Géry-Saint Cathérine), the retailing district (Grand Place) and the royal district (Coudenberg, Place Royale), with a secondary axis connecting Sainte-Gudule-Beguinage with Sablon and Nouveau Marché aux Grains. The persistence of these axes in the contemporary city is still visible and it unfolds the relevance of the medieval network presenting potential walkable paths. Moreover, these are highlighted by a space syntax analysis (Mezoued and Letesson, 2018) that identifies the streets that can be chosen when moving away from a particular point on the map within a given perimeter. The 1600-metre radius analysis shows a series of continuous paths crossing the 'petite ceinture', highlighting the continuity of the historical axes beyond the Pentagon for pedestrian displacements (Mezoued et al., 2020). However, as a result of the historical transformations of the city, especially the 'grands traces', some missing links emerge from the analysis, pointing out the need for specific interventions to guarantee such continuity.

Besides the continuity beyond the Pentagon, the key features that have been considered to determine the main E-W spatial sequences are their ecological value (enhancement of the green-blue network, reduction of the heat island effect) and their capacity for bridging socio-functional differences – connecting people from the different neighbourhoods as well as linking different functional zones (industrial, retail, cultural-touristic and office areas), which is in clear opposition with the N-S axis, which connects more homogeneous zones, stressing the importance of public spaces as, for example, the squares on the 'piétonnier' (Fontainas, Bourse, De Brouckère).

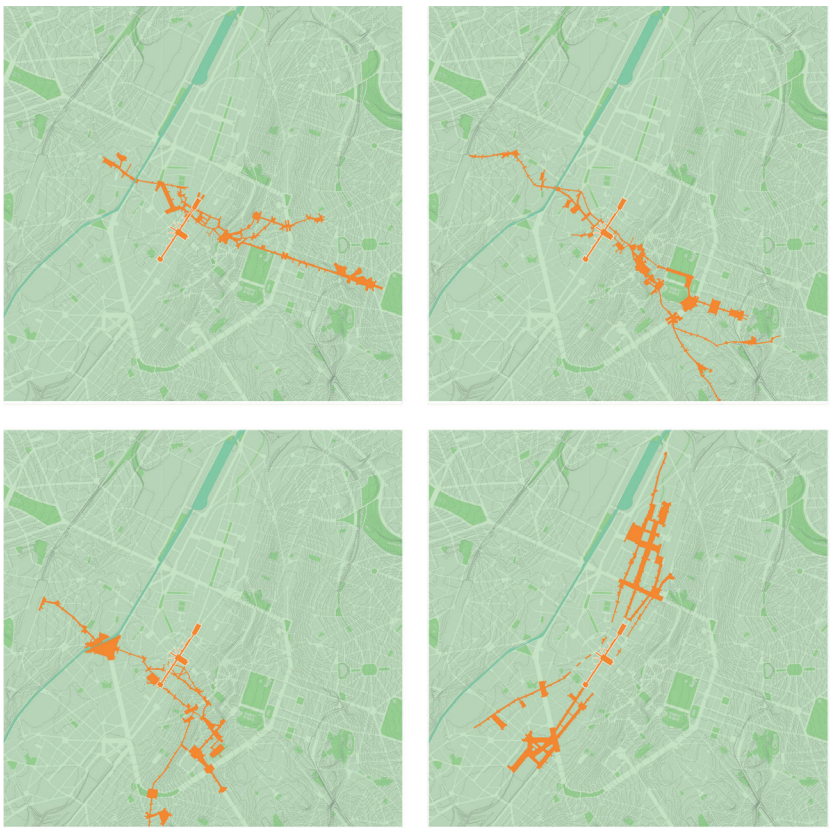
Based on this, four main sequences of roads and public spaces have been identified that are suitable to become future walkable and structuring axes of the hypercentre, which can be extended beyond the Pentagon (Figure 5).

The first sequence starts from Place Saint-Josse in the lower part of Saint-Josse-ten-Node to end at the Comte de Flandres metro-stop in historic Molenbeek, linking the two sides of the canal representing the notorious duality of Brussels. It crosses the petite ceinture at the level of Esplanade Madou to then offer several alternatives.

One is to go towards the canal via the cathedral Saint-Michel-et-Gudule and the streets of the Fossé aux Loups and the Ecuyer, as well as the place Sainte-Catherine; another one is to go through the Notre-Dame-aux-Neiges district to reach the Cité Administrative de l'Etat, the Martyrs' Square and the Béguinage Church. In both configurations, the sequence crosses the pedestrian zone at place De Brouckère.

The second sequence traverses the central tourist zone in downtown Brussels and follows the historical route of the Steenweg (see De Visscher, 2020, in this book). When looking at its course, it seems logical to extend it up to the centre of Ixelles, including the Chaussée d'Ixelles and the Chaussée de Wavre, and down to Molenbeek-Saint-Jean, including the Chaussée de Gand. Throughout this sequence, there is considerable socio-economic and sociocultural diversity, as one crosses the gentrified districts of Ixelles (Saint-Boniface, Chaussée d'Ixelles) and Dansaert, the ethnic districts of Matongé and Historic-Molenbeek, as well as the central tourist zone of Brussels's core. In such a configuration, the Stock Exchange – la Bourse – becomes the knot of articulation between the pedestrian zone and this extended route.

› Figure 5. The three east-west and one north-south axes of the hypercentre



Source: © BSI-BCO, De Visscher, Mezoued and Vanin, 2018

The third sequence stretches the limits of the southern part of the Pentagon. The network connects the southern slopes of the Ville de Bruxelles with the eastern slopes of Molenbeek at Gare de l'Ouest. It starts from place Stéphanie to reach place Poelaert (Palais de la Justice), the more affluent Sablon neighbourhood, the popular district of the Marolles, place Fontainas in the Anneessens neighbourhood, Porte de Ninove at the junction of three municipalities and Gare de l'Ouest. The public spaces of this sequence have probably been the least affected by the construction of the large boulevards. As a result, there is a fine network of streets and alleys where highly diverse low-class neighbourhoods and gentrification pockets coexist.

The fourth sequence focuses on the continuity of pedestrian developments around the central boulevards, along a north – south alignment. The Gare du Nord and Gare du Midi become the gateways to this sequence, which includes all the central boulevards (Anspach, Lemonnier, Adolphe Max, Emile Jacqmain), as well as the parallel streets, which are just as important: Rue Neuve, Rue du Midi and Avenue Stalingrad on the one hand, and Rue de Laeken, Rue de la Vierge Noire and Chaussée d'Anderlecht on the other.

The investigation around those imaginary axes – that are, in fact, each composed of a number of different tracks and spaces – aimed to answer some questions regarding, for example, the relationship between the central boulevards and the mesh of public spaces in the hypercentre, or the one between the pedestrian zone and its extensions to the two stations and the three east – west axes.

It also highlighted the need for a clear vision about the future of the N-S and E-W sequences and a reflection on what actions can be taken in the short term, and how these can initiate a long-term transformation processes.

5 > FOUR STRUCTURING AXES

Looking in detail at the methodology and the results of the 'Zoom in, Zoom out' master class is particularly relevant in terms of the definition of the metropolitan centre. The output of the project-based research conducted by the participants is a series of four projects organized along the four main structuring axes (each in fact being a sequence of tracks and spaces) that bypass the limits of the Pentagon. This led to a series of debates after the master class, and allowed the identification of a number of paths worth pursuing.

The overview of the four sequences helps to understand and build a new figure for the Brussels hypercentre. The grid of public spaces that is mainly devoted to soft mobility together with the reversal of the priorities concerning the use of the roads enabled the exceeding of the limits and physical borders of the dominant figure of the Pentagon, which fades in favour of a series of continuous transversal east – west paths alongside a north – south one. The boundary represented by the

canal is also crossed, becoming a hinge, a sort of spine that creates a link, rather than a partition. This new form also helps to network a lot of places, programs and uses, many of which have been divided since the 19th century. Reconnecting them in this way can support and reinforce the dynamics and the diversity of the hypercentre.

5.1 Sequence 1: Place Saint-Josse – Comte de Flandre

The main idea of the proposal is to install a clear continuity and fluidity when proceeding from the Place Saint-Josse to Comte de Flandre and to punctuate this course with a succession of small squares in order to transform the route into a more intuitive path. These spaces can be activated through the programming of weekly markets that can materialize the desired continuity through a programmatic proposal. The streets and alleys between the small squares are released from the presence of cars and from parking lots along the road. A new mobility scenario is being proposed as part of the expected paradigm shift for the hypercentre, transforming the public spaces into areas with reduced car presence, shared by soft transport modes and open to different types of appropriation.

To support the development of the proposed links, the focus is – in the first stage – placed upon the sequence between the Congress Column and the Place des Martyrs. Moreover, special attention is paid to the scars represented by the North-South railway junction and the Cité Administrative de l'Etat, in order to facilitate the spatial-functional continuity and the pedestrian crossings between the upper and lower part of Pachéco Boulevard.

The deployment of the above-described vision across the whole sequence in terms of concrete actions to be performed in the short and long term is condensed here in three main proposals:

First, the redevelopment and reprogramming of the esplanade of the Cité administrative : renew the space, make it more attractive and allow new activities, while facilitating street crossings (Pachéco Boulevard). The Esplanade can also be the subject of a new program in which a weekly market and leisure activities are established.

Second, to enhance the attractiveness of the proposed route between the administrative city and the Place des Martyrs, a new square is to be created at the Rue du Marais. The current building of BNP Paribas, which will soon become unoccupied,

is being demolished[8] and could be replaced by student housing and a small square, creating a sort of new student district near the Université Saint-Louis – Brussels.

Finally, the redevelopment of the streets into shared spaces, with parking lots being eliminated from the roadside, is one of the main actions of the proposal that can be tried out in the short term, enhancing the spatial quality without the need for significant investments (at least if the sidewalks are preserved).

5.2 Sequence 2: Chaussée de Wavre-Ixelles – Chaussée de Gand

The vision proposed for this axis is to extend the Steenweg to Ixelles and Molenbeek and to include the Chaussée de Gand and the area of Matongé in the continuous sequence of symbolic and iconic places of Brussels (Place de la Bourse, Grand-Place, Mont des Arts, Place Royale, etc.) (Figure 10). This extension and the envisaged unity were initially fostered thanks to the pedestrianization of some missing sections along the sequence. Indeed, the majority of streets along this axis are already pedestrianized. The idea is to complete the missing sections and create a kind of pedestrian east – west path retracing the historic roadway. This implies a heavy redevelopment of the junction of this new road with the petite ceinture (inner ring-road). Moreover, in order to ensure the continuity of the pedestrian route, the two nodal points at Porte de Namur and Porte de Flandre have already been completely redesigned.

In addition to the development of public space to better accommodate slow mobility, less invasive actions are also envisaged, along with exclusively programmatic and immaterial ones:

One is to highlight the path by placing an illuminated plan that puts forward a number of elements related to the local identity of the places.

Secondly, it is suggested that cultural and sports festivals be organized along the axis in order to be allow increased interaction between different groups of people living in different parts of the axis, thus promoting and enhancing social cohesion.

Thirdly, the intention is to create a digital app that can provide instant information on the different cultural and sports events, as well as on places of interest throughout the sequence.

In terms of concrete actions, this sequence proposes key interventions at Porte de Namur and Porte de Flandre. As for the first location, the main question is how to

8 We would like to point out that criticism can surely be formulated on parts of this proposal, like on the demolition of a building. The proposal is the result of a co-creative master class, not a purely science-based exercise. A more defendable alternative from an ecological point of view could, for example, involve remodelling the existing building instead of demolishing and rebuilding it.

create spatial and functional continuity of the pedestrian zone between Chaussée de Wavre and Rue de Namur. At this point, the small ring-road becomes a shared space with enhanced pedestrian priority.

Regarding the second focus point, the aim is to create a better continuity of the pedestrian public space between Rue de Flandre and Chaussée de Gand, with a partial covering of the canal between the bridges of the Chaussée de Gand and Rue de Witte de Haelen. Although highly ambitious given the physical constrains, this new public space would make it possible to cross the canal 'barrier' and to construe a meeting place in what is to actually become the heart of the hypercentre.

5.3 Sequence 3: Place Stéphanie – Gare de l'Ouest

In this sequence, located in the southern part of the Pentagon, there is an increased density of schools and institutions for higher education or professional training from both the French and Flemish communities. It is proposed that a network of schools be created that intertwines with a network of inclusive and mainly shared public spaces (Mezoued and Letesson, 2018) that pay special attention to schoolchildren. It strongly focuses on reinforcing the public transport connectivity as a safe and secure alternative that allows the eradication of the dominance of the car and its allocated importance in public space.

Schools are also to be networked through a common urban agriculture program. The roofs of schools, their playgrounds and a number of other public spaces hold the potential to become productive spaces whose production management is shared between schools and whose production can serve to supply the school canteens. The implementation of this project should involve all institutions and stakeholders concerned. As for the schools, these should also comprise the Academy of Fine Arts and the Institute of Arts and Trades, which are located in the neighbourhood. The idea is also to rethink the relationship between schools and public space. The use of some schools' playgrounds or other premises for activities that are open to the general public is one of the core proposals of this project. It is inspired by the Flemish 'Brede School' programs.

Several short-term actions are proposed. They mainly concern the urban agriculture program that is linked to the schools, but also the pacification of public space and its transformation into a child-friendly space.

The first action is the unification of Fontainas square and the adjacent park to make it the heart of a new urban agriculture network that is linked to schools. The park can thus be transformed from a mere urban garden – as it is conceived today within the pedestrian spine – into a productive space. It also has the potential of becoming the centre of a network of large open spaces that is constituted by the sequence of the Egmont park, Fontainas, and the future park at Porte de Ninove. At Fontainas Square, the corner of the ground floor of the Anneessens-Funck

Institute becomes the central place of this joint program, where the coordination is located with an access and contact point for the public. It also becomes a meeting place for schoolchildren from different communities and socio-economic and socio-cultural backgrounds. The project is to become a space and learning program dedicated to Brussels cosmopolitanism.

The second action concerns the appropriation of the rooftop of the Athénée Robert Catteau. This roof, which is located at the same level as Poelaert Square, is currently unused, and offers a large surface that can be exploited. The idea proposed here is that this space be arranged as a visual extension of the square and utilized within an urban agriculture program linked to the nearby school.

The final action concerns the re-appropriation of the public space of the boulevard de l'Empereur and the adjoining Justice square . The central reservation and the sidewalks of the former are redesigned to create a pedestrian continuity and secure road crossings. Sports fields and playgrounds can be incorporated in the redesigned area. The Place de la Justice can be reorganized and the great institution of the National Library could launch a school-related outreach program to animate the square.

5.4 Sequence 4: Gare du Nord – Gare du Midi

For the final sequence, the idea is to strengthen the links of the central boulevards to the Gare du Nord and the Gare du Midi. This proposal will emphasise the actual broadness of the central boulevards including the Rue du Progrès, place Rogier, Rue Neuve, Rue du Midi, Boulevard, Stalingrad and the Esplanade de l'Europe. These streets and squares each have a specific character and a street-life that the proposal aims to integrate into a coherent whole by reinforcing the spatial and programmatic links between them. This vision involves, among other things, the strengthening of the metropolitan character of the entire sequence by enhancing the availability of the metropolitan infrastructure: reprogramming the Continental Hotel at place de Brouckère, opening up the Academy of Arts to the public space, reprogramming the Palais du Midi, and planning and programming the existing spaces under the railways along the esplanade de l'Europe.

In terms of actions, it is proposed that the links between the parallel streets of the sequence be reinforced (Figure 15). An example would be to create a link between Rue Neuve and Boulevard Adolphe Max. The latter road is relatively calm, and could take advantage of the dynamics of the Rue Neuve. To achieve this, a recreational area is created between the two streets in order to attract flows from one space to another.

The second action concerns the reprogramming of the Palais du Midi as a palace devoted to southern cultures. The aim here is to recognize and reinforce the Maghreb cultural character of the area and integrate it in the metropolitan canon. The

redevelopment and reprogramming of the Palais du Midi also presents an opportunity to enhance the passage between the Lemonnier and Stalingrad boulevards.

Finally, one of the project's actions is to create new spaces under the railroad along the Esplanade de l'Europe and to turn these over to new uses. This action aims to reactivate the space between the Gare du Midi and the inner ring road on the one hand, and to reduce the effect of the rupture in the urban fabric, which was caused by the railroad, on the other.

6 > PERSPECTIVES

In 2018, the results of the master class were presented during an exhibition and public debate at Bozar and perspective.brussels. They also served as support for a cycle of meetings between academic experts, public actors and citizens, which confirmed the fundamental principles proposed in this paper and opened up more concrete perspectives and partnerships.

In fact, after the master class, the BSI-BCO set up a program of seminars, workshops, exhibitions and public debates where the model was used as a support for discussion. The first event was an exhibition and public debate with a panel of experts and official representatives from the city of Brussels and the Brussels region, held at the Museum of Fine Arts. Over the next three months, the model was exhibited at perspective.brussels, and was used for thematic workshops on economy and mobility with experts from universities, public administrations, and professionals' and citizens' associations. This led to adaptation and refining of the model according to the consensus that emerged from the debate between the stakeholders that were present. It also led to the production of the outlines of a vision for the Brussels metropolitan city centre,[9] a vision that describes how to evolve beyond the Pentagon so that Brussels's city centre becomes the cosmopolitan centre of the metropolitan capital of Europe. Along with this vision, five challenges were formulated: 1) the definition of a co-productive and inclusive socio-economic policy by using levers for public land use; 2) the realization of a mobility transition through a paradigm shift; 3) the development of a productive city and logistic ecosystem at multiple scales from a low-carbon perspective; 4) the programming of a multidimensional city, including its public spaces and the built environment (basements, ground floors), as well as the in-between-zones, reducing nuisance for the most fragile neighbourhoods; 5) governance of the metropolitan city centre (beyond the Pentagon). Moreover, it delineates six ideas for research-by-design processes: 1) the testing of alternative solutions for urban freight transport and providing operational support for local merchants to adapt during the transition; 2) elaboration of the pilot project 'a pedestrian-friendly network of schools' with a program of urban agriculture and public spaces along the axis Poelaert-Sablon-Porte de Ninove

9 https://issuu.com/bsi-bco/docs/de_pliant_final

(towards the Gare de l'Ouest and the Abattoirs); 3) reinforcing the east – west linkage, ensuring and visualizing a walkable axis along the 'Steenweg' between Porte de Namur and Porte de Flandre, completing and prolonging the missing pedestrian links between Matongé, Chaussée d'Ixelles and lower Molenbeek; 4) reinforcing the walkable axis between Saint-Josse, rue de l'Avenir and Compte de Flandre; 5) reworking the nodes on the north – south axis, rethinking the use and identity of the Esplanade de l'Europe as well as the Palais du Midi, the Hôtel Continental, the future galleries of the Bourse, the 1st floor of the Centre Monnaie; 6) valorisation of the basements of certain buildings to increase the accessibility and supply system of the metropolitan city centre, such as the parking of the Cité Administrative and the Monnaie car park.

7 > DISCUSSING THE VISION

After delineating this vision, the proposed ideas needed adhesion from a larger public and stakeholders on the one hand, and to be detailed and supported by research and a research-by-design process on the other. For this reason, another series of discussions and public debates were organized, while searching at the same time for subsidies to further develop the vision. In partnership with Brussels Academy,[10] a series of lectures and debates with inhabitants and citizens' associations were organized, and, thanks to a partnership with Pyblik,[11] a platform providing training in public space design for both professionals and public stakeholders, a workshop was held. From June to November 2018, the proposed model of the Metropolitan Centre was exhibited. In parallel, an alternative model made by the activists of Bye-Bye Petite Ceinture[12] (BBPC) was presented (Figure 6) at the Brussels branch of the International Architecture Biennale of Rotterdam[13]. The model of the new spatial figure of the metropolitan centre proved to be complementary with the work simultaneously carried out by BBPC: while BCO had focused on the spatial structures crossing the petite ceinture, BBPC focused on the fading of the inner ring as a barrier.

The process of communication and collective discussions led to two main observations. The first was a general agreement of the participants with the values expressed by the model: widening the perimeter to include the metro loop, the canal and the stations; structuring the metropolitan centre around a network of public spaces favourable to soft mobility and ecological services; developing support programs for a cosmopolitan urban culture. Clues as to the acceptance by public stakeholders are the adoption of some of the key proposals into planning

10 https://brusselsacademy.be/, accessed 20 November 2019.

11 http://www.pyblik.brussels/, accessed 20 November 2019.

12 Bye- Bye Petite Ceinture is a citizens' association that strives to transform the inner ring-road from an urban highway into a public space. http://byebye.petiteceinture.be/, accessed 20-11-2019.

13 http://www.youarehere.brussels/, accessed 20 November 2019.

policies. In 2018, the Regional Plan for Sustainable Development[14] adopted a decision to extend the perimeter of the city centre in order to include the metro loop, the canal and the historical centre of Molenbeek. The new regional mobility plan[15] also institutionalizes the connection between the Gare du Midi, the pedestrianized boulevard and the Gare du Nord as a main walkable axis (axis 04), along with the historical axis connecting Molenbeek with the upper town (axis 02).

The second observation was the usefulness of the model as a tool through which a collaborative and creative understanding of the concrete challenges and issues could be fostered. The model provides a spatial pattern reframing the usual ways of understanding the challenges and opportunities. On the one hand, it is very concrete and relatively easy to understand thanks to the selection of streets that are highlighted in an aerial picture as strategic spaces for the future. On the other, it is abstract, showing a set of coloured cardboard elements that do not propose detailed spatial solutions. The tension between concreteness and abstractness allows participants to specify their own understanding of the challenges and opportunities through their personal experiences and background. In some cases, original personal interpretations gained collective agreement and led to substantial modification of the model. Improvements to the model were made by adding or removing pieces of cardboard, and discussions on specific challenges and opportunities led to the emergence of new partnerships. Generally speaking, research-by-design proved to be a helpful tool for the development of a multidisciplinary, multi-stakeholder, open and evolving approach. The model realized during the master class has been helpful in getting participants to move beyond their personal point of view, rendering themselves into a common future. It has also helped to ground debates in concrete and easily understandable proposals. In this case, research-by-design proved to be useful in supporting the co-production of an urban project as complex as the metropolitan centre.

However, although significant, the outcome of the process of discussion was limited, both in terms of planning and stakeholder involvement. In terms of planning, the Regional Plan for Sustainable Development (PRDD) and the Regional Mobility Plan (GoodMove) include only fragments of the suggested spatial pattern. In terms of stakeholders, while the BSI-BCO developed close partnerships with the regional administration for territorial development, citizens' associations and activists, no partnerships with economic stakeholders have been developed to date. Additionally, the sharing and co-production of the vision with the Alderman's college of the Brussels municipality happened to be less intense than expected. The reason for this is, according to our interpretation, primarily the result of the municipal elections, which meant that time was required by the new political majority to agree on a new agenda and translate it into planning policies. Prior to

14 https://perspective.brussels/fr/plans-reglements-et-guides/plans-strategiques/plan-regional-de-developpement-prd/prdd, accessed 20 November 2019.

15 https://goodmove.brussels/fr/plan-regional-de-mobilite/#plan-telechargement, accessed 18 November 2019.

Figure 6. The final model of the Zoom in | Zoom out research-by-design process (vertical), with the model of Bye-Bye Petite Ceinture (horizontal)

Source: BSI-BCO and Bienvenue sur la petite ceinture

such an agreement within the college, collaboration with external advisers such as the BSI-BCO proved difficult. Conversely, it was difficult for the BSI-BCO to explore how its proposals could integrate with or complement the municipal urban policies. Another (additional) interpretation might be the difficulty of politically managing the complex nature of such a municipality that is both a combination of local neighbourhoods, with each presenting local challenges, and a regional (national and international) pole whose influence goes far beyond the municipal borders. The BSI-BCO hoped that its vision for the metropolitan centre would help bring together the different municipal, regional and federal public stakeholders around shared purposes. However, without being officially commissioned to act as a mediator, the BSI-BCO had limited legitimacy in this respect. It may be the case that the BSI-BCO underestimated the importance of such a legitimacy being built up bit-by-bit, by tackling concrete urban challenges as opportunities to demonstrate the relevance and potential benefits of their analysis, proposals and methodologies for a broad range of urban stakeholders.

8 > TOWARDS PROTOTYPING

Two pieces of research, following the approach described above, have been recently financed and are now entering the operative and test phase of the process, which aims to give account, prove the validity and further develop the proposed vision of the Metropolitan Centre of Brussels. Key goals of the research 'Pentagone Sud' and 'Steenweg' are, on the one hand, to detail the general vision for specific segments of the identified strategic network and, on the other, the realization of pilot projects to produce prototypical results. Prototyping is thus an integral part of the methodology because its goal is to produce test projects that can be reproduced elsewhere (Gehl and Savarre, 2013).

8.1 Southern Pentagon

In 2019, following the design workshops held during the International Architecture Biennale of Rotterdam, a group composed of the BSI-BCO, Architecture Workroom Brussels (the organizers of the biennale in Brussels), BRAL (a Dutch-speaking citizens association) and Atelier Groot-Eiland (a non-profit organization helping marginalized people to gain employment) received funding from the Vlaamse Gemeenschapscommissie (which has competencies for culture, education, well-being and health for Flemings in Brussels) to build a series of productive green pilot projects (i.e. vegetable gardens, fruit trees) in close coordination with the schools located in the south of the Brussels city centre. Instead of proposing only installations within the respective school perimeters, the group has also expressed a willingness to build them in the surrounding public spaces, creating a school network (both French- and Dutch-speaking, from nursery school through to university) with multiple purposes. The aim is to provide safe routes for children,

reduce car dependency and air pollution, and foster the access to qualitative food in neighbourhoods with low average levels of income.

Workshops held in 2019 with inhabitants and school representatives demonstrated a willingness to support the project. A spatial and actor-network analysis identified three strategic sites suitable for testing. In November 2019, in order to discuss the possibility of creating the pilot projects in the public space, a workshop was held with representatives from the urbanism and green spaces departments of the Brussels municipality. The municipality welcomed the proposal, as it met its general objective of improving walkability, green spaces and facilities in proximity to them. One of the topics of discussion was the presumed shift from classic public services towards public-citizen partnerships. As noted by the head of the green spaces department, the choices for vegetation in the public space are usually very limited due to the municipality's limited management capacities. However, having schools and neighbourhood associations stewarding the gardens on an everyday basis opens up much wider possibilities.

From a methodological point of view, structuring the discussions around a spatial issue allows the highlighting of unexpected potential synergies between environmental, social, economic and cultural issues. The complexity of those potential synergies also illustrates why public stakeholders should operate as enablers[16] rather as planners or providers of public facilities (see in this book, Dudal et al., 2020).

8.2 The Steenweg

In 2019, perspective.brussels commissioned a scientific study from the BSI-BCO for the redevelopment of the main historical axis (called the Steenweg) as a pedestrian trajectory connecting the bottom of the valley with the top of the hill (see in this book, De Visscher, 2020). The outcomes of the first surveys and discussions highlighted that the Steenweg can become much more than a mere pedestrian axis. Besides being an important environmental axis connecting the top of the hill with the bottom of the valley, the Steenweg is also a social catalyst, connecting the western poorer neighbourhoods with the eastern richer ones. In addition, it is an economic axis connecting different areas where industrial, retail, cultural and office activities are located. Finally, it is a cultural axis connecting the major heritage sites and museums of the city centre. However, the discussions also revealed that presuming so many stakeholders to collaborate is a major challenge.

16 LabGov.city. Co-cities Open Book. Transitioning from the Urban Commons to the City as a Commons. (Self-edited, 2019), 8. http://commoning.city/the-co-cities-open-book/

9 > CONCLUSION

This chapter proposed an open vision for the Brussels metropolitan city centre that can serve as a framework for developing design initiatives meant to implement such a vision at different scales across Brussels's extended metropolitan centre.

The first outcome of the research-by-design process is the envisioning of potential sustainable scenarios for the spatial and programmatic structuring of the Brussels metropolitan city centre, within which the pedestrian zone retroactively appears as a strong potential starting point. As illustrated in this chapter, making the Brussels central avenues car-free can be seen as the first step towards an expanded network of public spaces where priority is given to pedestrians, cyclists and public transport. An opportunity for expanding this network can be found in the potentialities of the capillary mesh of small roads and public spaces in the city core, mostly inherited from the medieval period. Since many of these streets are not major axes for car flows, they hold greater potential for transformation in the short term. Secondly, they provide east-west connections facilitating crossings of the north-south oriented, large-scale infrastructures and the Pentagon itself. They permit a better connectivity between the variety of spaces, socio-economic dynamics and natural flows in the centre. More specifically, the resulting network provides strategic spatial connections between the Pentagon, the surrounding train and metro stations, the historical suburbs and the other side of the valley. By connecting the (regional and federal) public transport networks, the other mobility flows, and the functional and social diversity, this network allows for a spatial definition of the metropolitan centre that is more consistent with the regional vision sought by the government in the PRDD. On the other hand, reading Brussels as a polycentric city structured by different interconnected centres, the specificity of the metropolitan centre should be reinforced in contrast to the other centres.

The second outcome of the research-by-design process is the envisioning of new governance models, where public stakeholders shift from a role of public service providers towards a role of enabler, fostering partnerships between public stakeholders, private stakeholders, citizens (associations) with the support of experts and universities. The two specific cases of Southern Pentagon and the Steenweg illustrate the necessity and complexity of articulating local challenges and opportunities in relation to a wider vision, and of encouraging synergies between the many stakeholders able to make a positive contribution. The communication and co-design process that followed the master class illustrates a possible methodology for achieving such a goal.

Disseminating, sharing and discussing the new imaginary for the Brussels Metropolitan Centre is essential to both improving the vision of and fostering synergies between stakeholders. In order to reach that goal, it is crucial to continue to invest in three types of actions:

- enabling exhibitions, publications, public debates and workshops, and strengthening collaborations between the different stakeholders;
- promoting the coordination of spatially driven studies in the fields of mobility, ecology, sociology, architecture, economy, public programs and governance, using a transversal, prospective and situated approach to as great an extent as possible;

developing targeted studies (e.g. on prototyping) and pilot projects on particular cases (e.g. exploration of the E-W axis), as a means to test and improve the vision and governance model.

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